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Endocrinology and Infertility. Baltimore, USA: Willliams & Wilkins, 1994:1-967.

ACKNOWLEDGMENTS

Aimed at the scientific or material contributions of others that do not justify co-authorship.

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TÁRIK KASSEM SAIDAH
WALDEMAR NAVES DO AMARAL
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PROFILE OF NEONATAL DEATHS: A STUDY IN A GOIÂNIA PUBLIC MATERNITY

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ABSTRACT

Introduction: The World Health Organization (WHO) defines fetal death as that which occurs before the complete expulsion or extraction of the product from the conception of the maternal organism, regardless of the duration of pregnancy Objectives: To trace the profile of fetal deaths in a public maternity hospital in Goiânia. Describe the main causes of fetal death. Analyze the characteristics of deaths occurred and declared. Analyze risk factors associated with the occurrence of fetal death. Methods: Retrospective cross-sectional ecological study. Results: The main factors that culminated in fetal death are 18.5% Premature Labor. The main cause of fetal death was prematurity with 28%. The unit's fetal mortality rate is 22.8 deaths per 1000 births, but the profile is of high risk, which justifies the data. As for the maternal factors presented and related to fetal deaths, it was observed that of 131 (95.6%) pregnancies with one or more children, 104 (75.9%) were born alive, while 64 (46.7%) were born dead. Of these pregnant women, 27 (19.7%) had one or more abortions; 20 (14.7%) had ruptured amniotic membranes and 36 (26.3%) ruptured pouch during pregnancy. Among all the pregnant women evaluated, 22 (16%) presented Systemic Arterial Hypertension as the main complication in the current pregnancy. Among the factors associated with pregnancy and which led to fetal death, Prematurity was found in 39 (18.5%) of pregnant women. In this study, it was also found that 96 (65.3%) of the pregnant women did not use medication during pregnancy and, when used, the main drugs were antihypertensive drugs 14 (9.5%). As a condition for hospitalization, 42 (31%) pregnant women died of fetal death and motherhood was the place where the majority of births occurred, 133 (97%). Of all deliveries performed, 90 (65.7%) were vaginal, and in 98 (71.5%) the obstetrician was the professional who conducted the procedure. When cesarean section was indicated, acute fetal distress was the deciding factor in 12 patients, totaling 25.2% of all pregnant women whose indication for delivery was surgical. The prevailing gestational age in 75 (54.7%) had less than 31 weeks of gestation that constitutes extreme preterm, with a predominant weight in 66 (48.2%) <1000 grams being classified in extremely low weight. The presence of meconium was present in 30 (22%) of fetal deaths. Conclusion: Regarding the observed fetal characteristics, the following deaths were found: male, extreme preterm (<31 weeks), extremely low birth weight (<100g), normal birth. An important data that draws attention was the large amount of underreporting in relation to the type of anesthesia performed during cesarean section, neonatal resuscitation and birth conditions. It was observed that almost half of those born were not sent to the autopsy service. Having found arterial hypertension as the main cause of fetal death in this population is not surprising, since other studies carried out in the country have identified this same cause.

KEYWORDS: FETAL MORTALITY, DEATHS, MATERNITY

INTRODUCTION

The World Health Organization (WHO) defines fetal death as that which occurs before the complete expulsion or extraction of the product of conception from the maternal organism, regardless of the duration of pregnancy[1].

Although there is no consensus on the definition of fetal death, the Ministry of Health (2012) conceptualizes it as the death occurring in the uterus at any gestational age, from fertilization, before the complete exteriorization of the maternal body[2,3].

Fetal death can be classified as: a) early: up to 20 weeks of gestation and fetal weight up to 500 grams; b) intermediate: between 20 and 28 weeks of gestation and fetal weight between 500 and 1000 grams; c) late: after 28 weeks of gestation and weighing more than 1000 grams[2,4].

Fetal mortality results from a complex articulation between biological factors, social conditions and the care provided by health services. Despite the evident importance of fetal death as a public health problem, little attention has been paid to this issue, especially regarding its epidemiology; fetal death has rarely been analyzed

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separately from perinatal and infant mortality. Some risk factors have been associated with fetal death. A number of them can be prevented and treated. However, in many cases of fetal loss, no factor can be clearly detected[1,5].

It is known that neonatal mortality is associated with the quality of health care, being the main factor in infant mortality since the 1990s in the country[6]. The first month of life is the most vulnerable period for a child's survival. With an average global rate of 17 deaths per 1,000 live births in 2019. Globally, 2.4 million children died in the first month of life in 2019 and approximately 6,700 neonatal deaths every day with about a third of all neonatal deaths they occur on the first day after birth and about three quarters in the first week of life[7]. Neonatal death is one that occurs within 27 days of delivery. Death in this period reflects socioeconomic and reproductive conditions, as well as those related to the quality of prenatal care, during childbirth and with the newborn, demonstrating gaps in the organization of the health network[8].

It is estimated that, worldwide, fetal deaths occur in the same number as neonatal deaths. In Brazil, in 2007, 30,677 neonatal deaths and 30,123 fetal deaths with more than 22 weeks of gestation were reported. The concept of Fetal Mortality Rate or Coefficient implies the number of fetal deaths (occurring from the 22nd full week of gestation, or 154 days or fetuses weighing 500g or more or height from 25 cm) per thousand births totals, in the population residing in a given geographic area, in the considered year. Total births include live births and stillbirths. In order to reduce the incidence of fetal death in the antepartum period, it is essential to have knowledge about its etiology. However, 40 to 50% of cases are said to have an undefined cause[1,8].

Given this, the objective of this research is to trace the profile of infant deaths in a public maternity hospital in Goiânia.

METHODS

Retrospective cross-sectional ecological study. Data referring to all those born at Hospital e Maternidade Dona Íris from January 2019 to July 2020 were analyzed. The information was obtained from the Infant Death Investigation Forms – Hospital Health Service of the Ministry of Health.

Data collection was carried out after approval by the Ethics and Research Committee of Hospital e Maternidade Dona Íris, city of Goiânia, to which the project is linked. The outcome to be analyzed will be fetal mortality.

RESULTS

The period analyzed was from January to December 2019 with a total of 5999 births. A total of 137 fetal deaths were found. The unit's fetal mortality rate is 74 deaths per 1000 births, representing 22.8%, as the fetal mortality coefficient.

	Number of patients (N=137)	
	N	%
NUMBER OF PREGNANCIES		
1	55	40,1
2	32	23,3
3	22	16,1
≥ 4	22	16,1
NR	6	4,4
NUMBER OF NORMAL DELIVERIES		
1	61	44,5
2	13	9,5
3	7	5,1
≥4	10	7,3
None	36	26,3
No registry	10	7,3
NUMBER OF ABORTIONS		
1	21	15,3
2	4	3,0
3	1	0,7
≥4	1	0,7
None	105	76,6
No registry	5	3,7
LIVE BORN CHILDREN		
1	52	38
2	25	18,2
3	15	11,0
≥ 4	12	8,7
None	29	21,1
No registry	4	3,0
CHILDREN BORN DEAD		
1	58	42,3
2	3	2,2
3	2	1,5
≥ 4	1	0,7
None	73	53,3
SEX		
Female	58	42,0
Male	68	50,0
Ignored	11	8,0
WEIGHT		
Extremely low birth weight (<1000g)	66	48,2
Very low birth weight (1000-1500g)	17	12,3
Low birth weight (1500-2500g)	25	18,3
Adequate birth weight (>2500g)	29	21,2
GESTATIONAL AGE		
Postterm (>42 weeks)	0	0
Term (37s - 41s 6d)	30	22,0
Late preterm (36s - 36s 6d)	8	5,8
Moderate preterm (31s - 35s 6d)	24	17,5
Extremely preterm (< 31s)	75	54,7
PLACE WHERE THE DELIVERY OCCURRED		
Home	2	1,5
Another hospital	2	1,5
TYPE OF DELIVERY		
Vaginal	90	65,7
Cesarean	46	33,6
Forceps	1	0,7

MEDICATION IN PREGNANCY

No	96	70,0
Yes	41	30,0

MATERNAL INTERCURRENCES

No intercurrences	69	50,4
Hypertension	22	16,0
Eclampsia	4	3,0
Infection	12	8,6
Other Diseases	30	22,0

RISK FACTORS DURING PREGNANCY

Premature Labor	39	18,5
SHDP	30	14,3
Infections	23	11,0
Premature Rupture of Membranes	23	11,0
Gestational diabetes	12	5,7
Bleeding	6	2,8
IUGR	8	3,8
No complications	9	4,3
Malformations	9	4,3
Storch	9	4,3
Amniotic Fluid Changes	9	4,3
No Records	14	6,7
Others	19	9,0

CONDITION TO INTERNATION

Fetal death	42	31,0
Labor	30	22,0
Clinical Treatment	5	3,7
Premature Labor	21	15,4
Cesarean	13	9,5
Roprema	6	4,4
Others	4	3,0
No registry	15	11,0

PROFESSIONAL WHO PERFORMED THE DELIVERY

Obstetrician	98	71,5
Midwife nurse	9	6,6
Resident	7	5,1
Non-obstetrician doctor	4	3,0
Obstetrician and Nurse	4	3,0
Non-obstetrician doctor and resident	2	1,4
No registry	12	8,7
Home	1	0,7

RUPTURED SAC

Yes	36	26,3
No	101	73,7

AMNIOTIC MEMBRANE

Ruptured	20	14,7
Complete	72	52,5
No registry	45	32,8

MECONIUM

Yes	30	22,0
No	107	78

UTERINE DYNAMICS

Yes	49	35,8
No	88	64,2

DILATATION OF THE COLUM

Yes	56	40,9
No	81	59,1

FETAL HEART BEAT

Positive	66	48,2
Negative	55	40,2
No registry	16	11,6

PRESENTATION

Cephalic	40	29,2
Pelvic	23	16,8
Anomalous	2	1,5
Pelvic/anomalous	1	0,7
No registry	71	51,8

ANESTHESIA DURING LABOR

Yes	29	21,2
No	79	57,6
No registry	29	21,2

INDICATION OF CESAREAN SECTION

Anomalous Presentation	8	17,0
SHDP	9	19,2
Iterative/Previous	8	17,0
Acute/Chronic Fetal Distress	12	25,5
Others	10	21,3

TYPE OF ANESTHESIA

Epidural	2	1,5
Spinal	26	19,0
No registry	109	79,5

WHO ATTENDED THE CHILD

Pediatrician	57	41,6
Obstetrician	38	27,7
Nurse	9	6,6
Resident	5	3,6
No registry	16	11,7
Pediatrician/Obstetrician	6	4,4
Others	6	4,4

ATTEMPTED RESUSCITATION

Yes	3	2,2
No	63	46
No registry	71	51,8

BIRTH CONDITIONS

Stillbirth/death before labor	32	23,3
Stillbirth/macerated fetus	26	19,0
Stillbirth/death during labor	3	2,2
No registry	76	55,5

CAUSES OF FETAL DEATH

	13	10,5
Shock	12	9,7
Infection/Sepsis	8	6,4
Malformation	35	28,2
Prematurity	20	16,2
Anoxia/Respiratory Causes	19	15,3
Other Causes	17	13,7

BODY REFERRED TO NECROPSIA

Yes	62	45,3
No	64	46,7
No registry	11	8,0

MEDICATION USED DURING PREGNANCY

Did not use	96	65,3
Antihypertensive	14	9,5
Antibiotics	10	6,8
Progestins	8	5,4
Antianemic/Iron	8	5,4
Anti-diabetics (Oral/Insulin)	2	1,4
Corticosteroids	2	1,4
Others	7	4,8

Table 1 – Distribution of maternal, pregnancy and childbirth characteristics of fetal deaths in the HMDI, Goiânia (GO), Brazil, 2019 (N=137)

DISCUSSION

Reducing child mortality is still a challenge for health services and society as a whole. It is part of the Millennium Development Goals, a commitment assumed by the member countries of the United Nations (UN), of which Brazil is a signatory, to fight poverty, hunger, diseases, illiteracy, environmental degradation and discrimination against women, aiming to reach more dignified levels of life for the population, since infant mortality reflects the living conditions of society[9].

In the present study, the results obtained show that the main factors that culminated in fetal death are Premature Labor 18.5%, Hypertensive Diseases of Pregnancy with 14.3%, Infections and Premature Rupture of Membranes, both with 11%. The main causes of fetal death identified were prematurity with 28%, anoxia/respiratory causes in 16.2%, followed by shock from various causes (cardiogenic, hypovolemic, neurogenic) in 10.5%, and infections or septic shock in 9.7% of the causes.

The unit's fetal mortality rate is 22.8 deaths per 1000 births, but the profile is of high risk, which justifies the data. WHO (2011) estimated that approximately 2.6 million fetal deaths (considering weight greater than 1,000 g or gestational age greater than 28 weeks) occurred worldwide in 2009. From 1995 to 2009, the fetal mortality rate dropped by 14.0%, going from 22.1/1,000 total births to 18.9/1,000 births[10].

As for the maternal factors presented and related to fetal deaths, it was observed that of 131 (95.6%) pregnancies with one or more children, 104 (75.9%) were born alive, while 64 (46.7%) were born dead. Of these pregnant women, 27 (19.7%) had one or more abortions, 20 (14.7%) had ruptured amniotic membranes and 36 (26.3%) had a ruptured sac during pregnancy.

Among all the pregnant women evaluated, 22 (16%) had Systemic Arterial Hypertension as the main complication in their current pregnancy. For Barbeiro et al (2015), an interaction between maternal hypertension and prenatal care was identified: among hypertensive women with inadequate prenatal care, the OR was [8.7], much higher than in hypertensive women with adequate prenatal care with an OR of [5.6]. According to Aquino and Cecatt (1998) in a study carried out with 122 pregnant women, of all isolated causes, the most prevalent was arterial hypertension (20.5%), which led to fetal death[1]. For Vieira et al (2017), despite the data from their study covering almost 100% of the coverage of prenatal care, the most prevalent causes of fetal death are still arterial hypertension and infections[11]. In the literature, the stillbirth rate in hypertensive women ranges from 5 - 52/1000N, depending on the severity of complications of the hypertensive disease[12].

Among the risk factors associated with pregnancy that led to fetal death, prematurity was found in 39 (18.5%) of pregnant women, followed by Specific Hypertensive disease of pregnancy in 30 (14.3%), infections 23 (11%) and premature rupture of membranes in 23 (11%) patients.

The 2009 Ministry of Health technical note advises that it is necessary to pay attention to the importance of preventing prematurity and its complications that must occur during prenatal care, taking away the weight of the effort that needs to be undertaken in the care of the premature newborn[8].

In this study, it was also found that 96 (65.3%) of the pregnant women did not use medications during pregnancy and, when they did, the main medications were antihypertensives 14 (9.5%). It should be noted that the use of medication during pregnancy, especially in an indiscriminate and unguided manner, can cause irreversible damage such as malformations and even death for both the mother and the fetus.

As a condition for hospitalization, 42 (31%) pregnant women had fetal death and the maternity ward was the place where most births occurred, 133 (97%). Of all deliveries performed, 90 (65.7%) were via the vaginal route, and in 98 (71.5%) the obstetrician was the professional conducting the procedure. These data reveal that even in a safe place with a suitable professional, death refers to other factors.

When cesarean section was indicated, acute fetal distress was the decisive factor in 12 patients, totaling 25.2% of all pregnant women whose indication for delivery was surgery. A very important data regarding the type of anesthesia at the time of surgery, 109 (79.5%) remained unregistered. The quality of information on fetal death certificates, despite some improvement, is still deficient. Sociodemographic variables such as age and maternal education are still poorly filled[13].

Among the variables related to the fetus, it is observed that 68 (50%) were male. The predominant gestational age in 75 (54.7%) had less than 31 weeks of gestation, which configures extreme preterm, with predominant weight in 66 (48.2%) < 1000 grams, fitting in extremely low weight. The presence of meconium was present in 30 (22%) of fetal deaths. Veloso et al, studying the trend of low birth weight from 1996 to 2010 in Brazilian capitals, found a negative correlation between the percentage of low birth weight (increasing until 2004) and the fetal mortality rate[14].

This study showed that 57 (41.6%) of the newborns were assisted by a pediatrician in the delivery room and that only 3 (2.2%) underwent resuscitation, in 71 (51.8%) of the cases there is no record of any procedure was performed or not with the newborn. There is also no record of birth condition in 76 (55.5%) and 64 (46.7%) were not referred for necropsy. These data are alarming in relation to the quality of filling out the forms. For Barbeiro et al., (2015) there is still a deficiency regarding the quality of information on fetal death certificates[13]. Some maternal sociodemographic variables are still poorly filled out, which makes the use of the Mortality Information System (SIM) unfeasible to study social inequalities in stillbirths. Incompletion in fetal death certificates exceeded the values reported in death certificates for children under one year of age, cor-

roborating, once again, the "invisibility" of fetal deaths. Although it decreased, it was still reported underreporting of fetal deaths, with the possibility of rescue, using the Hospital Information System (SIH)-SUS, at least for deliveries in users of this system15.

CONCLUSION

The Death Certificate is the instrument that notifies the death and triggers the investigation process. Considering the different realities observed in the country, it is still a challenge to eradicate underreporting of deaths, which was not different in this study, being necessary to take into account the different possibilities of capturing deaths, to expand the coverage of the Information System on Mortality (SIM).

Regarding the fetal characteristics observed, the following deaths were found: male, extreme preterm (< 31 weeks), extremely low weight (<100g), normal delivery. An important fact that draws attention was the large amount of underreporting in relation to the type of anesthesia performed during the cesarean, neonatal resuscitation and birth conditions. It was observed that almost half of those born were not sent to the necropsy service.

Finding arterial hypertension as the main cause of fetal death in this population is not surprising, as other studies carried out in the country have identified this same cause.

REFERENCES

1. Aquino MMA, Cecatt JG. Epidemiologia do óbito fetal em população de baixa renda. RBGO, v. 20, n. 2, p: 71-75, 1998.

2. Sampaio AG, Souza ASR. Indicação de cesareana em óbito fetal. Rev. Bras. de Ginecol. e Obstetr. Rio de Janeiro, v. 32, n. 4, p. 169-75, 2010.

3. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Gestação de alto risco: manual técnico. Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Ações Programáticas Estratégicas. 5ª ed. Brasília: Ministério da Saúde, 2012a.

4. Klein CJ. et al. Fatores de risco relacionados à mortalidade fetal. Rev. AMRIGS, v.56, n.1, p. 11-16, 2012.

5. Nurdan N, Mattar R, Camano L. Óbito Fetal em Microrregião de Minas Gerais: Causas e Fatores Associados. RBGO, Rio de Janeiro, v. 25, 2, p: 103-107, 2003.

6. Lansky S et al. Pesquisa Nascer no Brasil: perfil da mortalidade neonatal e avaliação da assistência à gestante e ao recém-nascido. Cad. Saúde Pública, v. 30, supl. 1, 2014.

7. UNICEF. Neonatal mortality. Disponível em: https://data.unicef.org/topic/child-survival/neonatal-mortality/. Acesso em 05.10.2020.

8. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Secretaria de Atenção à Saúde. Manual de vigilância do óbito infantil e fetal e do Comitê de Prevenção do Óbito Infantil e Fetal / Ministério da Saúde, Secretaria de Vigilância em Saúde, Secretaria de Atenção à Saúde.2. ed. Brasília: Ministério da Saúde, 2009.

9. United Nations Millennium Declaration. UN, 2000. Disponível em: http://www2.ohchr.org/english/law/millennium.htm. Acesso em 10.10.2020.

10. WHO. World Health Organization. Recommended definitions, terminology and format for statistical tables related to the perinatal period and use of a new certificate for cause of perinatal deaths. WHO/ FIGO. Acta Obstet Gynecol Scand 1977; 56: 247-53.

11. Vieira MSM. Natimortalidade no Brasil e Revisão Sistemática sobre os Sistemas de Classificação Utilizados para o Esclarecimento das Causas do Óbito Fetal. Tese (doutorado) - Universidade Federal de Santa Catarina, Centro de Ciências da Saúde, Programa de Pós-Graduação em Ciências Médicas, Florianópolis, 2017.

12. Liu LC, Wang YC, Yu MH, Su HY. Major risk factors for stillbirth in different trimesters of pregnancyd: A systematic review. Taiwanese Journal of Obstetrics & Gynecology 53 p:141 – 145, 2014.

13. Barbeiro FMS, Fonseca SC, Tauffer MG, Ferreira MSS, Silva FP, Ventura PM, Quadros JI. Óbitos fetais no Brasil: revisão sistemática. Rev Saúde Pública, v. 1, n. 49, 22, 2015.

14. Veloso FCS et al . Análise dos fatores de risco na mortalidade neonatal no Brasil: uma revisão sistemática e metanálise de estudos observacionais,. J. Pediatr. (Rio J.), Porto Alegre , v. 95, n. 5, p. 519-530, Sept. 2019.

15. Romero DE, Cunha CB. Avaliação da qualidade das variáveis socioeconômicas e demográficas dos óbitos de crianças menores de um ano registrados no Sistema de Informações sobre Mortalidade do Brasil (1996/2001). Cad Saude Publica, v. 22, n 3, p: 673-84, 2006.

ACCURACY OF ULTRASONOGRAPHY FOR DIAGNOSIS OF FETAL MACROSOMY

LARA DIAS CAVALCANTE, EDUARDO SANTOS LOPES PONTES, ANA CAROLINA BOSCH

ABSTRACT

INTRODUCTION: Fetal macrosomia is a birth weight greater than or equal to 4000g, regardless of gestational age. The weight of the fetus estimated by ultrasound (USG) significantly influences the decision to continue or to terminate the pregnancy. OBJECTIVE: To define the accuracy of USG in the estimative of fetal macrosomia in a municipal maternity hospital in Goiânia. METHODS: Retrospective descriptive transversal epidemiological study carried out at Hospital e Maternidade Dona Íris (HMDI), Goiânia, Goiás. The population consisted of patients undergoing cesarean delivery in 2019, with a total of 2742 people. Inclusion criteria: obstetric USG performed at the HMDI up to 7 days before delivery. Data collection was carried out in the hospital's database. Patients were ordered in decreasing manner based on the birth weight of the newborns. 1033 patients were selected by convenience. After inclusion and exclusion criteria, the n sample was 189. RESULTS: The accuracy of the USG for diagnosis of fetal macrosomia was 76.2%, sensitivity 59.5% and specificity 80.3%. The rate of caesarean delivery for fetal macrosomia in 2019 at HMDI was 27.5%. CONCLUSION: As it is an exam with greater specificity and a high negative predictive value, obstetric USG has better applicability when associated with clinical suspicion of fetal macrosomia.

INTRODUCTION

Fetal macrosomia is defined as birth weight greater than or equal to 4000g, regardless of gestational age, or above the 90th percentile (p90) in relation to gestational age and is related to an increased risk of birth trauma, maternal and neonatal morbidity and mortality[1].

In 2017, newborns weighing 4000g or more accounted for 5.26% of births in Brazil and 3.94% in Goiás[2].

Some experts recommend elective caesarean section as a way to avoid more serious complications, such as bi-acromial dystocia and brachial plexus palsy. However, this practice does not present sufficient scientific evidence to establish a consensus, and the applied weight limit is also not well defined, ranging from 4000g to 5000g depending on the literature[3].

It is known that the number of caesarean sections has grown in developing countries and has become a public health problem, since caesarean delivery is associated with higher rates of maternal mortality and neonatal morbidity and mortality when compared to vaginal delivery. Studies show that the suspicion of fetal macrosomia is among the most frequent indications for caesarean sections[4].

However, elective caesarean section is indicated in fetuses with estimated weight above 5,000 g, as level A recommendation and vaginal delivery should be attempted in fetuses with estimated weight below 4500 g without other associated complications[5].

The fetal growth, development and its deviations are evaluated throughout the gestation, from the evaluation of the uterine fundal height and the obstetric ultrasonography. Currently, obstetric ultrasound is the most efficient way to identify low or high fetal weight[6].

There are several formulas for estimating fetal weight by ultrasonography, which are calculated directly by the USG equipment software, the main ones are the formulas of Warsof, Shepard, Hadlock with two parameters, and Hadlock with four parameters, and there is no superiority of one in relation to others. However, all of them have greater chances of error in fetuses at the extremes of weight variations[7].

Kacem et al., (2013) demonstrated that 26.6% of ultrasound assessments of fetal weight have a relative error greater than 10% in relation to birth weight. The most used formula for calculating fetal weight is Hadlock's, which uses four measures: cranial circumference, biparietal diameter, abdominal circumference and femur length[8].

The fetal weight estimated by ultrasonography, especially when a deviation to more or less is identified, considerably influences the conducts related to the maintenance or interruption of pregnancy[9].

Fetal macrosomia is an obstetrical challenge involved in controversies from the conceptual definition to the decision on the mode of delivery and timing of pregnancy interruption. Knowing that ultrasound is used as a complementary method in the diagnosis of fetal macrosomia and sometimes used as the only intrauterine diagnostic parameter, it directly influences the choice of the mode of delivery and the timing of termination of pregnancy.

Therefore, this study aims to determine the accuracy of two-dimensional obstetric ultrasonography in estimating fetal weight equal to or greater than 4000g, through tests performed at a Municipal Hospital in Goiânia.

MATERIALS AND METHODS

This is a descriptive retrospective cross-sectional epidemiological study, carried out at Hospital e Maternidade Dona Íris (HMDI) in Goiânia, Goiás, from January to October 2020. The study was submitted to the HMDI Research Ethics Committee through Plataforma Brasil, complying with the ethical principles of research in human beings of resolution 466/12, with the waiver of the Free and Informed Consent Term. Data collection was performed in the hospital's database, by consulting the surgical center's virtual caesarean worksheet, the Wareline electronic medical record system and the USG Wultra system.

The virtual caesarean worksheet presented the patients in chronological order of the date of delivery and in 2019, 2742 patients underwent caesarean section at HMDI. For sample selection, patients were organized in descending order based on the birth weight of the newborns. For convenience, 1033 patients were selected sequentially from the new ordering performed, so that all who had macrosomic newborns were included.

As inclusion criteria for the study, we defined the performance of obstetric USG at HMDI up to 7 days before delivery and as exclusion criteria, having performed obstetric USG at HMDI more than 7 days before delivery and not having performed obstetric ultrasound at the time of delivery at HMDI.

After applying the inclusion and exclusion criteria, the sample number obtained was 189. Data were organized in Excel to make spreadsheets, tables and perform statistical calculations to obtain accuracy, sensitivity, specificity, negative and positive predictive values.

USG sensitivity (S) in the diagnosis of fetal macrosomia was calculated using the formula: $S=(PV/(PV+FN))\times 100$. Specificity (S) was calculated using the formula: $S=(NV/(NV+FP))\times 100$.. The positive predictive value (PPV) was calculated using the formula: $PPV=(PV/(PV+FP))\times 100$, and the negative predictive value using the formula: $NPV=(NV/(NV+FN))\times 100$. To calculate the accuracy (A) the formula was used: $A =((PV+NV)/(PV+NV+FP+FN))\times 100$.

RESULTS

Information was collected from 189 patients regarding indication for caesarean section, date of delivery, birth weight, date of ultrasound and estimated weight by ultrasound. Of these, 27.5% (52) had fetal macrosomia diagnosed by USG as an indication for caesarean delivery, and 72.5% (137) had different indications not related to fetal macrosomia (TABLE 1).

INDICATION OF CAESAREAN SECTION	n (PERCENTAGE VALUE)
Macrosomia	52 (27.5%)
Other reasons	137 (72.5%)
TOTAL	189

TABLE 1 – Indication of caesarean section. Hospital e Maternidade Dona Íris, 2019

Regarding the newborn's weight at birth, 19.5% (37) of the patients had newborns weighing 4000g or more, and 80.5% (152) had newborns weighing less than 4000g (TABLE 2).

WEIGHT AT BIRTH	n (PERCENTAGE VALUE)
Greater than or equal to 4000g	37 (19.5%)
Less than 4000g	152 (80.5%)
TOTAL	189

TABLE 2 – Birth weight of newborns by caesarean delivery. Hospital e Maternidade Dona Íris, 2019.

Comparando o peso fetal estimado pela ultrassonografia com o peso ao nascimento, 22 (42,3%) apresentaram-se como verdadeiros positivos (VP) para macrossomia, 122 (89%) como verdadeiros negativos (VN), 15 (10,9%) como falsos negativos (FN), e 30 (57,6%) como falsos negativos (FP) (TABELA 3).

Comparing the estimated fetal weight by ultrasonography with birth weight, 22 (42.3%) presented themselves as true positives (PV) for macrosomia, 122 (89%) as true negatives (NV), 15 (10.9%) as false negatives (FN) and 30 (57.6%) as false positives (FP) (TABLE 3).

	WEIGHT AT BIRTH		
WEIGHT AT USG	Macrosomic (percentage values)	Non-macrosomic (percentage values)	TOTAL
Macrosomic (percentage values)	22 (42.3%) - PV	30 (57.6%) - FP	52
Non-macrosomic (percentage values)	15 (10.9%) - FN	122 (89%) - NV	137
TOTAL	37	52	189

TABLE 3 – Comparison between fetal weight estimated by ultrasound and birth weight. Hospital e Maternidade Dona Íris, 2019.

The sensitivity of ultrasonography in diagnosing fetal macrosomia was 59%, and the specificity was 80%. The PPV obtained was 42% and the NPV 89%. The accuracy

found was 76%. For all parameters, a confidence interval of 95% was applied (TABLE 4).

ESTIMATED	VALUE	CI 95%
Sensitivity	59.5	(52.5 – 66.5)
Specificity	80.3	(74.6 – 85.9)
Accuracy	76.2	(70.1 – 82.3)

TABLE 4 – Statistical estimates of USG in the diagnosis of fetal macrosomia, in percentage values. Hospital e Maternidade Dona Íris. 2019.

DISCUSSION

Currently, there is no method with high diagnostic accuracy for fetal macrosomia and USG is the most commonly performed test in obstetric practice, sometimes used alone in the intrauterine diagnosis of macrosomia and in the indication for caesarean section.

The USG analyzed in this study used the Wultra software, whose calculation of the fetal weight estimate was made using the Hadlock formula, assuming an error margin of ± 10%. They presented a sensitivity of 59.5% (CI 95: 52.5 - 66.5) and specificity of 80.3% (CI 95: 74.6 - 85.9) in the diagnosis of fetal macrosomia, and, consequently, high NPV (89%), which demonstrates a greater probability of a fetus not considered macrosomic by USG in fact not being macrosomic at birth.

The USG performed up to 7 days before delivery showed an accuracy of 76% when positive for fetal macrosomia, which represents a moderate risk of the result not being in line with reality. The PPV was 42%, which means that out of 100 fetuses diagnosed as macrosomic by the USG, only 42 are truly macrosomic at birth.

The results found are similar to the most current recommendations of the ACOG (2020), which point to USG as a method of low accuracy for predicting fetal macrosomia (33-44%), with 56% sensitivity and 92% specificity[10].

These findings are also consistent with the study by Freire (2010), who correlated fetal weight estimated by USG performed up to 7 days before delivery with birth weight, indicating a high negative predictive value (100%, CI 95: 95.9 -100) and low positive predictive value (23.5%, CI 95: 10.8 – 41.1) for large for gestational age fetuses.

Weiner et al. (2002) compared ultrasonography in estimating fetal macrosomia with clinical estimation, and concluded that ultrasonography was not superior because it had a sensitivity of 58%, while the clinical estimate had a sensitivity of 68%. They also concluded that ultrasonography has a higher negative predictive value (70%), and a lower positive predictive value (56%) in the diagnosis of fetal macrosomia.

On the other hand, Ricci et al. (2011) concluded that ultrasonography has superiority in estimating fetal weight when compared to estimation by clinical param-

eters, with an accuracy of 79% using the four-parameter Hadlock formula[11].

The results found in this study, as well as those found in the literature, show that USG for fetal macrosomia is a method with greater specificity and high negative predictive value, which shows better applicability when associated with clinical suspicion of fetal macrosomia.

The latest recommendations of the ACOG (2020) on the subject corroborate the findings of this study, pointing out as level A of evidence, that ultrasonography for estimating fetal weight is not more accurate than the abdominal assessment of the pregnant woman. In addition, as level B of evidence, USG can be used to rule out fetal macrosomia when there is clinical suspicion[10].

CONCLUSION

✓ The accuracy of ultrasound in diagnosing fetal macrosomia was 76.2%.

✓ Sensitivity was 59.5% and specificity 80.3%.

✓ The caesarean rate for fetal macrosomia at Hospital e Maternidade Dona Íris in 2019 was 27.5%.

REFERENCES
1. AMB. Projeto Diretrizes. Recém-nascido Macrossômico.Associação Médica Brasileira e Conselho Federal de Medicina. 2011.
2. Brasil. MINISTÉRIO DA SAÚDE - MS/SVS/DASIS/ SINASC – DATASUS 2017. Disponível em http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinasc/cnv/nvuf.def. Acesso em 08 de dezembro de 2019.
3. Calderon IMP, Rudge MVC. Macrossomia fetal – Um desafio obstétrico. Rev Bras Ginecol Obstet, 2006, 28(4):211-13.
4. Marcolin AC. Até quando o Brasil será conhecido como o país da cesárea? Rev Bras Ginecol Obstet, 2014,36 (1): 283-9.
5. Souza ASR, Amorim MMR, Porto AMF. Rev. FEMINA, 2010,38(10): 505-16.
6. Kayem G et al. Comparison of fundal height measurement and sonographically measured fetal abdominal circumference in the prediction of high and low birth weight at term. Ultrasound Obstet Gynecol, 2009,34(1):566-71.
8. Kacem, et.al. Fetal Weight Estimation: Comparison of Two-dimensional US and MR Imaging Assessments. RSNA, Radiology, 2013,267(3): 902-10,.
9. Freire DMC, Cecatti JG, Paiva CSM. Rev Bras Ginecol Obstet, 2010, 32(1): 4-10.
10. ACOG, American College of Obstetricians and Gynecologists. Macrosomia. Obstet Gynecol, 2020, 135(1):18-35.
11. Weiner Z et.al. Clinical and ultrasonographic weight estimation in large for gestational age fetus. European Journal of Obstetrics & Gynecology and Reproductive Biology, 2002, 105(1), p: 20–24. 2002.

AORTIC THROMBOSIS AND ACUTE MESENTERIC ISCHEMIA IN A PATIENT WITH COVID-19 DIAGNOSIS

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ABSTRACT

INTRODUCTION: COVID-19, a rapidly spreading infectious disease caused by the Sars-CoV-2 virus, represents a continuous global threat. Among the extrapulmonary disorders associated with COVID-19, arterial and venous thromboembolism has been gaining prominence as one of the most serious consequences and with a very poor prognosis. The thromboembolic events of the arterial macrovasculature described in the literature in association with COVID-19 include thrombosis of the thoracic aorta, infrarenal abdominal aorta, aortoiliac segments and upper mesenteric artery. CASE REPORT: Patient LRCJ, 41 years old, male, with non-insulin-dependent diabetes mellitus and systemic arterial hypertension, he presented positive laboratory tests for the detection of Sars-CoV-2 by the viral PCR method. He reported severe abdominal pain for 1 day, associated with a stop of the elimination of flatus and feces in the same period. Abdominal tomography showed a hypodense thrombus in the distal thoracic aorta and in the superior mesenteric artery. He underwent an exploratory laparotomy with resection of 130 cm of ischemic small intestine. In the postoperative period he evolved with hemodynamic instability, significant clinical deterioration, Acute Renal Insufficiency. He presented with a Cardiorespiratory Arrest on the 16th day of hospitalization, progressing to death. DISCUSSION: Although there is still a need for a more detailed investigation, a possible association between COVID-19 and thrombogenic events seems to be increasingly evident, which makes us more aware of its repercussions in diagnosed patients. Therefore, under COVID-19, assessments of abdominal pain should be thoroughly investigated, and ischemic events should be considered.

KEYWORDS: AORTIC THROMBOSIS; ACUTE MESENTERIC ISCHEMIA; COVID-19

INTRODUCTION

COVID-19, an infectious disease caused by the Sars-CoV-2 virus which was discovered in late 2019 in the city of Wuhan, China and quickly spread around the world, becoming a pandemic in the first few months of 2020.[7] This rapidly spreading disease represents a continuing global threat.[4] It is still growing in several countries, having been lethal to thousands of people around the world, with a mortality rate ranging from 0.8% to 12% depending on the country affected.[7]

In moderate and severe forms, the predominant manifestation is that of the respiratory system, which can range from mild pneumonia to acute respiratory distress syndrome.[7] Among the extrapulmonary affections associated with COVID-19, arterial and venous thromboembolism has gained prominence as one of the most serious consequences and with a very poor prognosis.[1,11]

Such events associated with COVID-19 may be related to an exacerbated inflammatory response that would lead to a cytokine storm, complement activation and endothelial damage. A possible direct role of the virus in inducing the coagulation cascade has also been suggested. These observations are causing the use of anticoagulants, in therapeutic and prophylactic doses, to be considered by many health institutions in their disease treatment protocols.[1]

Compared to venous thrombosis, arterial thrombosis seems to have a lower incidence, which is still a significant concern.[1] The thromboembolic events of the arterial macrovasculature described in the literature in association with COVID-19 include thrombosis of the thoracic aorta, infrarenal abdominal aorta, aortoiliac segments and superior mesenteric artery.[3,4,11]

CASE REPORT

Patient LRCJ, 41 years old, male, with non-insulin-dependent Diabetes Mellitus and Systemic Arterial Hypertension, admitted to the Emergency Hospital of Aparecida de Goiânia (HUAPA) in early July 2020, complaining of severe dyspnea, cough dryness, asthenia, fever and

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pain in the body for 11 days, with intense worsening of the condition for 2 days, when he started to present concomitant complaints of severe diffuse abdominal pain. He also presented a positive laboratory test for detection of Sars-CoV-2 by the viral PCR method performed 8 days before.

At the time, he was admitted to an isolation bed for clinical treatment of COVID-19. He evolved with improvement in respiratory complaints, with a report of partial improvement in abdominal pain after analgesia and dietary measures, being discharged on the 4th day of the first hospitalization, after 15 days of the onset of symptoms.

Two days after hospital discharge, the patient returned to HUAPA, when an assessment by the General Surgery team was requested, with a report of progressive worsening of the abdominal pain, which started to be characterized again as severe for 1 day, associated with a condition of stoppage of the elimination of flatus and feces in the same period. In the anamnesis, the patient denied having any personal or family hematological diseases, as well as previous thromboembolic events, cardiac arrhythmias, or other comorbidities in addition to those reported. On physical examination, the patient was conscious, Glasgow 15, with heart rate of 112 bpm, blood pressure of 142 x 82 mmHg, Sat02 in 95% room air, pain face, intense painful sensitivity to abdominal palpation, abdominal stiffness, defense, reduction of abdominal hydro-aerial noises. Laboratory tests indicated Hemoglobin 16.6mg/dl, Leukocytes 18 000 /mm³ (with 10% Lymphocytes), Platelets of 198 000 mm³, INR of 1.18, APTT of 29 sec, Creatinine 1.2, PCR of 13.6mg/L. Patient underwent abdominal contrast tomography with identification of absence of enhancement of multiple segments of the small intestine, presence of intestinal pneumatosis in the small segment; presence of a hypodense thrombus determining partial filling failure at the distal end of the Thoracic Aorta, measuring 1.7 x 1.3 x 3.8 cm and the presence of a hypodense thrombus determining occlusion of the distal third of the superior mesenteric artery.
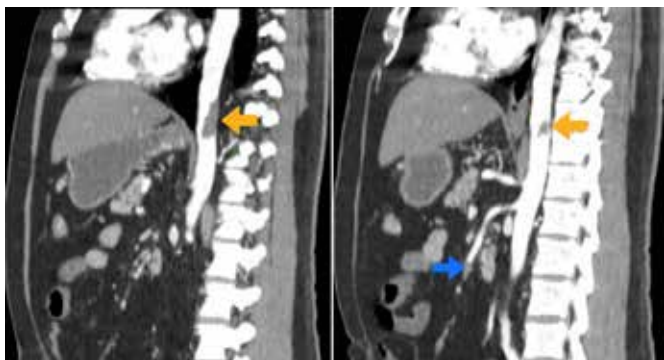

Figure 1: Contrast-enhanced Computed Tomography of the abdomen in the arterial phase - Yellow arrows indicating thrombus located in the distal portion of the thoracic aorta and blue arrow, occlusion point of the superior mesenteric artery.

Exploratory laparotomy was indicated, with intraoperative finding of an ischemic lesion of a 120 cm segment of small bowel located 70 cm from the Treitz angle and 180 cm from the ileocecal valve. 130 cm small bowel enterectomy with manual primary anastomosis was performed.

Figure 2: A) Intraoperative finding of small bowel ischemia. B) Resected segment of ischemic small intestine.

Postoperatively, early anticoagulation was instituted. The resumption of intestinal transit 72 hours after surgery was observed, with the presence of air-fluid noises and elimination of flatus, when an oral diet was started. On the 5th postoperative day, he presented diffuse abdominal distension, and deterioration of the clinical condition, with decreased level of consciousness, tachycardia, hypotension and worsening of leukocytosis with a left shift, and a new laparotomy was indicated. Enteric content in the abdominal cavity and anastomotic dehiscence were identified. It was decided to wash the cavity and make a double ileostomy. Postoperative management took place in the intensive care unit, with the use of vasoactive drugs for hemodynamic stabilization, maintenance of maximum anticoagulation dose, antibiotic therapy and mechanical ventilation. The patient evolved with Acute Renal Failure and presented cardiopulmonary arrest on the 16th day of hospitalization, with no success in resuscitation measures.

DISCUSSION

The identification of aortic thrombus without association with aneurysm and atherosclerosis is a rare presentation. In this situation, it is usually accompanied by a state of hypercoagulability, trauma, malignant neoplasms, previous surgeries and turbulent blood flow. Clinically, it can manifest asymptomatically or with symptoms that are related to embolization. Thus, the diagnosis is based on findings in routine exams or after cerebral, peripheral

or visceral embolic events.[2,9]

Acute mesenteric ischemia is defined as sudden intestinal hypoperfusion. They are triggered by occlusive events such as embolisms or plaque thrombosis or by non-occlusive events such as situations of low output and vasoconstriction. Impaired blood flow mainly by the superior mesenteric artery.[5] In addition, mesenteric venous thrombosis presents as a rare entity, manifesting in about 10 to 15% of intestinal ischemia, mainly caused by coagulopathies, inflammatory processes and neoplasms .[8]

In the case presented here, contrast-enhanced tomography shows the presence of thrombosis of the thoracic aorta and superior mesenteric artery, with a thrombus with an aspect suggestive of acute formation. The images do not identify other vascular changes that might suggest aneurysmal or atherosclerotic lesions. There are not enough parameters to conclude whether mesenteric thrombosis manifests itself synchronously with aortic thrombosis, or whether it is of emboligenic origin.

The Dutch study by Klok et al. brought an epidemiological analysis of the incidence of thrombogenic complications in patients admitted to Intensive Care Units of three hospitals in the Netherlands.[6] The study evaluated 184 patients diagnosed with COVID-19, of which 49% had some thrombotic event. Pulmonary thromboembolism was the most prevalent event, manifesting 87% of the time. Other thrombotic events identified were Stroke (6.6%), Deep Vein Thrombosis (4%) and Arterial Thrombosis (2.6%).[6,10]

As for the pathophysiology of the thrombogenic action triggered by the presence of SARS-Cov-2, it is postulated that it is initiated by a severe proinflammatory action of alveolar origin with the release of inflammatory cytokines that lead to the activation of epithelial cells, monocytes and macrophages. In addition, a direct action of endothelial cell infection through the Angiotensin-converting Enzyme [2] (ACE2) receptor also leads to endothelial activation and dysfunction, tissue factor expression, platelet activation, increased levels of von Willebrand factor (VWF) and factor VIII (FVIII), in such a way that they promote the formation of fibrin clots.[1]

Although more detailed investigation is still needed, a possible association between COVID-19 and thrombogenic events seems to be increasingly evident, which makes us more aware of its repercussions on diagnosed patients. In the case presented here, the absence of a history of vascular lesions, coagulopathies and other prothrombotic events reinforces the possibility of viral action in the genesis of the diagnosed thrombi. Intestinal ischemia is a potentially fatal condition, which must be diagnosed early so that treatment can be instituted soon to provide greater chances of survival for the patient. Therefore, under COVID-19, evaluations of abdominal pain conditions should be thoroughly investigated, and ischemic events should be considered.[12]

REFERENCES

1. Abou-Ismail MY, Diamond A, Kapoor S, Arafah Y, Nayak L. The hypercoaguluable state in COVID-19: Incidence, pathophysiology, and management. Thrombosis Research 194 (2020) 101–115.
2. Avelino MC, Miranda CLVM, Sousa CSM, Bastos BB, Sousa RSM. Trombo flutuante no arco aórtico. Radiol Bras vol.50 no.6 São Paulo Nov./Dec. 2017.
3. Barry O, Mekki A, Diffre C, Seror M, Hajjam ME, Carlier RY. Arterial and venous abdominal thrombosis in a 79-year-old woman with COVID-19 pneumonia. Radiology Case Reports 15 (2020) 1054–1057.
4. Bhayana R, Som A, Li MD, et al. Abdominal Imaging Findings in COVID-19: Preliminary Observations [published online ahead of print, 2020 May 11]. Radiology. 2020;201908.
5. Herrero M, Agúndez I. Isquemia mesentérica: algoritmos diagnósticos y terapéuticos. Angiología, Volume 69, Issue 1, January–February 2017, Pages 34- 40.
6. Klok FA, Kruip MJHA, van der Meer NJM, et al. Confirmation of the high cumulative incidence of thrombotic complications in critically ill ICU patients with COVID-19: An updated analysis. Thromb Res. 2020 Jul; 191: 148–150.
7. Nascimento JHP, Gomes BFO, Júnior PRC, et al. COVID-19 e Estado de Hipercoagulabilidade: Uma Nova Perspectiva Terapêutica . Arq Bras Cardiol. 2020; 114(5):829-833.
8. Oliveira PH, Oliveira AH, Costa M, Silva A. Trombose Venosa Mesentérica: uma causa rara de oclusão intestinal. Rev. Port. Cir. no.22 Lisboa set. 2012.
9. Pires NF, Ferreira MCF. Embolização arterial recorrente: aorta torácica, fonte embolígena pouco frequente. Relato de caso. Rev Bras Clin Med. São Paulo, 2011 jan-fev;9(1):87-9.
10. Ramacciotti E, Macedo AS, Biagioni RB, et al. Evidence-Based Practical Guidance for the Antithrombotic Management in Patients With Coronavirus Disease (COVID-19) in 2020. Clinical and Applied Thrombosis/ Hemostasis. 2020, Volume 26: 1-8.
11. Vulliamy P, Jacob S, Davenport RA. Acute aorto-iliac and mesenteric arterial thromboses as presenting features of COVID-19. British Journal of Haematology, 2020, 189, 1050–1063.
12. Wong SH, Lui RNS, Sung JJY. Covid-19 and the digestive system. Journal of Gastroenterology and Hepatology 35 (2020) 744–748.

BREAST CARCINOMA WITH OSTEOCLAST-LIKE GIANT CELLS: A CASE REPORT

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ABSTRACT

Breast carcinoma with osteoclastic giant cells (OGCs) are uncommon. As per the WHO classification of tumors of the breast, these tumors are designated carcinoma with osteoclast-like giant cells and are categorized under invasive carcinoma of no special type. Here, we report a 69-year-old woman with a lump in her left breast. Diagnosed with a triple negative breast carcinoma with OGCs. She is still free of recurrence with an 18-month follow-up.

INTRODUCTION

According to INCA in 2020, breast cancer represented 29.7% of all cases of tumors in women in Brazil. Mortality in 2019 in the same public was 16.4% [1]. It is considered the main cancer in female patients. Of the various types, osteoclast-like giant cells mammary carcinoma (OGC) is uncommon and described in less than 2% among cases of breast cancer patients [2]. According to the WHO classification of breast tumors, these are called osteoclast-like giant cell carcinomas and are classified as atypical invasive carcinoma [3]. Leurox 1931 and Duboucher et al 1933 first described this subtype of breast carcinoma in the French medical literature. There are few cases in the literature and its importance is due to the assessment of tumorogenesis and prognostic evaluation of affected patients. Below we report a case of an elderly woman with OGC accompanied by invasive ductal carcinoma and papillary carcinoma.

CASE REPORT

Female patient, 69 years old, white, admitted to the oncology service with a painless nodule in the left breast. On physical examination, she showed breast asymmetry with retraction and deformation of the affected breast with a palpable retroareolar lesion. Mammography showed two irregular retroareolar nodules in the left breast, with retraction of Cooper's ligaments, thickening and retraction of the areola and nipple, measuring 2.5 cm each. Ultrasonographic study documented two hypoechoic, rounded, well-circumscribed, retroareolar masses measuring 2.0 cm each, in its largest diameter. Investigation showed no evidence of distant metastases. The patient underwent left unilateral mastectomy and sentinel lymph node biopsy.

The resection of the sample showed that the tumors had dimensions of 3.5 cm (as a whole) in their largest diameter. In the tissue, a 10% buffered neutral formalin fixative was used and embedded in paraffin. Hematoxylin-eosin stained sections revealed a tumor composed of an intracystic papillary carcinoma with a prominent osteoclastic giant cell component. The stroma revealed hemorrhage and hemosiderin deposition. Sentinel lymph node in the left axilla was free from malignancy (Pn0). Tumor cells stained negative for estrogen receptor, progesterone receptor and Her/neu2. Ki-67 positive by approximately 30%. After surgery, the patient received taxane-based chemotherapy for 4 cycles and post-mastectomy radiotherapy.

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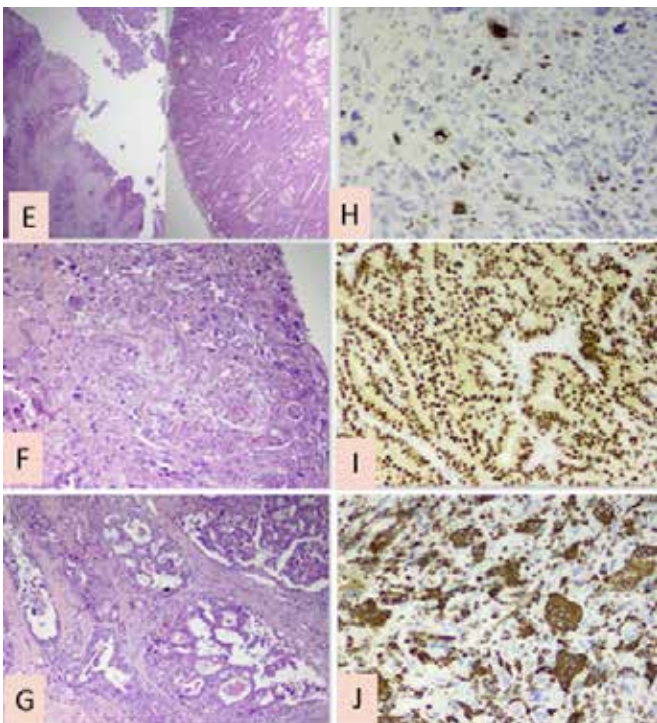4. Acadêmico de Medicina PUC-GO
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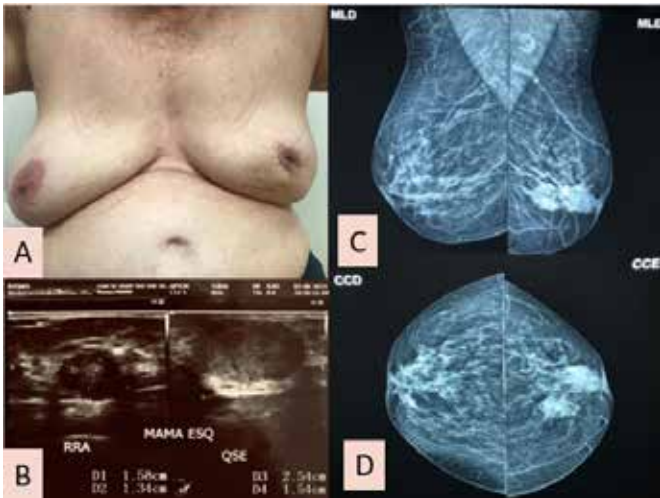
(A. Patient with asymmetry and retraction; B. Ultrasound image; C. Mid lateral oblique mammography; D. Craniocaudal mammography)

(E and F. Cystic retroareolar lesion; G. Scarce carcinoma-in-situ; H. ki67; I. Estrogen receptor; J. CD68)

Breast carcinoma with osteoclastic giant cells (OGC) is characterized by the presence of OGC together with malignant epithelial cells. They often appear with atypical hyperchromatic nuclei and occasionally with small nucleoli and fine chromatin structure. Mitotic images are typically rare. The mechanism of OGC formation is still unknown and is at least partially attributed to tumor-induced angiogenesis and inflammatory cytokines such as VEGF and MMP12 [5]. So far, the influence of OGCs on the patient's prognosis is still controversial. In the case described in this elderly patient, with triple negative breast carcinomas, with OGCs, she was free from recurrence during the 18-month follow-up until then. As there were no comorbidities, it was not necessary to introduce anthracycline-based chemotherapy. In the literature, there are more than 200 registered cases, but more studies are needed to define the exact pathogenesis of OGCs and determine their role in tumor formation [5].

REFERENCES

1. MS / INCA / Coordenação de Prevenção e Vigilância / Divisão de Vigilância e Análise de Situação, 2021
2. Alia Saeed Albawardi1,2, Aktham Adnan Awwad2 , Saeeda Saleh Almarzooqi1. Case Report Mammary carcinoma with osteoclast-like giant cells: a case report. Int J Clin Exp Pathol 2014;7(12):9038-9043 www.ijcep.com /ISSN:1936-2625/IJCEP0003146
3. Sunil R Lakhani, Ian O Ellis, Stuart J Schnitt, Puay Hoon Tan, Marc J van der Vijver. WHO Classification of Tumours of the Breast. In: International Agency for Research on Cancer (IARC). 4th edition. 2012. pp. 36-7.
4. The American Cancer Society medical and editorial content team. Types of breast cancer. Available at: https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/types-of-breast-cancer.html#written_by
5. Ya Niu1 , Xin Liao2 , Xuenong Li1 , Liang Zhao1. Case Report Breast carcinoma with osteoclastic giant cells: case report and review of the literature. Int J Clin Exp Pathol 2014;7(4):1788-1791 www.ijcep.com /ISSN:1936-2625/IJCEP1401060

DISCUSSION AND CONCLUSION

Invasive ductal (or infiltrating) carcinoma is the most common type of breast cancer, accounting for 80% of cases. Papillary carcinoma, among others, is less frequent and is generally treated as standard invasive ductal carcinoma [4].

ROLE OF TRANSESOPHAGEAL ECHOCARDIOGRAPHY IN THE INTRAOPERATIVE OF COMPLEX HEART SURGERY. CASE REPORT

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ABSTRACT

The combination of myocardial revascularization (CABG) and valve surgery is a viable strategy for patients with both comorbidities, avoiding multiple approaches and increasing survival. However, this method is related to a higher risk of postoperative morbidity and mortality. To guide hemodynamic management in a more rational way and to minimize unfavorable outcomes, the use of intraoperative transesophageal echocardiography (TEE) has emerged as an important tool in cardiac surgery. The case is a male patient, 75 years old, with a history of arterial hypertension, coronary atherosclerotic disease, mitral valve heart disease and the presence of prosthesis in the aortic valve was referred for surgical correction where he opted for intervention in a single session. The initial intraoperative TEE showed the significant mitral regurgitation seen in the preoperative period, paravalvular aortic leak in the right coronary leaflet of the prosthesis with calcification and reduced mobility of its components. Aortic valve was removed with long-term bioprosthesis implant (number 23) and mitral valve repair followed by CABG - saphenous vein to right coronary bypass. CPB time was 111 minutes and 76 minutes of aortic clamping. At the end of the correction, the TEE confirmed the absence of regurgitation and adequate opening of the mitral valve (indicating satisfactory result of the plasty) and absence of important paravalvular leaks in the aortic valve. The patient presented a favorable clinical evolution and was discharged seven days after the procedure, with adjunct medication and guidance for outpatient follow-up.

KEYWORDS: CARDIAC SURGICAL PROCEDURES; MYOCARDIAL REVASCULARIZATION; HEART VALVE PROSTHESIS IMPLANTATION; ECHOCARDIOGRAPHY, TRANSESOPHAGEAL; HEMODYNAMIC MONITORING.

INTRODUCTION

The correlation between population aging and the higher prevalence of coronary artery disease (CAD) and valvular heart disease is a topic widely explored in the literature and the results reinforce the need to adopt therapeutic methods that favor the maintenance of the elderly's functional capacity, prolonging their survival [1]. In this context, an increase in the incidence of cardiovascular surgery in the elderly population is likely to occur in the coming years, making it a challenge for the cardiac surgeon to choose an intervention strategy that can reconcile the restoration of the organ with the improvement of the individual's quality of life [2,3].

With the remarkable technological advance, it became possible to improve and incorporate different surgical techniques and options, among them the single-session approach of surgical myocardial revascularization (SMR) associated with double valve surgery in selected patients. Although controversial, combined surgery is a viable strategy for individuals with both comorbidities, avoiding multiple approaches and increasing long-term survival. However, it is a highly complex method, requiring effective myocardial protection and associated with a higher risk of postoperative morbidity and mortality [1]. As with any therapeutic approach, its indication must be substantiated and individually contextualized, considering the benefits and adverse consequences [3].

Mortality rates from concomitant cardiac surgeries vary widely between centers and are related to factors in the pre, intra and postoperative period. Among the surgical variables, surgery time, prolonged aortic clamping time, and cardiopulmonary bypass time (CPB) are directly related to the increase in complications [2]. In order to minimize unfavorable developments, similar to other technologies added to the routine of the operating room, the use of intraoperative transesophageal echocardiography (TEE) has emerged as an important tool in cardiac surgery [4]. TEE has the potential to guide hemodynamic management in a more rational way and significantly influence the surgeon's decision-making, which can eventually change the course

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of surgical procedures, as well as their outcome [5].

The aim of this study is to report a case of combined surgical treatment of aortic and mitral valve pathology associated with SRM with intraoperative monitoring through TEE.

The Research Ethics Committee of the Hospital de Urgências de Goiânia, linked to Plataforma Brasil, approved this study (CAAE: 38630920.7.0000.0033).

CASE REPORT

Male patient, 75 years old, hypertensive, with benign prostatic hyperplasia, atrial flutter, CAD, with significant lesion in the right coronary artery (RCA) and mitral valve insufficiency. He underwent a previous cardiac procedure: aortic valve replacement for a bioprosthesis. Using pantoprazole, doxazosin mesylate associated with finasteride, olmesartan and hydrochlorothiazide.

During clinical follow-up, a transthoracic echocardiogram was performed, which showed a biological prosthesis in the aortic position with structural and hemodynamic dysfunction and mitral valve insufficiency. On Doppler ultrasound examination of the carotids and vertebral areas, the patient presented mild stenosis in the common and right internal carotids and mild to moderate stenosis in the left internal carotid. Patent vertebral artery with bilateral antegrade flow. Therefore, a combined valve intervention associated with SRM was proposed to the patient.

The procedure was performed under general anesthesia and, after tracheal intubation, an echo transesophageal probe was inserted for intraoperative analysis of the cardiac chambers, valves and aorta. At that moment, TEE in mid-esophageal long axis section showed paraprosthetic leak in the right coronary leaflet (Figure 1) and important mitral valve regurgitation being demonstrated in different planes of echocardiography (Figure 2 A, B and C).
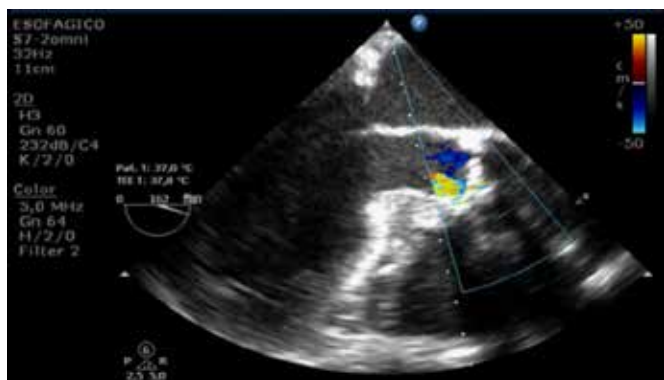
Figure 1. Image of the transesophageal echocardiogram, pre-CPB, in mid-esophageal long axis section, showing paravalvular leak in the right coronary leaflet of the aortic valve bioprosthesis.
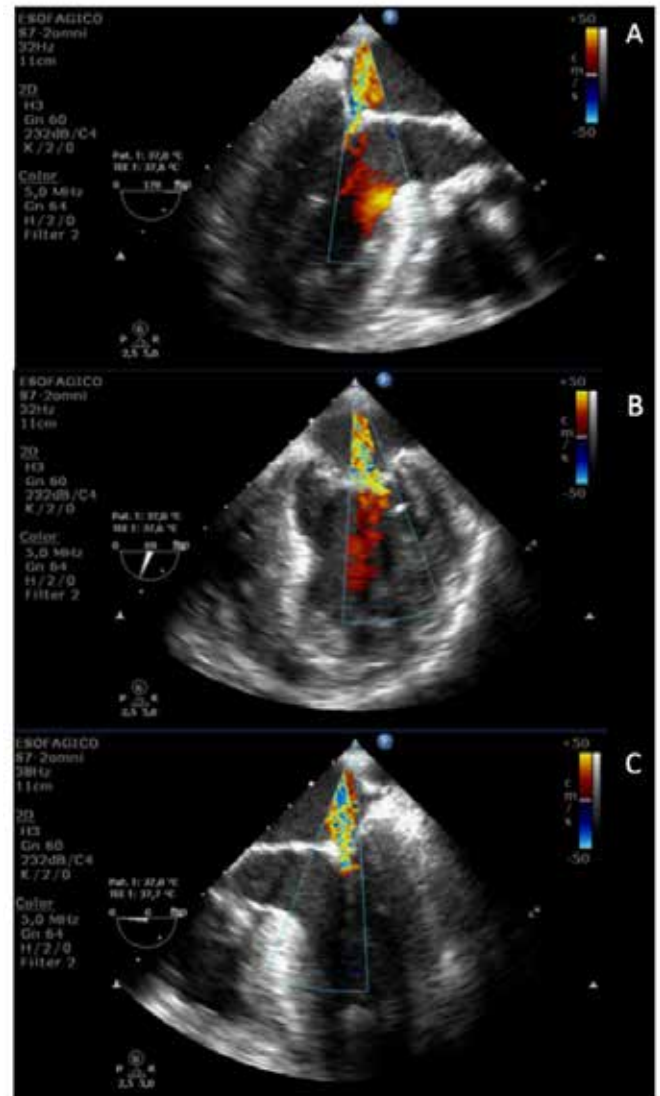
Figure 2. Pre-CPB transesophageal echocardiogram image. A: Mid-esophageal long axis section showing eccentric and important blood reflux from the mitral valve towards the walls of the left atrium. B. Mitral commissural middle esophagus section demonstrating accelerated and turbulent blood flow towards the left atrium. C. Mid-esophageal four-chamber section indicating mitral valve insufficiency.

A median sternotomy and pericardiotomy were performed, followed by full heparinization and connection of the patient to the CPB circuit through the cannulation of the distal ascending aorta and the superior and inferior vena cava. After aortic clamping, a transverse aortotomy was performed and a biological prosthesis removed from the aortic valve, which was dysfunctional, with important signs of degeneration and calcification. A new long-lasting aortic bioprosthesis, number 23, was implanted. Mitral valve exposure was obtained through left atriotomy followed by correction of the lesion responsible for regurgitation through mitral valve repair. Subsequently, SRM was performed using the great saphenous vein as con-

duit in anastomosis with the right coronary artery. Aortic clamping was released after 76 minutes and CPB time was 111 minutes.

At the end of the interventions, TEE demonstrated aortic biological prosthesis with preserved mobility and without paravalvular regurgitation (Figure 3) and mitral valve repair with good appearance, adequate opening and absence of residual insufficiency (Figure 4 A and B).

Figure 3. Transesophageal echocardiogram image, after aortic valve bioprosthesis replacement, in aortic middle esophagus long axis section, demonstrating the absence of paravalvular leak.
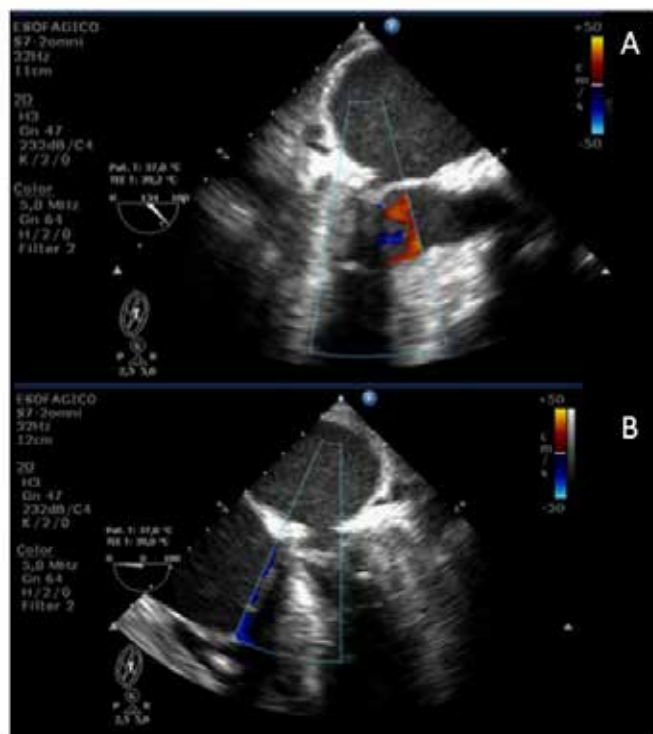

Figure 4. Transesophageal echocardiogram image after mitral valve repair. A. Middle esophageal long axis cut showing adequate mitral valve opening without regurgitation towards the left atrium. B. Mid-esophageal four-chamber view showing absence of mitral insufficiency.

The patient presented a favorable clinical evolution and was discharged from the hospital seven days after the procedure, with adjunct medication and guidance for outpatient follow-up.

DISCUSSION

TEE was incorporated as a diagnostic tool in cardiology about 40 years ago and its role in perioperative assessment is well established, and its purposes are described through a set of guidelines. Great scientific and technological advances have resulted from the expansion of its use, which has allowed its validation as a versatile and highly reliable tool in defining diagnoses, also consolidating itself as an important part of the composition of the monitoring arsenal within the surgery room [4,6].

According to the literature, intraoperative monitoring through TEE has as main objectives: confirming the preoperative diagnosis, detecting new unidentified or previously unsuspected pathologies, guiding surgical interventions, diagnosing the etiology of hemodynamic disorders and evaluating the surgical results in real time [6].

Guidelines for the application of intraoperative TEE were developed by the American Society of Anesthesiologists and the Society of Cardiovascular Anesthesiologists in the 1990s, and, according to these entities, TEE has a positive impact and should be used routinely in all conventional cardiac surgeries and in thoracic aorta procedures, in adults who do not present contraindications [6]. It is currently a notorious procedure, widely used and routinely used in North American and European cardiac surgical centers. On the other hand, in Brazil, its use is still discreet and is concentrated in centers that present a significant number of cardiac interventions [7].

In 2009, the Brazilian Society of Cardiology (SBC) published the document entitled "Echocardiography Indications Guidelines", and later, in 2018, the Brazilian Society of Anesthesiology together with the SBC Cardiovascular Imaging Department published the Consensus on Perioperative TEE aiming to standardize the performance of intraoperative TEE for anesthesiologists and echocardiographers. In line with international guidelines. Brazilian recommendations include a wide spectrum of surgical procedures, such as surgical repair or replacement of valve lesions, aortic diseases and hypertrophic cardiomyopathy, ventricular aneurysm, removal of cardiac tumors, intracardiac thrombectomy, congenital heart disease surgery with cardiopulmonary bypass, placement of intracardiac devices, evaluation of transcatheter procedures (Level of evidence class I) [8].

Due to the proximity of the heart and the esophagus, the exam allows for an accurate analysis of the intra and extra-cardiac anatomy and vessels. Furthermore, through its adjustments, it is able to provide images with higher resolution and number of anatomical cuts. For the method to be applied effectively, the operator must be able to master the manipulation movements of the probe and the

transducer to obtain adequate echocardiographic recordings and to prevent complications [8]. These considerations are especially important in high-risk patients undergoing complex cardiac surgery, such as the case reported here.

Images for mitral valve evaluation can be obtained through two-, four- and five-chamber middle esophagus views, commissural middle esophagus view, basal transgastric short axis view and views of the left atrium and ventricle. The aortic valve complex must be evaluated essentially in the short axis and long axis middle esophagus, long axis transgastric and deep transgastric sections. The purpose of the pre-CPB exam is to verify the morphology, define the disease mechanism, location and extension of the lesions, which are determining factors for surgical decision-making, therapeutic guidance, and may result in changes to the previously planned procedure [5,8]. In an American retrospective review, TEE changed the surgical course in 5.6% of patients [9]. A Brazilian retrospective analysis showed that the examination led to a change in intervention in 3.5% of cases. Its variations and applications must be carefully analyzed, considering the small sample number [4].

After completion, whether of a valve repair or replacement, the multiple axes are again revised, allowing for immediate evaluation of the surgery. At that time, surgeons have the opportunity to perform repairs and, in case of inadequate surgical results, determine the immediate re-approach, preventing morbidity and mortality from possible subsequent reoperations and reducing hospital costs. Studies have shown that post-CPB TEE identified the need for valve revision and repair in up to 6% of cases and that routine intraoperative TEE is associated with an estimated cost savings of $230 per cardiac surgery performed [7,9].

In contrast to the use of echocardiography in valve operations, the assessment of myocardial function after SRM with or without CPB through TEE remains controversial (level of evidence IIa) [10]. Considering CAD as a dynamic and evolutionary, multifactorial process, the pre-SRM examination must be comprehensive and detailed. In this case, the focus is on the assessment of systolic pressure, ventricular function and grading the severity of diastolic dysfunction. It should also include the study of the aorta artery in its proximal ascending and descending portions, in addition to the aortic arch. In the post-procedure, it is essential to assess myocardial function, detect significant complications and ventricular dysfunction, the latter being especially important for weaning from CPB and defining the need for mechanical circulatory support or the use of inotropic agents in the post-CPB period. Changes in blood volume and the level of sedation must be considered when analyzing the ventricular function because they affect the pre- and afterload, which can affect the evaluation [6].

Despite being considered a low-risk procedure, TEE is not free from complications, which are generally related to direct trauma to the airway and esophagus, such as lacerations, esophageal bleeding and burns, dysphagia,

bacteremia and paralysis of the vocal cords; or, the indirect effects of the procedure, including the occurrence of hypertension, hypotension, arrhythmias, bronchospasm, inadvertent manipulation of the airway and distraction in patient care [7,8].

CONCLUSION

The use of surgical monitoring through TEE is extremely useful, as it allows the cardiac surgeon and anesthesiologist to evaluate and validate the results in the post-CPB, providing the opportunity to perform immediate corrective measures, diagnosis and adequate management of situations that can lead to weaning of challenging CPB, avoiding unfavorable evolution and additional surgical procedure in the short term. Although a prospective and randomized multicenter study is needed, these data suggest that the routine use of intraoperative TEE in cardiac surgeries, especially in valve replacements and repairs, can reduce the morbidity of patients undergoing complex interventions.

REFERENCES

1. Ahmed OF, Kakamad FH, Saoud YA, Salih RQ, Mohammed SH, Salih AM. Outcome of combined coronary artery bypass grafting and aortic valve replacement; a case series. International Journal of Surgery Open 21(2019)48-51.

2. Santos CA, Oliveira MAB, Brandi AC, Botelho HH, Brandi JCM, Santos MA, Godoy MF, Braile DM. Fatores de risco para mortalidade de pacientes submetidos à revascularização miocárdica. Braz J Cardiovasc Surg. 2014;29(4).

3. Ferreira AG, Coelho Filho CD, Lourenço RA, Esporcatte R. A doença arterial coronariana e o envelhecimento populacional: como enfrentar esse desafio? Ver HUPE 2013;12(Supl1):13-24.

4. Silva AA, Segurado A, Kimachi PP, Silva ED, Goehler F, Gregory F, Simões C. Ecocardiografia transesofágica em anestesiologia: caracterização do perfil de uso em hospital terciário. Rev Bras Anestesiol 2012;62(5):636-653.

5. Elsherbiny M, Abdelwahab, Nagy K, Mannaa A, Hassabelnaby Y. Role of intraoperative transesophageal echocardiography in cardiac surgery: an observational study. Open Acces Maced J Med Sci 2019;7(15):2480-2483.

6. Nicoara A, Skubas N, Niv A, Finley A, Hahn RT, Mahmood F, Mankad S, Nyman C, Pagani F, Porter TR, Rehfeldt K, Stone M, Taylor AJ, Taylor B, Vegas A, Zimmerman KG. Guidelines for the use of transesophageal echocardiography to assist with surgical decision-making in the operating room: a surgery-based approach from the American Society of Echocardiography in collaboration with the Society of Cardiovascular Anesthesiologists and the Society of Thoracic Surgeons. J Am Soc Echocardiogr 2020;33:692-734.

7. Galhardo Júnior C, Botelho ESL, Diego LAS. Monitorização intraoperatória com ecocardiografia transesofágica em cirurgia cardíaca. Ver Bras Anestesiol 2011;61(4):503-512.

8. Salgado-Filho MF, Morhy SS, Vasconcelos HD, Lineburger EB, Papa FV, Botelho ES, Fernandes MR, Daher M, Bihan DL, Gatto CST, Fisher CH, Silva AA, Galhardo Júnior C, Neves CB, Fernandes A, Vieira MLC. Consenso sobre ecocardiografia transesofágica perioperatória da Sociedade Brasileira de Anestesiologia e do departamento de imagem cardiovascular da Sociedade Brasileira de Cardiologia. Rev Bras Anestesiol. 2018;68(1):1-32.

9. Fanshawe M, Ellis C, Habib SBS, Konstadt S, Reich D. A restropective analysis of the costs and benefits related to alterations in cardiac surgery from routine intraoperative transesophageak echocardiography. Anesthesia & Analgesia:2002;45(4):824-827.

10. Tasoglu I, Imren VY; Yener A. Impact of intraoperative transesophageal echocardiography on surgical decisions in the cardiovascular operating room. Arch Turk Soc Cardiol 2012;40(3):242-250.

CORONARY-SUBCLAVIAN STEAL SYNDROME AS A CAUSE OF UNSTABLE ANGINA. CASE REPORT

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ABSTRACT

Introduction: Coronary-subclavian steal syndrome is a rare condition associated with patients undergoing coronary artery bypass graft surgery. In this context, it presents itself as a differential diagnosis of angina, which when correctly diagnosed and treated can improve the outcome and avoid potential complications.

Case report: Male patient, 65 years old, hypertensive, dyslipidemic, peripheral and coronary artery disease who underwent myocardial revascularization surgery in 2000 with mammary graft in an anterior descending artery. He was undergoing regular cardiological follow-up, asymptomatic from a cardiovascular point of view. In this first moment, ischemic test exams were performed, whose scintigraphy showed an 8% ischemic load and indicated catheterization with subclavian lesion with 70% in the origin and breast graft with preserved patency. About 6 months after this consultation, the patient returns with a complaint of stable angina. A new scintigraphy was performed whose ischemic load had increased, now by 12%. At this point, percutaneous treatment of the subclavian lesion was indicated, using a 9.0x25mm balloon-expandable stent successfully, with angiographic control performed with a PigTail catheter showing good results. On outpatient return, the patient showed a substantial improvement in anginal symptoms, confirmed on scintigraphy with a reduction in ischemic load to 5%. Conclusion: The above report describes a classic picture of subclavian theft syndrome, with presentation of precordialgia, showing that the rapid diagnosis of this rare condition and due treatment have the potential to improve the clinical scenario and myocardial perfusion.

KEYWORDS: CORONARY ARTERY BYPASS GRAFT; CORONARY SUBCLAVIAN STEAL SYNDROME; LEFT INTERNAL MAMMARY ARTERY; SUBCLAVIAN ARTERY STENOSIS; SUBCLAVIAN STEAL SYNDROME.

INTRODUCTION

Myocardial revascularization (MRV) surgeries have been widely performed in patients with coronary artery disease, who present a three-vessel pattern with complex stenotic lesions, or in patients with lesions in the left main coronary artery or in a region close to the anterior descending coronary artery. Myocardial bypass surgery can be performed using both a saphenous vein graft as well as a left internal mammary artery (LIMA). The latter is preferably used for revascularization of the anterior descending artery, as it has greater permeability and durability when compared to saphenous vein grafts [1, 2, 3, 4].

In MRV, the proximal portion of the LIMA is usually left connected to the left subclavian artery, while the distal portion is removed and anastomosed in the bed distal to the diseased coronary artery stenosis. The phenomenon resulting from the previous presence or development of a significant stenosis of the left subclavian artery causing a functional failure of the LIMA graft is known as Coronary-Subclavian Steal Syndrome (CSS). The clinical consequences of this anatomical condition are: myocardial ischemia leading to an anginal condition, heart failure with recurrent decompensation, malignant ventricular arrhythmias, among others [5, 6, 7, 8].

In view of these possible negative outcomes, it is necessary to screen for subclavian artery stenosis (SAS) before MRV, as well as active and continuous surveillance for the development of SAS after MRV [9]. SAS is present in approximately 2% of the general population, reaching a prevalence of 11.8% in patients with peripheral arterial occlusive disease (PAOD) and coronary artery disease who need MRV [10]. PAOD is the strongest predictor, with a 5-fold increased risk of having SAS. Other factors associated with SAS include smoking, high blood pressure, and lower levels of high-density lipoprotein cholesterol (HDL) [11]. However, not all patients

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with SAS resulted in CSS. It is estimated that CSS develops in 0.2% to 6.8% of patients who underwent MRV with LIMA graft [12].

The aim of this study is to report a case of a patient previously submitted to MRV associated with coronary artery disease (CAD) who evolved with unstable angina, with a high ischemic load resulting from a CSS in which percutaneous treatment was performed with conventional stent implantation in the left subclavian artery.

CASE REPORT

Male patient, 65 years old, with a previous history of myocardial revascularization in 2000 with anterior descending mammary graft, hypertension, dyslipidemia, PAOD with femoral angioplasty in 2016 and endovascular treatment of an infrarenal aortic artery aneurysm with endoprosthesis. In an outpatient evaluation in the first half of 2020, he was asymptomatic from a cardiovascular point of view. Scintigraphy was performed in February of the same year to evaluate residual lesions in previous catheterization, which showed ischemia of a moderate transient component in the apical, anterolateral and inferolateral regions (small peri-infarction ischemia) with an ischemic load of 8%. In that same month, Doppler of carotids was performed whose vertebral were patent with bilateral antegrade flow; evidence of fibrocalcific plaques on the left in the common carotid, carotid bifurcation, and internal carotid with obstruction, respectively, of 35%, 45%, and 45%; and on the right with 30% obstruction of the bifurcation and 40% of the internal carotid artery. A new catheterization was requested on 05/26/2020, he presented a 70% lesion at the origin of the left subclavian artery and mammary graft with preserved patency without indication for angioplasty.

In May 2020, the patient presented a sudden onset of dyslalia, mental confusion and paresthesia in the left side, confirmed minor stroke in the left frontal lobe area involving the middle and lower turns. In the etiological investigation of the stroke, an angiotomography of cervical vessels was performed and mixed atheromatous plaques were noted, with a predominance of calcified in the origin of the left vertebral artery, determining significant stenosis/subocclusion, with consequent thinning of the segments V1, V2 and V3, which are refilled by collaterals . The acute neurological condition lasted 24 hours, with complete recovery from deficits. It is noteworthy that 07 days before, due to mesenteric angina, the patient had undergone angioplasty of the celiac trunk and left renal artery, requiring a secondary intervention to approach the right renal artery.

New appointment in November 2020, the patient was symptomatic, reporting precordialgia for about 6 months and dyspnea on slight exertion, with limitation of daily activities. A new ischemic research was carried out, whose scintigraphy on 11/20/2020 showed an increase in the ischemic load to 12%, involvement of 29% of the total LV muscle mass with perfusion defects and a reduction in the LV ejection fraction (EF) after stress (EF rest 31%; EF post-stress 21%) ; 11/21/2020 carotid and vertebral Doppler showed stenosis of the left vertebral artery with high-resistance inverted flow (critical and hemodynamically significant stenosis at the origin of the ipsilateral subclavian artery). Due to clinical worsening and imaging tests confirming subclavian steal syndrome, the patient was referred for left subclavian angioplasty with balloon and 01 stent implant, performed on December 3, 2020. This procedure was performed under local anesthesia and sedation, via catheterization of the common femoral artery (7F), with angiographic series performed with non-ionic contrast. Pre-angioplasty angiography showed critical stenosis in the left subclavian artery ostium (Figure 1). The lesion was transposed with a 0.035″ guide wire through a 6Fr guide catheter. A 5.0x20mm balloon was then insufflated at 8 atm of pressure. Afterwards, a 9.0x25mm balloon-expandable stent was successfully placed. Angiographic control with PigTail catheter demonstrated good results (figure 2).

On return after angioplasty in February and March 2021, the patient reported substantial improvement in complaints, with preserved daily activities, without limitations. Control scintigraphy showed improvement when compared to the previous exam, demonstrating an ischemic load of 5% and normal LV global function (EF at rest 50%; EF post-stress 54%), proving not only the clinical improvement but also the perfusional improvement after the proper treatment (figures 3 and 4).

DISCUSSION

The use of left internal mammary artery graft to bypass obstructions of the anterior descending has its application established given its superiority compared to the use of the saphenous vein. Among the benefits, we highlight the greater durability of this graft, which is due to its continuous elastic lamina that inhibits smooth muscle migration and, therefore, arteriosclerosis, and the functional endothelium that produces vasodilators and potent inhibitors of platelet function. This allows for a graft with greater permeability leading to longer survival. [1]

When used for MRV, the LIMA has its proximal bed preserved in the subclavian artery while its distal end is dissected and reimplanted in the affected coronary artery. Because of this close relationship, stenosis of the proximal portion of the LSA have functional hemodynamic repercussions on the irrigated coronary artery, even though the graft has no structural lesions, leading to a retrograde flow from the LIMA to the LSA. This rare condition is called subclavian steal syndrome. [2,3]

The consequences of this syndrome are numerous, such as angina, acute coronary syndrome, emergence and/or decompensation of heart failure, malignant ventricular arrhythmias. In most cases, these symptoms are attributed to graft dysfunction, which makes the diagno-

sis of CSS difficult and delays its treatment.

The most accessible and economical screening method to assess SAS is the physical examination that includes auscultation of the supraclavicular fossa to detect murmurs, inspection to assess signs of hypoperfusion in the distal upper extremities with verification of pulse asymmetry, and especially bilateral measurement of the blood pressure to detect a systolic differential ≥15 mmHg [9]. The physical examination may have a low sensitivity to assess SAS, of approximately 50% [13]. However, it is a useful screening tool for asymptomatic patients and, therefore, should be performed in all routine consultations in patients with MRV who used the LIMA .

In asymptomatic patients with positive screening physical examination or in those with symptoms of angina, or with claudication in the upper limbs, several complementary tests can be performed to detect SAS, such as duplex ultrasound scan, CT angiography, angioresonance and subtraction angiography, considered the gold standard method for diagnosis.

Duplex scan is the most accessible, inexpensive, and non-invasive SAS screening complementary exam. Compared with digital subtraction angiography, it has a sensitivity of 73% and a specificity of 91%. The positive and negative predictive values are 96% and 97%, respectively, it has the limitation of being operator-dependent, in addition to the anatomical limitation offered by the curvature of the vessel and the constant movement of the heart, which make the non-invasive ultrasonographic assessment of flow directionality difficult. Both CT angiography and angioresonance have sensitivity above 90%, but there is the inconvenience of using contrast and the difficulty of availability. Angiography, in addition to being the gold standard to confirm the diagnosis, is the method to aid in percutaneous treatment [14].

Percutaneous angioplasty with stent implantation is the first-line treatment for stenosis or occlusion of the subclavian artery and brachiocephalic trunk, given its proven long-term efficacy, with reduced morbidity and mortality and cost-effectiveness [15]. Surgical revascularization should only be considered after failure of endovascular treatment in patients at low surgical risk [16]. When comparing surgical and endovascular treatment, the main advantages of percutaneous intervention are the avoidance of general anesthesia, the reduction in periprocedural mortality and shorter hospital stay. The primary patency rate is lower with endovascular techniques compared to surgery, but significantly improved with the introduction of stent support in addition to balloon angioplasty, Sixt et al. reported a primary success rate of 100% for the treatment of stenosis and 87% for occlusions, and when they compared stent implantation with balloon angioplasty they found a better primary patency rate one year after stent-supported angioplasty (89 vs. 79%) [17].

Although percutaneous treatment is preferable to surgical treatment, a good understanding of the cerebral flow anatomy and special attention to the proximity to the vertebral artery is essential. Surgical revascularization is restricted to failure in endovascular treatment or in cases of inadequate anatomy due to the proximity to the ipsilateral vertebral artery, in which case, stent implantation can compromise the flow of this artery. [18].

One study compared and demonstrated that balloon-expandable stent implantation is preferable to self-expanding stent placement to provide accurate stent placement, increasing radial strength and better restoring native vessel size [19]. The normal luminal diameter of the proximal left subclavian artery is 7 to 9 mm in an adult woman and 8 to 10 mm in an adult man, the fact that the left subclavian artery has a luminal diameter considered large, that is, above 6 mm, allows the implantation of conventional stents with excellent long-term results and, therefore, the implantation of drug-eluting stents is not used in the treatment of stenosis of the left subclavian artery. [19].

Despite the good long-term results, the prevention of restenosis in the implanted stent must be carried out with the control of risk factors associated with atherosclerosis, including the control of hypertension, diabetes, cholesterol levels, sedentary lifestyle, obesity and the smoking cessation, which are extremely important in preventing and limiting the progression of SAS.

SAS is underestimated and may not be considered at the time of differential/etiological diagnosis of anginal pain. In the presence of a significant difference in blood pressure values verified in the upper limbs, associated with symptoms of angina after MRV can lead to diagnosis and facilitate timely intervention. Those individuals submitted to percutaneous intervention with stent implants in the subclavian artery usually present expressive improvement, and the technical difficulties imposed by the challenging anatomy must be taken into account eventually, which may limit its usefulness, and therefore, surgical revascularization is necessary.
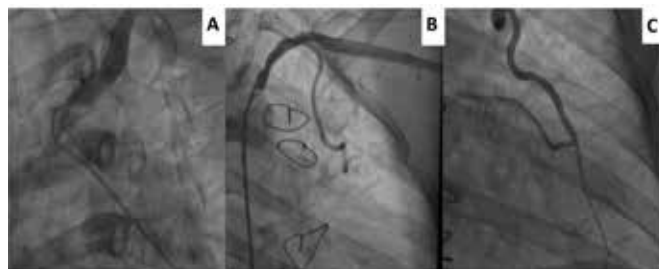

Figure 01. Subclavian artery angiography and mammary graft for CAD. Images A and B illustrate the subclavian artery with subocclusive calcification in the ostium. Image C depicts the pervious anterior descending mammary graft
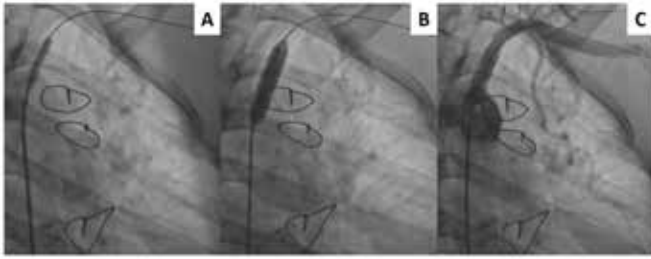
Figure 02. Subclavian artery angioplasty. A) Successful placement of the 9.0 x 25mm balloon-expandable stent; B) Dilation with a 5.0x20mm balloon with inflation at 8 ATM of pressure; C) Final result of angioplasty.
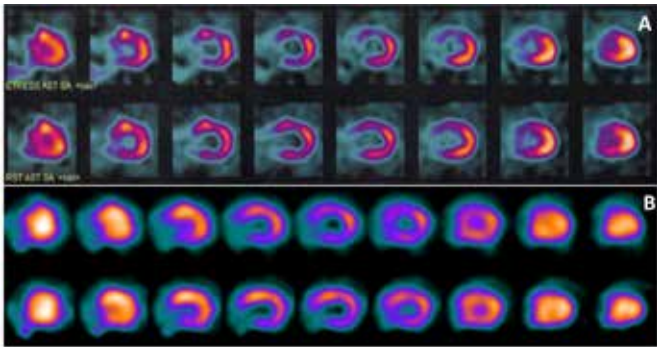
FIGURE 3: vertical long axis scintigraphic image. A) Pretreatment scintigraphy showing ischemia with a persistent hypoperfusion component associated in the anterior, anterolateral and inferior walls. Ischemic load estimated at 12%. B) Post-treatment scintigraphy showing mild to severe fixed hypoperfusion (scarring behavior) and medium extension (about 12%) involving the anterolateral and inferior regions, associated with a mild transient component (small peri-infarction ischemia). Ischemic load estimated at 5%.
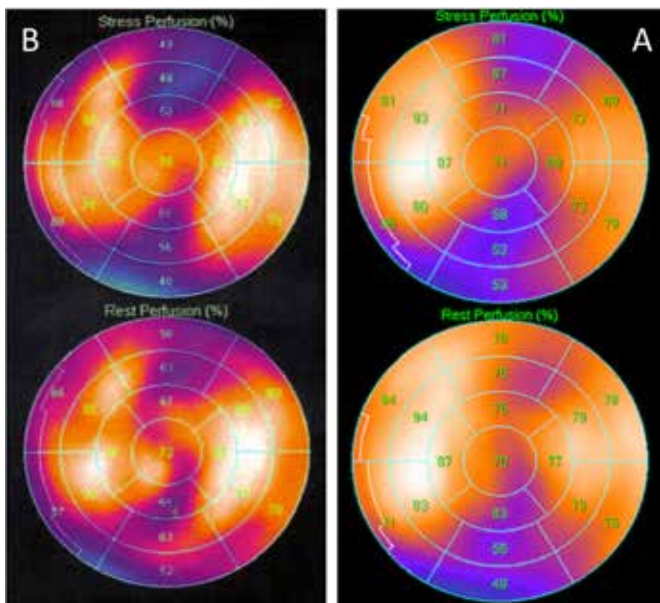
FIGURE 4: quantitative perfusion spect (QPS) scintigraphic image. A) Pre-treatment scintigraphy with ischemic load estimated at 12% B) Post-treatment scintigraphy with ischemic load estimated at 5 %

CONCLUSION

Although rare, CSS is a differential diagnosis of stable and unstable angina in patients who have already undergone MRV with a mammary-coronary graft, especially in those with a history of PAOD, hypertension and smoking. As presented in this case, when an adequate diagnosis and treatment of the stenotic lesion is performed, the patient tends to have remission of the symptoms, with improvement in myocardial perfusion.

REFERENCES

1. Grondin CM, Campeau L, Lesperance J, Enjalbert M, Bourassa MG. Comparison of late changes in internal mammary artery and saphenous vein grafts in two consecutive series of patients 10 years after operation. Circulation. 1984; 70: I208-I212.
2. Lytle BW, Loop FD, Cosgrove DM, Ratliff NB, Easley K, Taylor PC, Long-term (5 to 12 years) serial studies of internal mammary artery and saphenous vein coronary bypass grafts. J Thorac Cardiovasc Surg. 1985; 89: 248-258
3. Cameron A, Kemp Jr., HG, Green GE. Bypass surgery with the internal mammary artery graft: 15 year follow-up. Circulation. 1986; 74: III30-III36
4. Loop FD, Lytle BW, Cosgrove DM, Stewart RW, Goormastic M, Williams GW, Golding LA, Gill CC, Taylor PC, Sheldon WC, et al. Influence of the internal-mammary-artery graft on 10-year survival and other cardiac events. N Engl J Med. 1986; 314: 1-6.
5. Munk PS, Larsen AI, Fjetland L, Nilsen DW. Acute occlusion of the left subclavian artery causing a non-ST-elevation myocardial infarction with subacute lung edema due to a coronary subclavian steal syndrome: a case report. Int J Cardiol. 2006; 108: 139-141.
6. Pappy R, Kalapura T, Hennebry TA. Anterolateral myocardial infarction induced by coronary-subclavian-vertebral steal syndrome successfully treated with stenting of the subclavian artery. J Invasive Cardiol. 2007; 19: E242-E245.
7. Dimas B, Lindsey JB, Banerjee S, Brilakis ES. ST-Segment elevation acute myocardial infarction due to severe hypotension and proximal left subclavian artery stenosis in a prior coronary artery bypass graft patient. Cardiovasc Revasc Med. 2009; 10: 191-194.
8. Kursaklioglu H, Kose S, Iyisoy A, Amasyali B, Celik T, Aytemir K, Isik E. Coronary-subclavian steal syndrome presenting with ventricular tachycardia. Yonsei Med J. 2009; 50: 852-855.
9. Osborn LA, Vernon SM, Reynolds B, Timm TC, Allen K. Screening for subclavian artery stenosis in patients who are candidates for coronary bypass surgery. Catheter Cardiovasc Interv. 2002; 56: 162-165.
10. English JA, Carell ES, Guidera SA, Tripp HF. Angiographic prevalence and clinical predictors of left subclavian stenosis in patients undergoing diagnostic cardiac catheterization. Catheter Cardiovasc Interv. 2001; 54: 8-11.
11. Shadman R, Criqui MH, Bundens WP, Fronek A, Denenberg JO, Gamst AC, McDermott MM. Subclavian artery stenosis: prevalence, risk factors, and association with cardiovascular diseases. J Am Coll Cardiol. 2004; 44: 618-623.
12. Iglesias JF, Degrauwe S, Monney P, Glauser F, Qanadli S, Eeckhout E, Muller O. Coronary subclavian steal syndrome and acute anterior myocardial infarction: a new treatment dilemma in the era of primary percutaneous coronary intervention. Circulation. 2015; 132: 70-71.
13. Labropoulos N, Nandivada P, Bekelis K. Prevalence and impact of the subclavian steal syndrome. Ann Surg. 2010; 252: 166-170.
14. Cua B, Mamdani N, Halpin D, Jhamnani S, Jayasuriya S, Mena-Hurtado C. Review of coronary subclavian steal syndrome. J Cardiol. 2017; 70(5):432-437.
15. Ochoa VM, Yeghiazarians Y. Subclavian artery stenosis: a review for the vascular medicine practitioner. Vasc Med. 2011; 16: 29-34.
16. European Stroke Organisation. Tendera M, Aboyans V, Bartelink ML, Baumgartner I, Clément D, et al. ESC Guidelines on the diagnosis and treatment of peripheral artery diseases: Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteries: The Task Force on the Diagnosis and Treatment of Peripheral Artery Diseases of the European Society of Cardiology (ESC). Eur Heart J. 2011; 32: 2851-2906.
17. Sixt S, Rastan A, Schwarzwälder U, Bürgelin K, Noory E, Schwarz T, et al.

Results after balloon angioplasty or stenting of atherosclerotic subclavian artery obstruction. Catheter. Cardiovasc Interv. 2009 Feb;73(3):395–403.

18. Lak HM, Shah R, Verma B, R, Roselli E, Caputo F, Xu B: Coronary Subclavian Steal Syndrome: A Contemporary Review. Cardiology 2020; 145:601-607. doi: 10.1159/000508652.

19. Mahmud E, Cavendish JJ, Salami A. Current treatment of peripheral arterial disease: role of percutaneous interventional therapies. J Am Coll Cardiol. 2007; 50: 473-490.

BREAST CANCER IN THE PREGNANT-PUERPERAL CYCLE, A SERIES OF CASES

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ABSTRACT

Pregnancy-associated breast cancer is defined as those diagnosed in pregnancy or up to 1 year postpartum, pos abortion or while lactation. Invasive ductal carcinoma is the most common histological type followed by lobular carcinoma. Most are with big volume and triple negative, with 30% HER-2 +. At diagnosis, the lymph nodes may already be compromised. We report a series of cases with different prognoses.

KEYWORDS: PREGNANCY-ASSOCIATED BREAST CANCER, DUCTAL CARCINOMA, CHEMOTHERAPY AND RADIOTHERAPY, PROGNOSIS, FAMILY PLANNING, PREGNANCY.

INTRODUCTION

Breast cancer is the second most frequent neoplasm in the world, being the most common among women[1]. Pregnancy-associated breast cancer (PABC) is that diagnosed during pregnancy up to 1 year postpartum, post-abortion or during lactation. Due to physiological changes during this period, the physical examination may be impaired, delaying the diagnosis[2]. This can be performed through symptoms, complementary tests such as mammography and ultrasound, and confirmed by histopathology. Invasive ductal carcinoma is the most common histological type followed by lobular[3]. Most are bulky and triple negative, being 30% HER-2 +. At diagnosis, lymph nodes may already be compromised. Treatment can be local through surgery and radiotherapy, in addition to breast reconstruction or systemic using chemotherapy, hormone therapy and biological therapy[4]. In the group addressed in this work, the risks of teratogenicity of the means of diagnosis and treatment used must be taken into account.

Case 1: 25 years old, 27 weeks of gestational age (GA) at diagnosis. She underwent modified mastectomy followed by adjuvant chemotherapy (CT) during pregnancy. uneventful term delivery (Figure 1).

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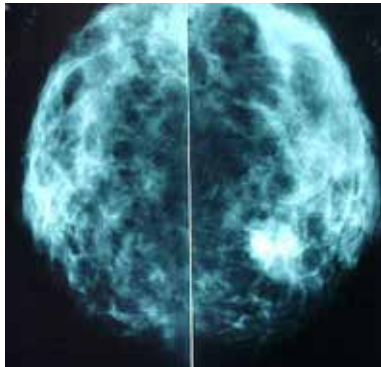4. Citomed
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Case 2: 30 years old, 39 weeks of GA with left breast lesion. Cesarean section was performed and she underwent quadrantectomy and lymphadenectomy in the puerperium, adjuvant chemotherapy and radiotherapy (RT) with good evolution (Figures 2 and 3).

Case 3: 22 years old, 30 days of vaginal delivery, with advanced BC in the left breast. Submitted to neoadjuvant chemotherapy, mastectomy and RT (Figures 4 and 5).

Case 4: New mother diagnosed with Inflammatory BC in the right breast. Submitted to neoadjuvant chemotherapy, mastectomy and RT. Evolved with Guillain Barré Syndrome after Covid-19, followed by death (Figure 6).

Case 5: 27 weeks GA, 2.5 cm tumor in UOQ of the right breast with free armpit. Submitted to quadrantectomy, axillary lymphadenectomy and adjuvant QT. Term delivery and postpartum radiotherapy with good evolution (Figures 7 and 8).

Case 6: 29 weeks GA at BC diagnosis. She underwent mastectomy, QT during pregnancy, and postpartum RT. She became pregnant again after 2 years of treatment without signs of recurrence until then (Figure 9).

DISCUSSION

The treatment is usually surgical, regardless of the protocol for pregnant women or not, depending on the GA at the time of diagnosis and the stage of the disease. Patent blue V dye is not indicated for pregnant women, the radioactive marker technetium-99m being used[5]. When necessary, QT is not recommended in the first trimester due to teratogenicity and should be avoided in the last three weeks before delivery due to the risk of maternal-fetal myelosuppression[6]. The most used therapies are cyclophosphamide, anthracyclines and taxanes (weekly paclitaxel is used). Methotrexate interferes with folic acid metabolism and is not prescribed in pregnancy. Endocrine therapy and anti-HER-2 therapy can cause fetal malformations and oligohydramnios, respectively, and are therefore used only after delivery[7]. Due to the deleterious effects on the fetus and probable late cardiogenic induction, RT is not indicated during pregnancy, but can be used in the puerperium[8,9]. The unaffected breast does not contraindicate breastfeeding and does not increase the risk of recurrence[9]. Family planning after diagnosis should be individualized and generally guided at an interval of at least 2 years[10].

CONCLUSION

Breast cancer (BC) in the pregnancy-puerperal cycle is that diagnosed in pregnancy up to 1 year postpartum, post-abortion or during lactation. The most common histological type is invasive ductal carcinoma followed by lobular carcinoma. Diagnosis can be made by symptomatology, complementary tests such as mammography and ultrasonography, and confirmed by histopathology. The treatment is usually surgical, regardless of the protocol for pregnant women or not, depending on the gestational age at the time of diagnosis and the stage of the disease. Chemotherapy is not recommended in the first trimester of pregnancy due to teratogenic effects and should be avoided in the last three weeks before delivery due to the risk of maternal-fetal myelosuppression. In addition, pregnancy is not an aggravating factor for prognosis and breastfeeding can be maintained as long as the patient is not undergoing adjuvant treatment with chemotherapy or radiotherapy. A future pregnancy can

be discussed after 2 years of treatment. This case series had 6 patients at different gestational ages or in the puerperium, and the chosen approach was specific for each case.

REFERENCES

1. Estatísticas de câncer [Internet]. INCA - National Cancer Institute. 2018 [cited 2021 Jun 4]. Available from: https://www.inca.gov.br/en/node/2244
2. Breast Cancer Treatment During Pregnancy (PDQ®)–Health Professional Version [Internet]. National Cancer Institute. Cancer.gov; 2019 [cited 2021 Jun 4]. Available from: https://www.cancer.gov/types/breast/hp/pregnancy-breast-treatment-pdq
3. Types of Breast Cancer | Different Breast Cancer Types [Internet]. Cancer.org. 2019 [cited 2021 Jun 4]. Available from: https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/types-of-breast-cancer.html#written_by
4. Fernandes CE, de Sá MFS, Filho AL da S. Tratado de Ginecologia Febrasgo. 1st ed. Elsevier; 2018. 1024 p.
5. Menke CH, Chagas CR, Vieira RJS. Tratado de Mastologia da SBM. Rio de Janeiro: Revinter; 2015. 1632 p.
6. Boff RA, Carli AC De, Brenelli FP, Brenelli H, de Carli LS, Sauer FZ, et al. Compêndio de Mastologia: Abordagem multidisciplinar. 1st ed. Lemar, editor. Caxias do Sul; 2015. 754 p.
7. Porto CC. Semiologia Médica. 5th ed. Rio de Janeiro: Guanabara Koogan; 2005.
8. Girão MJBC, Baracat EC, Lima GR de, Nazário ACP, Facina G, Sartori MGF, et al. Tratado de ginecologia. Rio de Janeiro: Atheneu; 2017
9. Bagnoli F, Brenelli FP, Pedrini JL, Júnior R de F, de Oliveira VM. Mastologia: do diagnóstico ao tratamento. Goiânia: Conexão Propaganda e Editora; 2017.
10. Harris JR, Lippman ME, Morrow M, Osborne CK. Doenças da mama. 5th ed. Rio de Janeiro: Di Livros; 2016.

IMMATURE OVARY TERATOMA: A CASE REPORT

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ABSTRACT

Immature ovarian teratoma consists of a tumor formed by tissues from the three germinal layers: ectoderm, mesoderm and endoderm, containing immature or embryonic structures. It is an uncommon tumor and comprises less than 1% of ovarian tumors, being the second most common germ cell tumor. This neoplasm is more common in the first three decades of a woman's life. May present with a pelvic mass, or in the form of abnormal uterine bleeding or pelvic pain. Early diagnosis associated with immediate therapy and strict follow-up are essential for a favorable long-term outcome, especially in relation to the preservation of the patient's reproductive future. The present case report presents a 24-year-old female patient with a large mass in the left ovary with omental infiltration, who was submitted to anatomopathological and immunohistochemical studies that showed an immature ovarian teratoma.

KEYWORDS: IMMATURE TERATOMA, TERATOMA, NEOPLASIA

INTRODUCTION

Ovarian teratomas are composed of germ cells from primordial cells of the ovaries. They are classified into: mature (benign), immature (malignant) and monodermal (neural tumors, struma ovarii and carcinoid tumor). The most common form is the mature teratoma, with the immature form being the second most frequent [1].

Immature teratoma consists of a tumor formed by tissues from the three germinal layers: ectoderm, mesoderm and endoderm. Contains immature or embryonic structures. It is an uncommon tumor and comprises less than 1% of ovarian tumors, being the second most common germ cell tumor. In addition, it represents between 10% and 20% of all ovarian neoplasms in women under 20 years old, with a peak between 15 and 19 years old, and 30% of the cause of death from ovarian cancer at this age. It rarely occurs in menopause [1].

Immature teratoma may present as a calcified pelvic mass, abnormal uterine bleeding, or pelvic pain. The most frequent dissemination sites are the peritoneum and retroperitoneal lymph nodes. Hematogenous spread to lungs, liver or brain is uncommon. It presents increased levels of alpha-fetoprotein in 50% of cases [2].

Immature ovarian teratomas are composed of variable amounts of immature tissues (neuroectodermal and primitive/embryonic), including, in their most primitive forms, embryoid bodies. Furthermore, they are formed by three germ layers: ectoderm, mesoderm and endoderm. This neoplasm is more common in the first three decades of a woman's life and is usually classified according to the degree of differentiation of their cells. Grade I teratoma is the best differentiated and has a slower evolution, with a lower risk of metastasis. Grade III, on the other hand, is more undifferentiated and presents a more aggressive behavior [2].

CASE REPORT

Patient Y.C.P.S., 24 years old, female, with a large mass in the left ovary with omental infiltration. Anatomopathological (Figure 1) and immunohistochemical (Figures 2, 3, 4, 5, 6 and 7) studies were performed, which resulted in the patient's diagnosis of immature ovarian teratoma. In addition, searches for tumor markers CD56 (Figure 8), S-100 (Figure 9) and Ki-67 (Figures 10 and 11) were requested.

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Figure 1 – Large mass in left ovary with omental infiltration

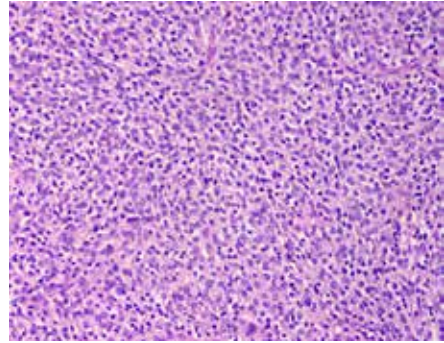Figure 2 – Microscopic aspect of the tumor
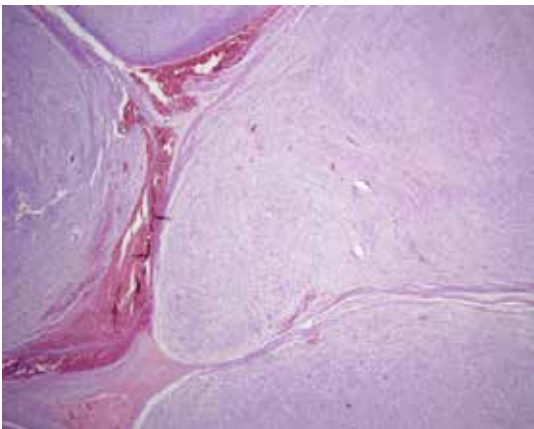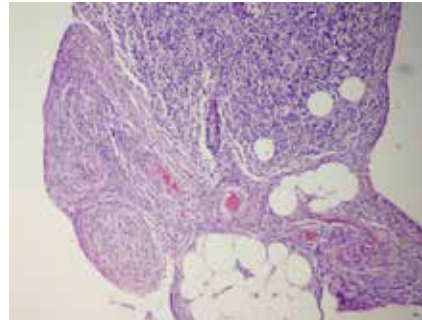

Figure 3 – Microscopic aspect of the tumor

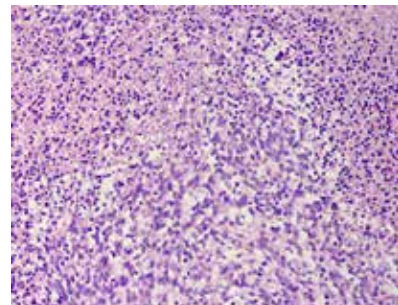Figure 4 – Microscopic aspect of the tumor

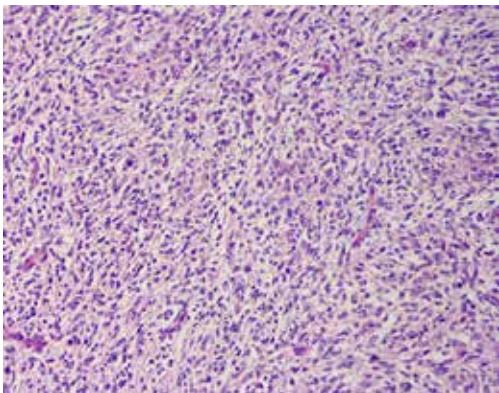Figure 5 – Microscopic aspect of the tumor

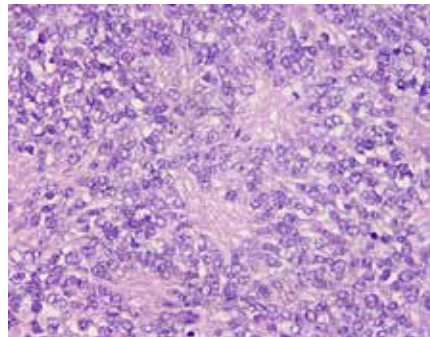Figure 6 – Microscopic aspect of the tumor

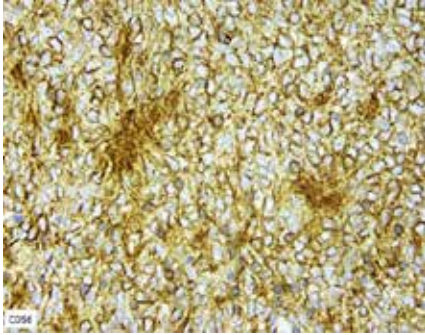Figure 7 – Enlarged microscopic aspect of the tumor

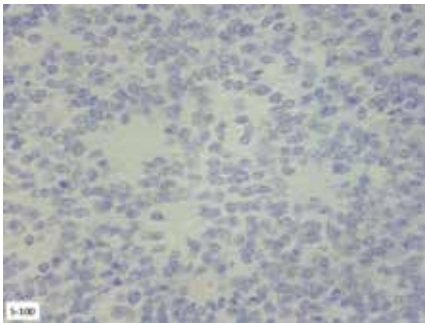Figure 8 – Microscopic aspect of the tumor with search for CD56

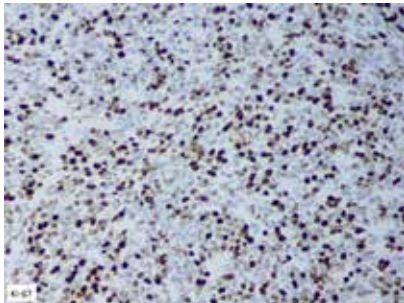Figure 9 – Microscopic aspect of the tumor with search for S-100

Figure 10 – Microscopic aspect of the tumor with research for Ki-67
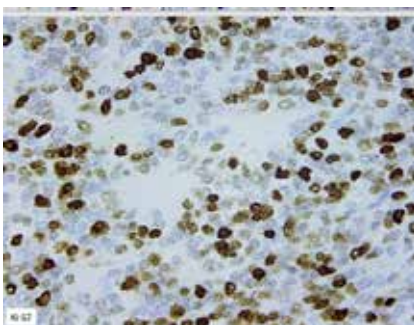

Figure 11 - Microscopic aspect of the tumor with research for Ki-67

DISCUSSION

Immature ovarian teratoma has an incidence of 35.6%, although it represents only 1% of ovarian teratomas. They appear primarily in young women, in the first two decades of life, with an average age of 18 years. However, this young age is not classified as a risk factor for progression or future recurrences [3]. Macroscopically it is characterized as unilateral, large, predominantly solid, fleshy, grayish in color and may contain cysts, hemorrhage and necrosis [1].

Despite being an uncommon tumor, it is the second most common germ cell tumor. It may present with a pelvic mass, as in the case of our patient, or in the form of abnormal uterine bleeding or pelvic pain. Diagnosis begins with detailed anamnesis and physical examination, in order to make differential diagnoses with more frequent diseases in this age group [1].

Malignant teratoma is usually classified according to the degree of differentiation of its cells. Grade I teratoma is the best differentiated and has a slower evolution, with a lower risk of metastasis. Grade III, on the other hand, is more undifferentiated and presents a more aggressive behavior [4]. The grade of the patient's tumor in question may justify the radical approach taken, to the detriment of the patient's reproductive future [1]. The surgical approach used is unilateral salpingo-oophorectomy with collection of samples from peritoneal implants, indicated for diagnosis, treatment and staging. Studies show that adjuvant treatment with chemotherapy and radiotherapy does not seem to improve the patients' prognosis [2].

Early diagnosis associated with immediate therapy and strict follow-up are essential for a favorable long-term outcome, especially in relation to the preservation of the patient's reproductive future.

CONCLUSION

The present case report presented a 24-year-old female patient with a large mass in the left ovary with omental infiltration. From the diagnosis of immature ovarian teratoma, it is important to emphasize that ovarian teratomas are composed of germ cells arising from primordial cells of the ovaries. The most common form is the mature teratoma, with the immature form being the second most frequent. Immature teratoma is usually characterized as a calcified pelvic mass, abnormal uterine bleeding, or pelvic pain. The most frequent dissemination sites are the peritoneum and retroperitoneal lymph nodes. The diagnosis of this neoplasm is carried out through detailed anamnesis and physical examination. Thus, it is recognized that early diagnosis associated with immediate therapy and strict follow-up are essential for a favorable long-term outcome, especially in relation to the preservation of the patient's reproductive future.

REFERENCES

1. Kurman RJ et al. WHO Classification of Tumours of Female Reproductive Organs. World Health Organization Classification of Tumours, p. 11–86,

2014.

2. Oliveira AB, Guedes CR. Teratoma imaturo ovariano em jovem de 12 anos. Relatos de Casos Cirúrgicos, v. 4, n. 3, 2018.

3. Comerci JT, Licciardi F, Bergh PA, Gregori C, Breen JL. Mature cystic teratoma: a clinicopathologic evaluation of 517 cases and review of the literature. Obstet Gynecol [Internet]. 1994 Jul;84(1):22–8.

4. Pinheiro P. Teratoma de Ovário: tipos, sintomas e tratamento [Internet]. MD.Saúde. Available from: https://www.mdsaude.com/ginecologia/teratoma/#Teratoma_imaturo

BENIGN OVARIAN BRENNER TUMOR: A CASE REPORT

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ABSTRACT

Brenner's tumors arise from the ovarian epithelium and are classified by the Word Health organization (WHO) as benign, malignant and borderline. They are characterized by a nest of transitional cells, which resemble urothelial cells, surrounded by a fibrous stroma. They usually present themselves in patients between the fifth and seventh decade of life. Most of them are asymptomatic and discovered accidentally, through the detection of a pelvic mass on physical examination, imaging exams, laparotomy, or even in the pathological study of an oophorectomy performed for other types of tumors, with cystadenomas being more common.

KEYWORDS: BRENNER TUMOR; BENIGN OVARIAN; TUMOR OVARIAN STROMA; HYPERESTROGENISM

INTRODUCTION

Brenner tumors (BT) represent about 5% of cases of benign epithelial ovarian tumors and are more common in postmenopausal women, between the fifth and seventh decades of life. Most are unilateral, and only 5-14% are bilateral. They are classified as benign Brenner tumors, or simply "Brenner Tumor", Brenner Borderline/atypical proliferative tumor, and Brenner malignant tumor. Histologically, they present as a grouping of epithelial cells of the ovarian stroma, in the form of niches, containing transitional epithelium, similar to the urothelial one [1].

CASE REPORT

Patient C.J.O., 51 years old, female, presented a history of metrorrhagia and finding of a solid tumoral mass in the ovary. She underwent an oophorectomy. Anatomopathological and immunohistochemical studies were performed, which showed a benign ovarian Brenner tumor.

Figure 1. Anatomical piece (Brenner's tumor)

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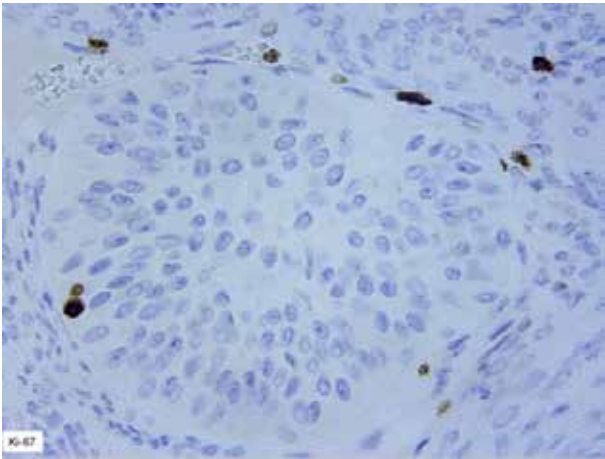E-mail: ana.fleuryluciano@gmail.com

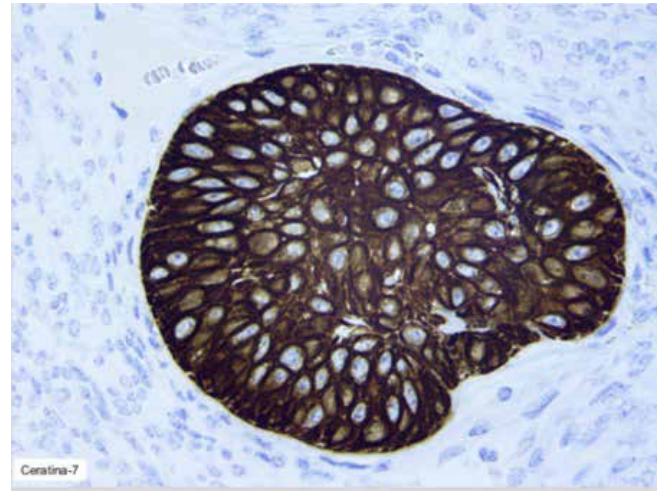Figure 2. Histological section (Brenner's tumor)

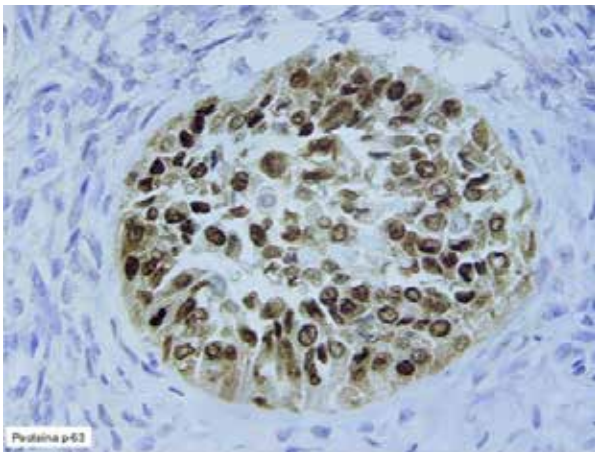Figure 4. Histological section (Brenner's tumor)

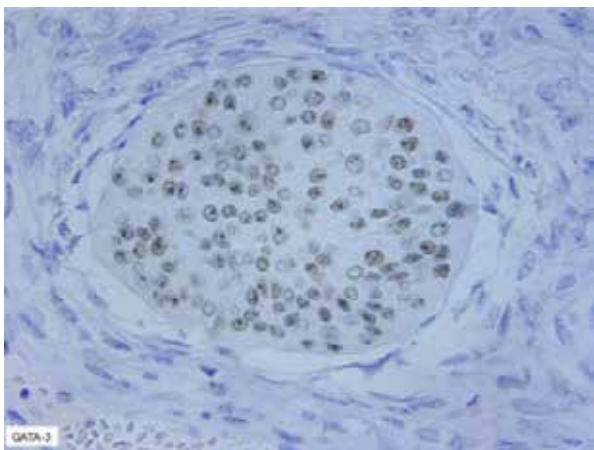Figure 3. Histological section (cells in "coffee bean pattern")

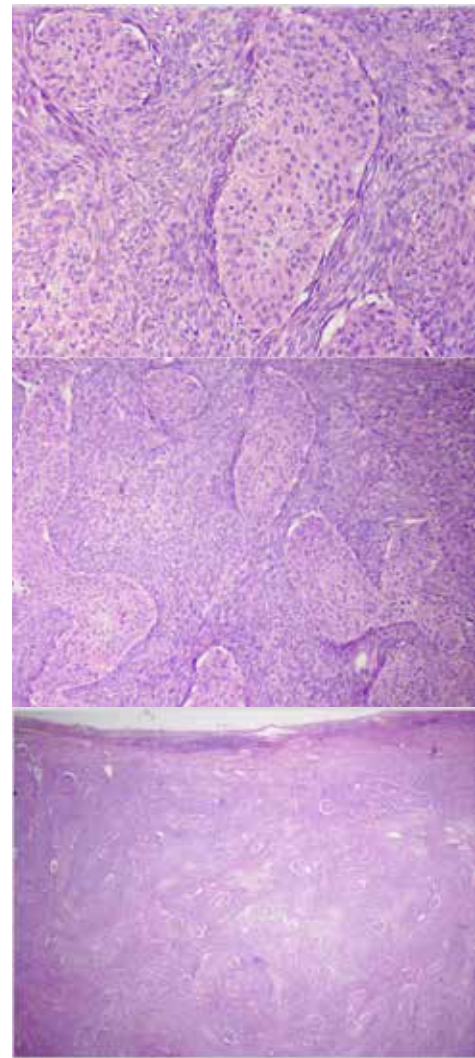Figure 3. Histological section (Brenner's tumor)

Figure 5. Microscopy section showing cluster-shaped cells in the ovarian stroma, containing transitional epithelium.

DISCUSSION

Brenner tumors (BT) account for about 1.1 to 2.5% of ovarian tumors. They represent about 5% of cases of benign ovarian epithelial tumors and are more common in postmenopausal women, between the fifth and seventh decades of life. Most are unilateral, and only 5-14% are bilateral. The diagnosis is histopathological, being observed grouping of epithelial cells of the ovarian stroma, in the form of niches, containing transitional epithelium, similar to the urothelial epithelium [1].

They are classified as benign Brenner tumors, or simply "Brenner Tumor", Brenner Borderline/atypical proliferative tumor, and Brenner malignant tumor.

Clinically, most cases are asymptomatic, being incidentally found in routine exams, such as transvaginal ultrasound, or during a laparotomy, presenting as a solid tumor mass, or solid-cystic, unilateral or bilateral, with dimensions of less than 2 cm up to large dimensions of about 20 cm [2].

Occasionally, when they reach large proportions, in rare cases, they can produce clinical manifestations, such as abdominal discomfort, pelvic pain due to tumor compression, pelvic mass on abdominal palpation, ascites and pleural effusion, constituting Meigs Syndrome, or abnormal uterine bleeding, by component estrogen hormone associated with the tumor. Studies also prove the association of hyperestrogenism and BT, presenting endometrial hyperplasia and abnormal uterine bleeding in postmenopausal women, which shows the importance of an accurate investigation of these patients [3].

The definitive diagnosis is histopathological, after initial investigation with ultrasound, CT/MRI and tumor markers. Ultrasound, benign BTs have predominantly solid characteristics, a smaller cystic component and poor vascularization on Doppler compared to borderline BT, while the presence of papillary projections, irregular cystic inner wall and high blood flow on ultrasound-doppler may raise suspicion of greater malignancy [2].

Macroscopically, Brenner tumors are solid, fibrous, yellowish-white or grayish tumors; malignant BT may present a necrotic or hemorrhagic aspect. Microscopically, they present epithelial cells with transitional epithelium grouped in niches or round islands similar to the urothelial epithelium, surrounded by dense stroma rich in fibrous tissue. The transitional epithelial cells oriented more centrally in the niches, present clear cytoplasm and oval nucleus with prominent grooves, being characteristically known as "coffee bean pattern", with finely dispersed chromatin. In borderline BT, the cells present a certain degree of epithelial proliferation, similar to low-grade papillary transitional cell carcinoma of the bladder, but with minimal atypia and no stromal invasion, different from malignant BT [3].

The surgical approach will depend on the histological type of tumor. Total hysterectomy plus bilateral salpingo-oophorectomy represents the main treatment for benign and malignant BT confined to the ovaries. In terms of prognosis, Brenner tumors have an excellent prognosis, with tumor resection being a practically curative method. However, given the rarity of Brenner ovarian tumor, the gynecologist must be aware of the presence of a complex ovarian tumor, and consider this entity in the differential diagnosis [4].

Brenner tumors represent 5% of benign ovarian tumors. Macroscopically, in most cases, they are less than 2 cm in size, solid, with a firm rubbery consistency and circumscribed. In the present case report, however, a tumor mass with more than 6 cm in diameter was observed. However, further studies are essential for improving knowledge and thus the treatment of this tumor.

CONCLUSION

Brenner tumors represent 5% of benign ovarian tumors. In most cases, they are less than 2 cm in size, solid, with a firm rubbery consistency and circumscribed. In the present case report, a tumor mass with more than 6 cm in diameter was observed. They are usually incidental findings on routine examinations or exploratory laparotomies. Eventually, when they reach large proportions, in rare cases, they can produce clinical manifestations. Finally, further studies are essential for improving knowledge, early diagnosis, and individualized treatment and follow-up of this tumor.

REFERENCES

1. Filho AC, Chambo D, Borges FLL, Cintra LC, Scardini R. Tumor de Brenner Benigno e maligno na mesma paciente: Relato de caso. RBGO - v.24, n.9,2002.
2. Kurman RJ et al. WHO Classification of Tumours of Female Reproductive Organs. World Health Organization Classification of Tumours, p. 11–86, 2014.
3. Silva CF. Tumor benigno de Brenner do ovário: A propósito de 3 casos clínicos. [s.l.] Universidade da Beira Interior, 2019.
4. Zheng R, Heller DS. Borderline Brenner tumor: A review of the literature. Archives of Pathology and Laboratory Medicine, v. 143, n. 10, p. 1278–1280, 2019.

SCLEROSING STROMAL TUMOR OF THE OVARY- CASE REPORT OF A RARE OVARIAN TUMOR

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ABSTRACT

Sclerosing Stromal Tumors (SST) represent 2 to 6% of ovarian stromal tumors and more than 80% occur in young women, in the second or third decades of life. They are rare stromal sexual cord type tumors. They can manifest as menstrual abnormalities or abdominal discomfort, being rare hormonal manifestations. They are benign and unilateral in the majority. Macroscopically, the tumors are well defined, oscillating between 3 and 17 cm in diameter. The section is solid, grayish-white with occasional yellow spots and may contain cystic or edematous areas. In his histopathology, the tumor presents densely cellular, pseudolobular, poorly defined areas separated by a fibroedematous stroma. Mitotic activity is low. Dilated thin-walled vessels are typical. From an immunohistochemical point of view, there is expression of vimentin, alpha-inhibin, calretinin and CD34

KEYWORDS: OVARIAN TUMOR, STROMA, TUMOR, RARE, SCLEROSANT

INTRODUCTION

Sclerosing Stromal Tumor of the ovary, an extremely rare pathology first described in 1973, usually affects young women up to 30 years old, a fact that differs from ovarian tumors of the sexual cord stroma, responsible for affecting women aged 50-60 years.

In this report, we will highlight the diagnosis of SST as well as its differentiation based on its origin.

CASE REPORT

Patient H.T.A.F., 69 years old, female with a history of adenocarcinoma of the sigmoid colon, underwent surgical treatment of the lesion 7 months before. She recently presented a solid tumor mass in her left ovary and underwent oophorectomy. The hypothesis of solid colon adenocarcinoma metastasis of the ovary was raised. Anatomopathological and immunohistochemical studies were performed which showed a sclerosing ovarian stromal tumor.

1. Macroscopic aspect of the tumor.
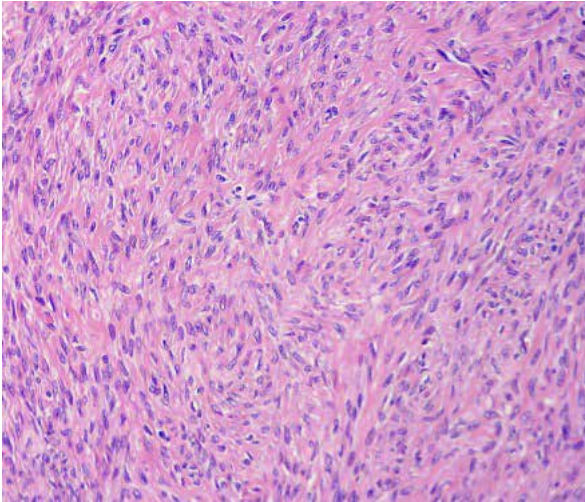
2. Microscopic aspect of the tumor.
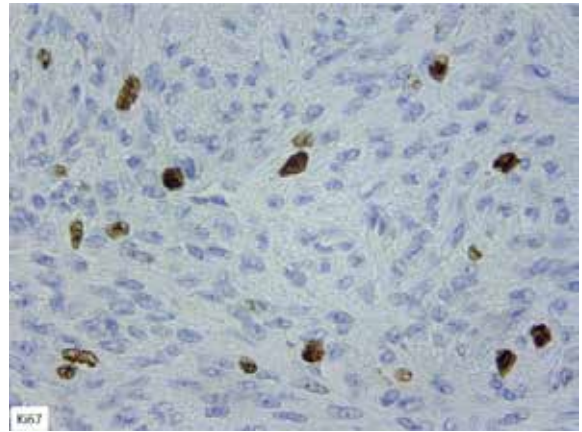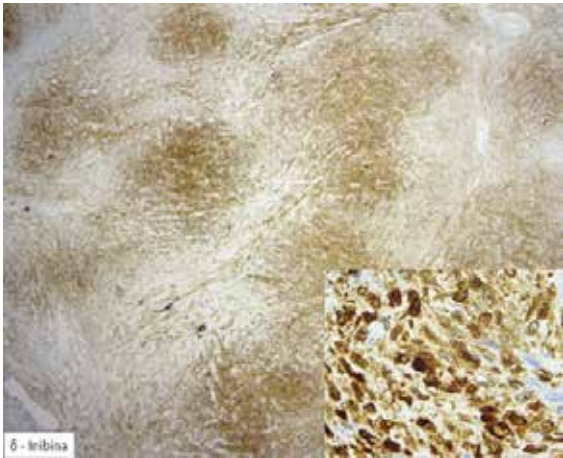
3. IHC marking Inhibin-alpha.
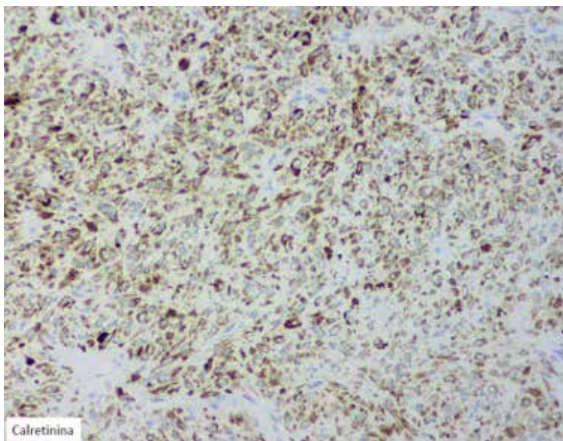
4. IHC marking Calretinin.

5. IHC marking Ki-67.

DISCUSSION

Sclerosing Stromal Tumors (SST) are benign tumors, usually unilateral, that affect young women in 80% of cases. However, in the present report, the patient presented is a 69-year-old woman, which is very unusual.

They can be classified into thecoma and fibroma, according to their local origin in epithelial, germ cell or stromal sexual cord. Sex cord neoplasms originate from steroid hormone-producing cells.

Often patients with adnexal masses do not present specific symptoms and are generally associated with pelvic pain, and therefore, this diagnostic hypothesis is raised during gynecological physical examination or during imaging [1].

Imaging exams may show evidence of SST, but there are no pathognomonic features. At USG it presents as a tumor with multilocular cystic components with irregularly dense septa and tumor walls. Doppler flowmetry demonstrates prominent peripheral and central vascularization. At Computed Tomography (CT) they are of mass in the adnexal region of variable volume, with high intensity signal of the cystic component, while those of the solid component are little homogeneous and vary between intermediate to high [2].

Under microscopy it is possible to highlight that the tumor is typically unilateral and well delimited, with dimensions ranging from 1-3cm in diameter. On section, it is solid, grayish-white with occasional yellowish foci and may contain cystic or edematous areas. However, the definitive diagnosis is established by characteristic microscopic findings with poorly defined, densely cellular pseudolobular areas separated by a fibroedematous stroma.

The choice of serum tumor markers to be ordered depends on the patient's age and suspicion about the origin of the tumor, based on other clinical parameters. The importance of tumor markers, in addition to diagnosis, is that they make it possible, in the segment, to observe response

to therapy and disease recurrence [3].

Because it produces estrogens, thecoma can be associated with endometrial hyperplasia or carcinoma, which can also lead to abnormal uterine bleeding [4].

The main differential diagnosis of ovarian SST, in the patient's age group, is the Krukenberg tumor, a malignant neoplasm, where there is the presence of signet-ring cells with swollen stroma, more commonly bilateral and which presents facets of the sclerosing stromal tumor in some cuts [5].

Treatment consists of removing the ovary with a tumor and staging it.

Most patients with stage I tumors are followed up after surgery without any additional treatment, while in stages II, III, IV chemotherapy or hormone therapy can be performed after surgery.

In this patient, active surveillance is being carried out due to the high risk of recurrence.

CONCLUSION

Sclerosing Stromal Tumors (SST) are benign tumors that affect young women. However, in the present report, the patient is a 69-year-old elderly woman. Furthermore, the history of adenocarcinoma of the sigmoid colon suggests a possible metastasis. Classified into thecoma and fibroma. In the case of this patient, a thecoma is suspected due to her age, in which it affects postmenopausal women, and has a mesenchymal origin, derived from the sexual cord, which occurs unilaterally and is benign.

REFERENCES
1. Girão MJBC, Baracat EC, Rodrigues de Lima G. Tratado de Ginecologia. Rio de Janeiro: Atheneu, 2017.
2. Sobrinho DBG, Vasconcelos RG, Carvalho BR, Furtado VMG, Ramos FAH, Netto JPS, et al. Tumor estromal esclerosante de ovário associado à síndrome de Meigs e gestação: relato de caso. Rev Bras Ginecol Obstet [Internet]. 2013[cited 2019 Jan 27];35:331-5. Available from: http://www.scielo.br/scielo.php?pid=S0100-   72032013000700008&script=sci**a** abstract&tl-ng=p
3. Freitas F, Menke CH, Rivoire WA, Passos EP. Rotinas em ginecologia. 6a ed. São Paulo: Artmed; 2011.
4. Silva TS, Guerra C. Tumores raros do ovário. In: Oliveira CF, coordenador. Manual de ginecologia. Lisboa: Permanyer Portugal; 2009:413-41.
5. Oncoguia- tratamento-do-tumor-estromal-de-ovario-por-estagio
6. Kurman RJ. et al. WHO Classification of Tumours of Female Reproductive Organs. World Health Organization Classification of Tumours, p. 11–86, 2014.
7. Silva TS, Guerra C. Tumores raros do ovário. Manual de ginecologia, p. 424-426, 2009.

CARDIAC DISEASES AND THE IMPORTANCE OF FETAL ECOCARDIOGRAPHY: A BIBLIOGRAPHIC REVIEW

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ABSTRACT

The aim of this study is through a literature review to describe the importance of fetal echocardiography in screening for fetal heart disease. Since the first report of fetal echocardiography in 1972 by Winsberg, several advances in ultrasound technology have occurred, allowing for a detailed assessment of the cardiac anatomy in the fetus. It is essential to remember that more than 90% of cardiac malformations occur in fetuses without any risk factor. Therefore, targeted population screening, during routine prenatal ultrasound, through systematic observation of the fetal heart, combined with basic knowledge on the part of the operator of its normal characteristics, is the only way for the diagnosis of heart disease congenital diseases can be expanded in terms of primary care to the population. The detailed anatomical knowledge of the cardiac structures, combined with the precise interpretation of echocardiographic images taken during fetal development, allow the early diagnosis of particular forms of congenital disease that have serious pathophysiological consequences. Prenatal diagnosis helps in planning the optimal management of the baby with the choice of a tertiary care center for stabilization and early initiation of therapy.

KEYWORDS: HEART DISEASE, ECHOCARDIOGRAPHY, FETAL

INTRODUCTION

Congenital heart diseases (CHD) are among the most common malformations in human fetuses and considered the most frequent. Due to their poor prognosis, they significantly contribute to infant mortality, accounting for about 10% of infant deaths and half of deaths due to congenital malformations[1].

It is essential to remember that more than 90% of cardiac malformations occur in fetuses without any risk factor. Therefore, targeted population tracking, during routine prenatal ultrasound, through systematic observation of the fetal heart, combined with a basic knowledge, by the operator, of its normal characteristics, is the only way to expand the diagnosis of congenital heart disease, in terms of primary care to the population[2].

According to the American College of Cardiology, the main indications for fetal echocardiography are fetal cardiac abnormalities or arrhythmia detected by routine prenatal ultrasound, family history of congenital heart disease, maternal diabetes or systemic lupus erythematosus, fetal exposure to a teratogen, karyotype fetal anomaly and other abnormalities of the fetal system. For fetuses with suspected congenital heart disease or extra-cardiac ab-normality detected in the second trimester fetal anatomy scan is adviced[3,4].

One of the main goals of prenatal diagnosis is the detection of severe CHD, whose prognosis depends, in most cases, on the planning of delivery in a specialized reference center[5].

Therefore, the aim of this study is to describe the importance of fetal echocardiography in the screening of fetal heart disease through a literature review.

2 HEART DISEASES AND THE IMPORTANCE OF FETAL ECHOCARDIOGRAPHY

2.1 INCIDENCE AND IMPORTANCE OF DETECTION

Congenital heart disease (CHD) is a leading cause of mortality in children, with an estimated prevalence of about 4-13 per 1000 live births. Given the increased risk of morbidity and mortality in babies with CHD, prenatal diagnosis is essential to help plan peripartum management4. The incidence of congenital heart disease in deaths is 10 times more frequent during abortions 22 to 42%6. In fetal life, this incidence is estimated to be up to five times higher, and this difference is justified by fetal deaths[5].

Approximately 50% of cases present early hemody-

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namic repercussions, requiring interventional treatment or surgical correction in the first year of life. The association with extracardiac malformations can be observed in up to 50% of those affected, further increasing pre- and postoperative morbidity and mortality[5].

Prenatal diagnosis of congenital heart disease (CHD) has been shown to have a significant effect on prenatal and postnatal care. In addition to the potential medical benefits, fetal diagnosis allows counseling for parents, in which well-informed families can make decisions regarding pregnancy, and prepare emotionally for the delivery of a child with significant CHD. Accurate prenatal diagnosis can also lead to additional tests of the fetus, which can yield valuable information in the general assessment of the fetus[7].

The performance of early first trimester ultrasound and the greater use of fetal echocardiography in recent years have contributed to an increase in the intrauterine diagnosis of congenital heart diseases, with consequent better perinatal evolution of them. However, fetal echocardiography is not yet universally available in our country, with a greater concentration of professionals with training in Fetal Cardiology in the South and Southeast regions, and a more restricted number in the North, Northeast and Midwest regions where the availability of this tool is mainly restricted to capital cities and is not readily available in the Unified Health System (SUS)[5].

As Congenital Heart Disease (CHD) is the most common serious birth defect and the least diagnosed by routine obstetric ultrasound, the challenge of recent years has been to discover an early screening method for fetal heart disease, since most fetuses with heart disease are born to mothers that do not have the classic indications for fetal echocardiography[5].

Although fetal echocardiography, traditionally indicated for high-risk pregnant women, is quite accurate, most newborns with heart disease are still born undiagnosed in all parts of the world. This is because many cases of congenital heart disease occur in low-risk groups and are not detected by screening at the time of prenatal ultrasound[5].

Given this scenario, some advocate that fetal echocardiography should be indicated for all pregnant women, since, in experienced hands, it can detect close to 100% of all cardiac anomalies in fetal life, being considered the gold standard for fetal cardiac diagnosis. Prenatal diagnosis significantly reduced pre- and postoperative mortality[5].

The most recent literature shows sensitivity around 13.5% for detecting cardiac anomalies, and the measurement of NT ≥ 3.5 mm should be considered an indication for fetal echocardiography. Doppler flowmetric analysis of the fetal cardiovascular system is also applied to screen for fetal heart disease, which may or may not be associated with chromosomal disorders. Several studies advocate that the altered flow of the ductus venosus, that is, the appearance of the reverse wave during atrial contraction (A wave) in fetuses with TN ≥ 3.5 mm increases the probability of CHD by three times, while a normal flow pattern reduces the risk of heart disease by half[5].

Although several studies have evaluated the effectiveness of congenital heart disease screening and the accuracy of fetal echocardiography, information on the use of specific risk factors to refer patients for fetal echocardiography is limited, especially for cases where cardiac findings on prenatal ultrasound are normal. This low detection rate may reflect the inability of traditional risk factors to identify the majority of patients at risk, as well as the limitations of ultrasound to detect cardiac anomalies in the prenatal period[3].

However, most pregnant women whose children are born with congenital heart disease have no known risk and, therefore, may not undergo high-risk obstetric consultations, with ultrasound professionals being responsible for referring those who present with ultrasound suspicion of fetal heart disease[8].

2.2 THE FETAL ECOCARDIOGRAPHIC STUDY

Until a few years ago, the only aspect of fetal cardiovascular physiology that could be routinely monitored was heart rate. With the introduction of M-mode, two-dimensional echocardiography (ECHO) and Doppler techniques (especially color flow mapping) in the study of the fetus, accurate description of the intracardiac anatomy, sequential analysis of the chambers and, finally, the recognition of malformations, disturbances of cardiac function and rhythm in the prenatal period[9].

Initially, fetal echocardiography included only the four-chamber view (basic cardiac echocardiographic examination [BCEE]) of the heart. Then, outflow tract view (OTV) and three-vessel tracheal view (3VTV) were added to increase the accuracy of fetal echocardiography. More recently, ECEE (extended cardiac echocardiographic examination), which included visualizing the 4 chambers, the right ventricular outflow tract, the left ventricular outflow tract, and the main pulmonary artery and its branches, was used as a specific protocol to identify some minimal defects and provide more details about suspected fetal heart[10].

The combined sensitivity of prenatal echocardiographic diagnosis of fetal heart disease in the first trimester, second trimester, and third trimester was 60.3%, 60.9%, and 77.4%, respectively[10].

Two-dimensional ECHO can visualize fetal heartbeats as early as the 6th week of gestation, but an adequate structural analysis is usually only feasible after the 16th week. At this gestational age, the fetal heart is still very small and often a complete study is not possible. The ideal time for the visualization of the fetal heart extends from the 18th to the 24th gestational week, when a large volume of amniotic fluid surrounds the conceptus. In the 3rd trimester, the fetal spine is often anterior and the ribs are more calcified, "shading" the cardiac area and making it difficult

to properly assess the fetal heart in this gestational phase[9].

Fetal cardiac examination is optimally performed between 18 and 22 weeks of menstrual age. Some anomalies can be identified during the end of the first and beginning of the second trimester of pregnancy, especially when an increase in the nape of the neck and translucency is identified[11]. From 18 weeks onwards, all cardiac structures can be analyzed by echocardiography. This is the initial gestational age at which the echocardiogram should be performed. The best images, however, are obtained between 24 and 28 weeks, when the heart is already larger, the fetus is still moving well, and the bones are not a significant barrier to ultrasound. It is noteworthy that the early assessment of the heart can be performed either via the transvaginal or transabdominal route (after the 14th week)[5].

Fetal cardiac examination consists of a systematic and careful study of the atrial situs and of the venoatrial, atrioventricular and ventricle-arterial connections. It also involves an adequate assessment of the myocardial walls, atrial and ventricular septa, in addition to the aortic and ductal arches[9].

It is essential that the fetal cardiologist have knowledge of basic ultrasound concepts, particularly with regard to fetal status and position. Before starting the assessment of the heart, the presentation of the fetus must be determined, identifying its right and left sides. The main marker on the left side of the fetus is the stomach. In situs inversus or ambiguous situations, it may be misplaced and cannot be used as a marker on the left fetal side[5].

In order to determine the cardiac anatomy and connections, four sections of the heart are needed, in general: four chambers, longitudinal of the left ventricle (LV), arch of the ductus arteriosus or ductal and aortic arch[9].

The basic cardiac screening exam is based on a four-chamber view of the fetal heart. This view should not be confused with a simple chamber count, as it involves a careful assessment of specific criteria (Figure 1)[11].
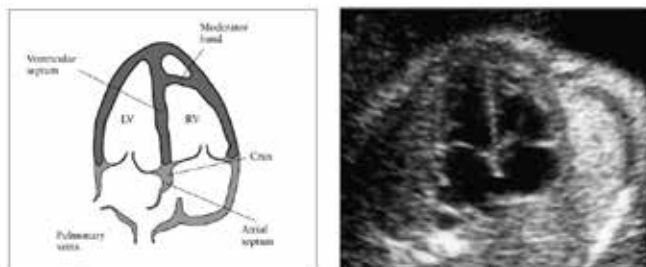
The most easily obtained cut is the four-chamber one (fig.1). The descending aorta lies between the spine and the left atrium (LA). The atrial cavities have similar dimensions and the membrane of the foramen ovale can be seen, moving towards the LA and the Eustachian valve inside the right atrium (RA) [9].

Among the technical factors, it is important to start the examination by adjusting the equipment for the best possible image resolution, which involves choosing the transducer with the highest frequency, gray scale with better contrast between the interfaces and the use of harmonics. The scanning angle must be sufficient to delimit the cardiac area under study and the depth and zoom adjusted so that the heart image fills 1\3 to 1\2 of the equipment screen. Visualization of cardiac structures using cineloop (frame-by-frame image) is also a resource used in the assessment of the fetal heart, an organ in constant movement whose frequency varies between 120 and 160 beats per minute[12].

A normal heart is usually no larger than a third of the chest area. Some views may reveal a small hypoechoic border around the fetal heart that may be mistaken for pericardial effusion. An isolated finding of this type usually represents a normal variation[11].

It is also possible to assess the morphology and dynamics of the atrioventricular valves, as well as the atrioventricular connection. The two ventricles have similar dimensions, but the contractile geometry shows a dominance of the right ventricle (RV). The differentiation between the ventricles can be made by trabeculation (coarser in the RV), the presence of a moderating band in the RV, the more distal insertion of the tricuspid valve, and the well-defined appearance of the papillary muscles in the LV. Wall thicknesses are similar[9].

Failure to obtain a normal four-chamber projection during obstetric ultrasound is an absolute indication to perform a fetal echocardiogram by a specialist in Fetal Cardiology. Although the four-chamber projection has great value in tracking normality by evidencing the proportional size between the cardiac chambers, as it does not pass through the aorta and pulmonary artery, it does not define cardiopathies of the transposition type of the great arteries, tetralogy of Fallot (T4F), common arterial trunk, among others. Tables 1.1 and 1.2 show the cardiopathies commonly associated with normal and abnormal four-chamber projection, respectively[5].

Figure 1- Four Chambers of the fetal heart. ISUOG, 2006

Tetralogia de Fallot
Transposição das grandes artérias
Tronco arterioso comum
Anomalias do arco aórtico
Estenose valvares aórtica e pulmonar leves
Comunicações interventriculares perimembranosas

Table 1 - Heart diseases commonly associated with normal four-chamber position. Source: PEDRA et al. 2019[5]

Atresias das valvas mitral e aórtica
Atresias das valvas tricúspide e pulmonar
Anomalia de Ebstein/ displasia da valva tricúspide
Defeito do septo atrioventricular
Comunicações interventriculares grandes
Ventrículo único
Estenoses das valvas aórtica e pulmonar graves
Coartação da aorta
Drenagem anômala total de veias pulmonares
Cardiomiopatias
Tumores cardíacos

Table 2 - Heart diseases commonly associated with abnormal four-chamber position. Source: PEDRA, et al. 2019[5].

The best image of the heart is obtained from the abdomen by sliding the transducer slightly towards the chest. Although it is also possible to obtain images through the chest or back, as the fetal lungs are filled with fluid and do not offer a barrier to the passage of ultrasound, these images are of lower quality, especially at the end of pregnancy, when the ossification of the ribs and spine represents an important barrier to the passage of ultrasound[5].

In this situation, to improve image quality, it is often necessary to ask the pregnant woman to be in the left or right lateral decubitus position. Difficulties can occur in the presence of polyhydramnios and maternal obesity. Polyhydramnios is a situation that can make it difficult or even impossible to perform echocardiography, as the fetus is positioned further away from the transducer and tends to move a lot, making it difficult to take measurements and position the Doppler volume sample to obtain the usual tracings. In this situation, the fetus can be brought closer to the transducer, placing the pregnant woman in a position of four supports on her knees and elbows[5].

Maternal obesity also hinders the technical quality of echocardiography and, often, obtaining a cardiac image is only possible by using a more vigorous compression of the transducer, or by using low-frequency sectorial transducers, such as those used for echocardiography of adults[5].

Fetal echocardiography performed in the third trimester follows the same principles as the examination performed in the second trimester. Some adjustments can be made if there is a more exacerbated acoustic shadow characteristic of this period. The use of images (chroma) can improve the contrast between the more evident structures and facilitate the identification of structures[12].

Heart rate and regular rhythm should be confirmed. The normal rate ranges from 120 to 160 beats per minute.

Mild bradycardia is temporarily seen in normal second trimester fetuses. Corrected bradycardia, especially heart rates that remain below 110 beats per minute, require timely evaluation for possible heart block. Repetitive heart rate slowdowns during the third trimester can be caused by fetal distress. Occasional skip beats are not usually associated with an increased risk of structural fetal heart disease. However, this finding may occur with clinically significant heart rate or rhythm disturbances as an indication for fetal echocardiography[11].

Mild tachycardia (>160 beats per minute) can occur as a normal variant during fetal movement. Persistent tachycardia, however, should be evaluated for possible fetal distress or more severe tachydysrhythmias[11].

The heart is normally shifted about 45± 20◦ (2 standard deviations (SD)) to the left side of the fetus (Figure 2). Special attention must be paid to the cardiac axis and position because they can be easily assessed even if the four-chamber view is not visualized satisfactorily. Abnormalities of situs should be suspected when the fetal heart and/or stomach is/is not found on the left side as well. Abnormal axis increases the risk of a cardiac malformation, especially involving the outflow tracts. This finding may be associated with a chromosomal anomaly[11].

Some hearts are abnormally displaced from their usual position in the left anterior central chest. The abnormal cardiac position may be caused by a diaphragmatic hernia or a space-occupying lesion such as a cystic adenomatoid malformation. Positional abnormalities can also be secondary to fetal lung agenesis-hypoplasia. Both atrial chambers normally appear similar in size and the foramen ovale flap should open into the left atrium. Pulmonary veins can often be seen entering the left atrium. However, their identification should not be considered a mandatory part of a basic cardiac screening exam. The lower border of the atrial septal tissue, called the septum primum, must be present[11].

Both ventricles should also be similar in size, with no evidence of thick walls. Although mild ventricular disproportion can occur as a normal variant, hypoplastic left heart syndrome and coarctation of the aorta are important causes of this disparity. The ventricular septum should be carefully examined for cardiac wall defects from the apex to the crux. Septal wall defects can be difficult to detect when the transducer insonation angle is directly parallel to the ventricular wall. In these circumstances, a defect may be falsely suspected because of the acoustic "fall" artifact. Small septal defects (1–2 mm) can be very difficult to confirm if the ultrasound imaging system does not provide a sufficient degree of lateral resolution, especially if fetal size and position are unfavorable[11].

Two distinct atrioventricular valves (in the right side, tricuspid and in the left side, mitral) should be seen to open separately and freely. The septal leaflet of the tricuspid valve is inserted into the septum closer to the apex when

compared to the mitral valve (ie. normal displacement). Abnormal atrioventricular valve alignment may be a key ultrasound finding for cardiac anomalies, such as atrioventricular septal defect[11].

In the context of Fetal Cardiology, antenatal diagnosis allows the monitoring of pathologies, with the potential for intrauterine hemodynamic decompensation, in addition to helping to schedule cases whose heart diseases will present hemodynamic repercussions in the immediate neonatal period[5].

FINAL CONSIDERATIONS

Detailed anatomical knowledge of cardiac structures, combined with accurate interpretation of echocardiographic images taken during fetal development, allow early diagnosis of particular forms of congenital disease that have serious pathophysiological consequences. Prenatal diagnosis helps in planning the optimal management of the baby with choosing a tertiary care center for stabilization and early initiation of therapy.

REFERENCES

1. Hagemann LL, Zielinsky P. Rastreamento populacional de anormalidades cardíacas fetais por ecocardiografia pré-natal em gestações de baixo risco no município de Porto Alegre. Arq. Bras. Cardiol. 2004; 82(4):313-319.
2. Zielinsky P. Malformações cardíacas fetais. Diagnóstico e conduta. Arq. Bras. Cardiol. São Paulo, 1997;69(3):209-218.
3. Simpson LL. Indications for fetal echocardiography from a tertiary-care obstetric sonography practice. Journal of Clinical Ultrasound, 2004; 32(3):123–128.
4. Mone JR. et al. Prenatal detection of structural cardiac defects and presence of associated anomalies: a retrospective observational study of 1262 fetal echocardiograms, 2015
5. Pedra RS et al. Diretriz Brasileira de Cardiologia Fetal. 2019; 112(5)
6. Cruz JC et al. Diagnóstico y frecuencia de cardiopatía fetal mediante ecocardiografía en embarazos con factores de alto riesgo. Ginecol Obstet Mex. 2006;74(12):645-656.
7. Pike JI, Krishnan A, Donofrio MT. Early fetal echocardiography: congenital heart disease detection and diagnostic accuracy in the hands of an experienced fetal cardiology program. Pre natal diagnoses, 2014; 34(8).
8. Macedo JM et al. Ecocardiografia fetal, ume estudo de três anos. Serviço de Cardiologia Pediátrica. Hospital de Santa Marta. Lisboa. Serviço de Obstetrícia e Unidade de Genética. Hospital de D. Estefânia. Lisboa
9. Tatani SB. Ecocardiografia fetal. Apresentando o método. Arq. Bras. Cardiol. São Paulo, 1997;69(3):197-201.
10. Zhang Y, Zeng X, Zhao E, Lu H. Diagnostic value of fetal echocardiography for congenital heart disease. Medicine, 2015;94(42).
11. ISUOG. International Society of Ultrasound in Obstetrics & Gynecology. Cardiac screening examination of the fetus: guidelines for performing the 'basic' and 'extended basic' cardiac scan. Ultrasound Obstet Gynecol. 2006;27(1):107-113.
12. Amaral WA et al. O coração fetal para o ultrassonografista SBUS, 2016.

GESTATIONAL DIABETES: BIBLIOGRAPHIC REVIEW WITH EMPHASIS ON KNOWLEDGE, ATTITUDES AND SELF-CARE

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ABSTRACT

The aim of this study is to bring an updated bibliographic review on gestational diabetes from concept to diagnosis and describe the importance of knowledge, attitude and self-care in diabetic pregnant women. Gestational diabetes is one diagnosed during pregnancy in a patient who was not diagnosed with diabetes before pregnancy in what we call prior diabetes. The diagnosis is controversial, but it is recommended that on the occasion of the first prenatal consultation, all pregnant women should be subjected to fasting plasma glucose. Lack of awareness, negative attitudes and inappropriate self-care practices among diabetic patients are some of the important variables that influence the progression of diabetes and its complications, which are largely preventable through education and patient involvement. Gestational diabetes is associated serious maternal, fetal and neonatal diseases. Prenatal care is an opportunity for pregnant women to receive guidance, they should be informed about their health care, the importance of regular exercise, dietary adjustment and suitability for taking medications, thus improving knowledge, attitudes and self-care in diabetic pregnant women. The literature on knowledge, attitude and self-care about GDM in pregnant women is scarce.

KEYWORDS: GESTATIONAL DIABETES, KNOWLEDGE, SELF-CARE, ATTITUDES.

INTRODUCTION

Diabetes Mellitus (DM) represents a set of metabolic disorders characterized by hyperglycemia resulting from insulin deficiency; this deficiency may be due to reduced pancreatic production, of inadequate release and/or increased peripheral resistance to the hormone. Considering the pregnancy-puerperal period, it is possible the occurrence of hyperglycemia both in women already known to have DM prior to pregnancy and in pregnant women without this previous diagnosis[1].

Diabetes is a common medical condition during pregnancy. It is associated with an increased risk of complications for the mother and fetus during pregnancy and postpartum[2].

The treatment of gestational diabetes is important to avoid maternal-fetal morbidity and mortality, nutritional therapy being the first treatment option for pregnant women, and the practice of light to moderate physical exercise should be encouraged in the absence of obstetric contraindications. Drug treatment is recommended when glycemic targets are not reached or in the presence of fetal excessive growth on ultrasound. The traditional treatment for gestational diabetes is insulin therapy, although more recently the use of oral hypoglycemic agents has been considered a safe and effective option. Treatment monitoring is performed with measurement of capillary blood glucose, with assessment of fetal abdominal circumference and amniotic fluid through obstetric ultrasonography from the twenty-eighth week of gestation onwards[3].

The higher the knowledge, attitude and self-care scores, the lower the impacts on the health of the mother and baby and the complications resulting from diabetes. Therefore, the aim of this study is to bring an updated literature review on gestational diabetes from concept to diagnosis and describe the importance of knowledge, attitude and self-care in diabetic pregnant women.

1. CONCEPT AND CLASSIFICATION

Diabetes mellitus, known as diabetes, is a group of metabolic disorders characterized by the presence of hyperglycemia and can be classified in different ways, as shown in Table 1[4].

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Type 1 diabetes
Type 2 diabetes
Hybrid forms of diabetes
Immune-mediated and slowly evolved diabetes in adults
Type 2 diabetes with a tendency to ketosis
Other specific types
Monogenic diabetes
- Monogenic defects of β cell function
- Monogenic defects in insulin action
Exocrine Pancreas Diseases
Endocrine Disorders
Induced by drugs or chemicals
Infection-related diabetes
Specific unusual forms of immune-mediated diabetes
Other genetic syndromes sometimes associated with diabetes
Unclassified diabetes
Hyperglycemia first detected during pregnancy
Diabetes mellitus in pregnancy
Gestational diabetes mellitus

Source: ADA,2020[5].

Table 1 - Diabetes classification according to the World Health Organization, 2020.

Gestational diabetes is the one diagnosed during pregnancy in a patient who was not diagnosed with diabetes before pregnancy, which we call prior diabetes. The identification and timely management of gestational diabetes is important to prevent fetal, child and maternal complications. Physical activity and dietary changes remain the hallmarks of treatment, with insulin becoming the drug of choice if further intervention is needed[2,6,7].

PREVALENCE

In 2015, the International Diabetes Federation (IDF) estimated that 8.8% (95% confidence interval [CI]: 7.2 to 11.4) of the world population aged 20 to 79 years (415 million people) lived with diabetes. If current trends persist, the number of people with diabetes is projected to exceed 642 million by 2040. The World Health Organization (WHO) estimates that high blood glucose is the third most important factor in the cause of premature mortality. Diabetes is responsible for 14.5% of all-cause mortality worldwide, and this is greater than the sum of deaths caused by infectious diseases. Global spending on diabetes in 2015 was estimated at between US$ 673 and US$ 1.197 billion, with projections for 2040 in the order of US$ 802 to US$ 1.452 billion. For Brazil, the estimated cost in 2015 was US$ 22 billion, with a projection of US$ 29 billion for 2040[8].

The prevalence of hyperglycemia during pregnancy may vary depending on the diagnostic criteria used and the population studied. According to population studies carried out in recent decades, the prevalence of GDM var-ies from 1 to 37.7%, with a world average of 16.2%, one in six births occur in women with some form of hyperglycemia during pregnancy, with 84% of these cases being due to GDM1.

DIAGNOSIS

The diagnosis is controversial, but it is recommended that at the time of the first prenatal consultation, all pregnant women should undergo fasting plasma glucose. A fasting blood glucose value (8 to 12 hours) greater than or equal to 92 mg/dl (5.1 mmol/l) but less than 126 mg/dl (7.0 mmol/l) makes the diagnosis of GD. Pregnant women with fasting plasma glucose values equal to or greater than 126 mg/dl (7.0 mmol/l) or with an occasional plasma glucose value greater than 200 mg/dl (11.1 mmol/l), if confirmed with a fasting value greater than or equal to 126 mg/dl, should be considered as having a diagnosis of Diabetes Mellitus in Pregnancy. If the blood glucose value is less than 92 mg/dl, the pregnant woman should be reassessed between 24 and 28 weeks of gestation with an OGTT with 75 g of glucose. The test must be done in the morning, after fasting for at least 8 hours, but not longer than 12 hours. It must be preceded, within the previous 3 days, by regular physical activity and a non-restrictive diet containing at least 150 g of carbohydrates. The test consists of ingesting a solution containing 75 g of glucose diluted in 250-300 ml of water. Blood samples are required to determine plasma glucose at 0, 1h and 2h. During the test, the pregnant woman must remain at rest[9,10].

RISK FACTORS

Risk factors are the classic triad, older age, higher BMI and family history of diabetes mellitus. According to Dode et Santos (2009), in addition to being over 25 years old, excessive central deposition of fat, obesity or excessive weight gain in ongoing pregnancy and family history of diabetes mellitus, the non-white color should be included among the risk factors for gestational diabetes mellitus[11].

A study by Ribeiro et al (2015), aimed at identifying predictive factors for the development of diabetes mellitus (DM) in women with a history of gestational diabetes (GD), demonstrated in a sample of 300 women, born before 1995, with a diagnosis from GD between January 1, 2001 and December 31, 2010, with monitoring of pregnancy at Hospital de Braga. It was observed that 32.7% of women developed DM. The probability of developing DM after GD increased by 8.2 times when the gestational age was less than 24 weeks at diagnosis (OR = 8.19; p < 0.001), 3.4 times if insulin therapy was needed (OR = 3.36; p < 0.001) and 3.1 times if previous body mass index (BMI) ≥ 26.4 kg/m2 (OR = 3.07; p = 0.003). The value of fasting blood glucose, maternal age at diagnosis, as well as postpartum BMI, despite being associated with the development of DM, were not predictors for the onset of DM[12].

KNOWLEDGE, ATTITUDES AND SELF-CARE IN DIABETIC PREGNANT WOMEN

According to the WHO "self-care" is the ability of individuals, families and communities to promote health, prevent disease, maintain health, and deal with illnesses and disabilities with or without the support of a health care provider." The scope of self-care includes health promotion; disease prevention and control; self-medication, care for dependent people. Hospital/specialist care should be sought in case of necessity, in addition to rehabilitation including palliative care[13].

Knowledge is defined as a set of information that individuals need to master to manage their health condition. However, knowledge alone is not enough to promote behavioral changes, which also involve other variables, namely, education, time of diagnosis, beliefs related to health and disease, family support, easy access to health services, among other dimensions. Although knowledge is a prerequisite for self-care, it cannot be the only and main factor involved in the educational process. Knowledge combined with decision-making shared with patients, according to their values, in addition to perceived barriers of self-care, motivation and proposed goals, can lead to the adoption of positive attitudes towards the treatment. Thus, it is clear that low levels of knowledge and negative attitudes towards the disease are factors that still interfere with metabolic control and treatment adherence[14].

A positive attitude towards the disease means having tolerance, acceptance, cooperativeness and a belief about the fact that the disease is not a significant source of suffering.

Lack of awareness, negative attitudes and inadequate self-care practices among diabetic patients are some of the important variables that influence the progression of diabetes and its complications, which are largely preventable through education and patient involvement[15].

FINAL CONSIDERATIONS

Gestational diabetes is associated with serious maternal, fetal and neonatal illnesses. Prenatal care is an opportunity for pregnant women to receive guidance, they must be informed about their health care, the importance of regular exercise, diet adjustment and medication adequacy, thus improving knowledge, attitudes and self-care in diabetic pregnant women. Literature on knowledge, attitude and self-care about GDM in pregnant women is scarce.

REFERENCES

1. Opas. Organização Pan-Americana da Saúde. Ministério da Saúde. Federação Brasileira das Associações de Ginecologia e Obstetrícia. Sociedade Brasileira de Diabetes Rastreamento e diagnóstico de diabetes mellitus gestacional no Brasil. Brasília, DF: OPAS, 2016

2. Benhalima K, Devlieger R, Assche AV. Screening and management of gestational diabetes. Best Pract Res Clin Obstet Gynaecol., v. 29, n. 3, p:339-349, 2015.

3. Weinert LS. et al. Diabetes gestacional: um algoritmo de tratamento multidisciplinar. Arq Bras Endocrinol Metab, v. 55, n. 7, p?435-445, 2011.

4. OMS. Organização mundial da saúde. Global report on diabetes. Disponível em: http://apps.who.int/iris/bitstream/10665/204871/1/9789241565257_eng.pdf?ua=1. Acesso em 12.03.2017.

5. ADA. American Diabetes Association. Diabetes Care.2020.

6. Kautzky-Willer A et al. Gestationsdiabetes (GDM) Gestational diabetes mellitus. Wien Klin Wochenschr., v.128, suppl 2, p:S103-S112, 2016.

7. Dugan JA, Crawford JM. Managing gestational diabetes [published correction appears in JAAPA. 2019. JAAPA., v. 32, n. 9, p:21-25, 2019.

8. SBP. Sociedade Brasileira de Diabetes. Diretrizes da Sociedade Brasileira de Diabetes. 4º ed. Itapevi, São Paulo: Clannad; 2019-2020.

9. Hapo, N England J Med 2008;358:1991-2002.

10. Ruas L, Almeida MC. Consenso "Diabetes Gestacional": Atualização 2017. Revista Portuguesa de Diabetes, v. 12, n. 1, p: 24-38, 2017.

11. Dode MASO, Santos IS. Fatores de risco para diabetes mellitus gestacional na coorte de nascimentos de Pelotas, Rio Grande do Sul, Brasil, 2004. Cad. Saúde Pública, Rio de Janeiro, v. 25, n. 5, p:1141-1152, mai, 2009.

12. Ribeiro AMC et al. Diabetes gestacional: determinação de fatores de risco para diabetes mellitus. Rev Port Endocrinol Diabetes Metab, v. 10, n. 1, p:8-13, 2015.

13. WHO. World Health Organization, Regional Office for South-East Asia. 2014. Self care for health. WHO Regional Office for South-East Asia. https://apps.who.int/iris/handle/10665/205887.

14. Islam B et al. Knowledge and attitude regarding gestational diabetes mellitus (GDM) among obese pregnant women coming for antenatal checkup at a tertiary care hospital. IJCS, v. 5, n. 5, p: 179-189, 2017.

15. Kakade AA, Mohanty IR, Rai S. Assessment of knowledge, attitude and self-care activities among type-2 diabetic patients attending a tertiary care teaching hospital. Int J Basic Clin Pharmacol., v. 5, n. 6, p:2458-2462, 2016.

EXPECTANT CONDUCT IN PREMATURE RUPTURE OF AMNIOTIC MEMBRANES IN LATE PRETERM INFANT: EXPERIENCE IN TERTIARY UNIT

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ABSTRACT

INTRODUCTION: maternal-fetal complications such as corioamnionitis and neonatal death, triggered by premature rupture of preterm ovular membranes (PPROM), caused many societies to adopt expectant management up to 34 weeks. However, currently, weight societies in the obstetric world have reviewed such conduct.

OBJECTIVE: this study aims to describe obstetric and perinatal morbidity in expectant management in patients with PPROM with GA between 34 and 36 weeks and 6 days, admitted to a tertiary hospital unit, a reference for the care of high-risk pregnancies in the state of Goiás.

METHOD: this is a descriptive retrospective observational study, in which women with single pregnancy were included, presenting PPROM confirmed between 34 ± and 36 + 6 weeks of gestation and who were not in labor within 24 hours after rupture of membranes. Result: the present study evaluated 94 patients, and 4.3% (4/94) of chorioamnionitis was observed; 1% (1/94) of puerperal infection; 3.2% (3/94) of Apgar < 7 in the 5th minute; 11.7% (11/94) of admission of newborns in the ICU and 0% (0/94) of neonatal death.

CONCLUSION: women with late PPROM, expectant management, as well as immediate delivery, are acceptable alternatives, given the equivalence in the literature in relation to the advantages and disadvantages for the maternal-fetal binomial.

KEYWORDS: PREMATURE, FETAL MEMBRANES, WATCHFUL WAITING

INTRODUCTION

Premature Rupture of Ovule Membranes (PROM) is the spontaneous rupture of the ovular and amniotic membranes that is known to occur before the onset of labor. This definition is independent of gestational age. Thus, one can find cases of PROM before 37 weeks of gestation (preterm premature rupture of the ovular membranes - PPROM) and at term (after 37 weeks). The latency period is defined as the interval between the rupture of the membranes and the beginning of labor[1].

It is known that when preterm ovular membranes are ruptured, the latency period is inversely proportional to gestational age. In term fetuses, when the membrane ruptures, a large part evolves to childbirth within 24 hours[1].

PPROM complicates about 1-5% of all pregnancies and accounts for 30-40% of all preterm births. It is associated with an increase in maternal and fetal mortality.[2] The United States of America is responsible for about a third (32.6%) of all premature births[3] and for approximately one fifth (18.2%) of premature births in Brazil, being, perhaps, the maternal complication most common of prematurity in the Brazilian panorama[4].

The etiology of spontaneous PROM is complex and multifactorial and involves factors that change the structure of membranes, whose main component is collagen, the most important being: Uterine overdistension (polyhydramnios and multiple gestation), mechanical factors (uterine contractions and fetal movement), alteration of cervical integrity (isthmus cervical incompetence and cerclage), intrinsic membrane factors (alpha-1-antitrypsin deficiency and Ehlers-Danlos syndrome) and alteration of tissue oxygenation (smoking). These factors are related to ascending infection of the vaginal flora, which is the most frequently identifiable cause associated with PROM[1].

As for neonatal complications, they come mainly from prematurity. In preterm births, the most prominent complication is respiratory distress syndrome, accounting for 63.63% of morbidity and 53.3% of mortality in a study of 100 cases of patients with ruptured membranes between

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28 and 37 weeks[5] .

As for maternal complications, 30% of patients with ruptured membranes between 24 and 37 weeks develop chorioamnionitis[6]. Its incidence is higher the lower the gestational age, with 41% in children under 27 weeks, 15% between 27 and 37 weeks and 2% over 37 weeks[7]. As for placental abruption, an incidence of 2.29% is observed, compared to a rate of 0.86% among women with intact membranes[8].

The diagnosis of PROM is essentially clinical, based on anamnesis and physical examination 90% of the time. In history, the typical complaint will be the sudden loss of liquid through the vagina, with a peculiar smell and appearance, in moderate quantity, which wets the patient's clothes. Specular examination reveals spontaneous loss of fluid through the external orifice of the uterine cervix and/or collected in the cul-de-sac. If there is no spontaneous flow of fluid, the pregnant woman can be asked to perform the Valsalva maneuver or the doctor himself can compress the uterine fundus, in search of induced flow.[9]

If the diagnostic doubt remains, an additional test can be used, such as: a) Phenol Test; b) pH reagent strips; c) "Fern Test" or Crystallization Test in heated blade. These are the classic tests, available in the national reality. However, more recently, other tests have become available, with approval by ANVISA in 2013. These are the immunochromatographic tests (IGFBP-1 and PAMG-1), which detect specific proteins in the amniotic compartment, with greater accuracy. As they are still expensive for the Brazilian reality, they are reserved for more difficult cases, such as, for example, in the presence of blood in the cul-de-sac, a situation in which the pH changes independently from the presence of amniotic fluid.[10-12]

Ultrasonography to assess the Amniotic Fluid Index (AFI) may help in the diagnosis of PROM when there is evidence of oligoamnios or decreased amniotic fluid. But for this, a previous assessment of the amount of amniotic fluid is necessary, as a normal AFI does not rule out the picture, as well as oligoamnios does not confirm it.[13]

Current evidence suggests that in women with PPROM between 24 and 34 weeks, the use of antibiotics significantly improved neonatal performance, including prolonging pregnancy, reducing the need for surfactant and oxygen therapy, reducing neonatal infection, and lower risk of brain changes on ultrasound .[1] The use of these antibiotics has not shown long-term deleterious effects for the newborn.[14]

A review of 22 randomized studies with more than 6,000 pregnant women in 2003 and updated in 2010 evaluated the benefits of different types of antibiotics in pregnant women with PROM. The review concluded that antibiotics are effective in prolonging pregnancy from 48 hours to 7 days and reduce the incidence of maternal and neonatal infection.[15]

On the other hand, a randomized controlled study from 1997 argues that although this approach increases the latency period, reducing some neonatal complications, there may be an increase in the rate of necrotizing enterocolitis with certain antibiotics, in addition to no change in perinatal mortality and predisposition to selection of resistant bacterial flora.[16]

Regarding the use of corticosteroids, it is known that a course of betamethasone (12 mg IM in two doses, 24 hours apart) or dexamethasone (6 mg IM in four doses, 12 hours apart) between 24 and 34 weeks should be performed in all pregnant women at risk of premature birth. Both steroids can be used and not one study has been able to show the superiority of one steroid over the other. The administration of a repeat or rescue course of corticosteroids in pregnant women with premature rupture of membranes is controversial and there is insufficient evidence to make a recommendation for or against.[17]

Due to the lack of scientific evidence on the benefits of using prophylactic tocolysis in the presence of preterm labor, this should not be indicated.[1] There is an underlying risk of an unsuspected infectious condition, with contractions often being the first manifestation of a histological chorioamnionitis.[18]

In cases of PPROM, expectant behavior is adopted, which includes periodic assessment of signs of infection and fetal vitality, in order to detect chorioamnionitis and fetal distress. Group B Streptococcus, Chlamydiatrachomatis and Gonococcus cultures are part of this evaluation, as well as a bacterioscopy (GRAM) of vaginal secretion, blood count with leukocyte count and C-Reactive Protein (CRP). On physical examination, signs such as fever, maternal or fetal tachycardia, purulent leukorrhea associated or not with a foul odor, should raise the suspicion of chorioamnionitis.[9] For the assessment of fetal vitality, the fetal biophysical profile is the recommended exam, which is also useful in detecting of chorioamnionitis, through the absence of fetal respiratory movements.[19]

There is no evidence to support the best place to perform expectant management (hospital vs. outpatient). A 2014 systematic review that included 2 small studies, one by Carlane and one by Ryan, showed similar results in perinatal mortality and frequency of chorioamnionitis. However, these should be interpreted very carefully. Therefore, the publication did not recommend one setting or another in clinical practice, due to the lack of evidence of safety.[20,21] However, in a 2018 retrospective cohort study, of 187 women with a single pregnancy and ruptured ovular membranes, 12 had complications (6.4%). Three criteria were observed to significantly increase the risk of a serious complication: rupture of membranes before 26 weeks, non-cephalic fetal presentation, and oligoamnios. The study concludes by saying that the combination of these three criteria is an indication of conventional hospitalization to limit maternal and fetal morbidity. When two criteria are combined, home care must be discussed on a

case-by-case basis. Finally, if only one unfavorable criterion is present, outpatient treatment is adequate.[22]

There is still no consensus regarding the optimal management of PPROM in late preterm infants. Another systematic review concluded that there was little evidence on the benefits and harms of early birth compared to expectant management.[14]

The management of PROM is dependent on the gestational age at which it occurs. Large societies in the obstetric world consider expectant management in PPROM between 33+6 and 37 weeks reasonable, as long as there is no maternal or fetal contraindication. This approach is based on recent studies that did not show advantages in immediate interruption. This is very clear in the study by Algert et al (2016) which shows little significant difference in neonatal sepsis between immediate delivery and expectant management (2% vs. 3%) and neonatal morbidity and mortality for the respective groups (8% vs. 7%) . However, the immediate delivery group needed more mechanical ventilation and spent more time in intensive care when compared to the expectant management group. As for the mothers, the expectant group had a lower rate of cesarean (16% vs. 19%), however, slightly higher rates of antepartum or intrapartum hemorrhage (5% vs. 6%), intrapartum fever (2% vs. 1%), postpartum antibiotic use (4% vs. 3%) and hospitalization.

Therefore, knowing the clinical impacts of expectant management on late preterm infants is of paramount importance, in addition to allowing the estimation of the potential benefit of maternal-fetal outcomes, since such behavior is not routinely used in other state institutions.

Chorioamnionitis		
Yes	4	4.3
No	90	95.7
Puerperal Infection		
Yes	1	1.1
No	93	98.9
Apgar< 7 in the 5th minute		
Yes	3	3.2
No	91	96.8
NB admission to the ICU		
Yes	11	11.7
No	83	88.3
Neonatal death		
Yes	-	0.0
No	94	100.0

NB: Newborn; Preterm PROM: Preterm premature rupture of membranes

ICU: Intensive Care Unit

Table 1 – Distribution of patients regarding variables

Variable	Number of cases (n = 94)	
	F	%
Interval in days between PROM and birth		
1	18	19.1
2	23	24.5
3	13	13.8
4	11	11.7
5	6	6.4
6	5	5.3
7	5	5.3
8	1	1.1
9	2	2.1
10	1	1.1
11	4	4.2
12	0	0.0
13	1	1.1
14	1	1.1
15	2	2.1
16	0	0.0
17	0	0.0
18	0	0.0
19	0	0.0
20	1	1.1

Preterm PROM: Preterm premature rupture of membranes

Table 2 - Distribution of patients regarding the interval in days between PROM and birth

Variable	Number of cases (n = 94)	
	F	%
Preterm PROM gestational age		
34w – 34w and 6 d	37	39.4
35w – 35w and 6 d	33	35.1
36w – 36w and 6 d	24	25.5
Gestational age at birth		
34w – 34w and 6 d	15	16.0
35w – 35w and 6 d	37	39.3
36w – 36w and 6 d	42	44.7
Interval in days between PROM and birth		
≤ 2 days	41	43.6
>2 days	53	56.4
Route of delivery		
Caesarean	44	46.8
Normal	50	53.2

Gestational age of Preterm PROM	NB admission in the ICU				P
	Yes		No		
	f	%	f	%	
34w – 34w and 6 d	4	36.4	33	39.8	
35w – 35w and 6 d	3	27.2	30	36.1	
36w – 36w and 6 d	4	36.4	20	24.1	-
Total	11	100.0	83	100.0	

Insufficient sample for testing; w: weeks; d: days

NB: Newborn; Preterm PROM: Preterm premature rupture of membranes

ICU: Intensive Care Unit

Table 3 - Distribution of patients according to gestational age of Preterm PROM and newborn admission to the ICU

Gestational age of the Preterm PROM	Chorioamnionitis				P
	Yes		No		
	F	%	f	%	
34w – 34w and 6 d	2	50.0	35	38.9	
35w – 35w and 6 d	-	0.0	33	36.7	
36w – 36w and 6 d	2	50.0	22	24.4	-
Total	4	100.0	90	100.0	

Insufficient sample for testing; w: weeks; d: days

Preterm PROM: Preterm premature rupture of membranes

Table 4 – Distribution of patients according to gestational age of Preterm PROM and chorioamnionitis

Gestational age of the Preterm PROM	Apgar< 7 in the 5th minute				P
	Yes		No		
	F	%	f	%	
34w – 34w and 6 d	-	0.0	37	40.7	
35w – 35w and 6 d	1	33.3	32	35.2	
36w – 36w and 6 d	2	66.7	22	24.2	-
Total	3	100.0	91	100.0	

Insufficient sample for testing; w: weeks; d: days

Preterm PROM: Preterm premature rupture of membranes

Table 5 - Distribution of patients according to gestational age of Preterm PROM and Apgar < 7 in the 5th minute

Interval until birth	Chorioamnionitis				p
	Yes		No		
	f	%	f	%	
≤ 2 days	2	50.0	39	43.3	
> 2 days	2	50.0	51	56.7	0.371
Total	4	100.0	90	100.0	

Test used: Fisher

Table 6 - Distribution of patients according to the interval until birth and chorioamnionitis

Interval until birth	Apgar< 7 in the 5th minute				p
	Yes		No		
	f	%	f	%	
≤ 2 days	2	66.7	39	42.9	
> 2 days	1	33.3	52	57.1	0.324
Total	3	100.0	91	100.0	

Test used: Fisher

Table 7 - Distribution of patients according to the interval until birth and Apgar < 7 in the 5th minute

Interval until birth	Admission of the NB in the ICU				p
	Yes		No		
	f	%	F	%	
≤ 2 days	4	36.4	37	44.6	
> 2 days	7	63.6	46	55.4	0.226
Total	11	100.0	83	100.0	

Test used: Fisher

NB: Newborn; ICU: Intensive Care Unit

Table 8 - Distribution of patients regarding the interval until birth and admission of the NB to the ICU

Chorioamnionitis	Admission of the NB in the ICU				P
	Yes		No		
	f	%	F	%	
Yes	-	0.0	4	4.9	
No	11	100.0	78	95.1	0.599
Total	**11**	**100.0**	**82**	**100.0**	

Test used: Fisher

NB: Newborn; ICU: Intensive Care Unit

Table 9 – Distribution of patients regarding chorioamnionitis and newborn admission to the ICU

METHODS

This is a descriptive retrospective observational study, conducted at Hospital Estadual Materno-Infantil Dr. Jurandir do Nascimento, located in Goiânia - Goiás. The project was submitted for approval by the Medical Research Ethics Committee (CEP) of Hospital Estadual Materno-Infantil Dr. Jurandir do Nascimento, following all the ethical precepts that govern research on human beings, in accordance with resolution nº. 466/2012.

Regarding the free and informed consent form (TCLE), the CEP was asked to waive it because it is a retrospective analysis of physical records filed at the SAME of Hospital Estadual Materno-Infantil Dr. Jurandir do Nascimento, without risk of exposure of patients .

The study population consisted of women and newborns who were conducted expectantly in the face of a diagnosis of PPROM with GA > 34 weeks and < 36 weeks and 6 days, admitted to the HMI between January 2019 and January 2020.

This study included women with a single pregnancy, with confirmed PPROM between 34 ± 0 and $36 + 6$ weeks of gestation and who were not in labor within 24 hours after rupture of the membranes.

The following were excluded: patients who evolved spontaneously with labor within 24 hours of PPROM; women with multiple pregnancies; women who presented on admission with abnormal cardiotocography (not reassuring), meconium amniotic fluid, signs of intrauterine infection, severe fetal abnormalities, HELLP syndrome (hemolysis, elevated liver enzymes, and thrombocytopenia) or severe preeclampsia; since these situations could indicate termination of pregnancy for reasons unrelated to PPROM.

Data was typed and manipulated in Excel, for further processing of the data using the Statistical Package for Social Science (SPSS) in Windows (version 21.0). Categorical variables will be presented as absolute frequency (f) and percentage value (%).

For comparisons between variables, the chi-square and Fisher tests were used for smaller samples and with a 2x2 matrix. For all tests, a 95% confidence level was considered, that is, $p < 0.05$ was considered significant.

RESULTS

Through the birth registry of the surgical center of the Hospital Materno Infantil de Goiânia, from January 2019 to January 2020, patients whose births occurred between 34 weeks and 37 weeks of gestation were selected. These patients had their medical records analyzed and 94 of them met the inclusion criteria, as well as no exclusion criteria.

Table 1 shows the distribution of patients regarding the analyzed variables. Of the 94 patients, 39.4% (37/94) were between and 34 weeks and 34 weeks and 6 days of gestation, 35.1% (33/94) were between 35 weeks and 35 weeks and 6 days, and 25 .5% (24/94) between 36 weeks and 36 weeks and 6 days. Regarding the gestational age at birth, 16.0% (15/94) were between and 34 weeks and 34 weeks and 6 days of gestation, 39.3% (37/94) were between 35 weeks and 35 weeks and 6 days, and 44.7% (42/94) between 36 weeks and 36 weeks and 6 days.

Regarding the interval of days between PROM and birth, shown in table 2, 43.6% (41/94) occurred within 2 days and 56.4% (53/94) occurred between 3 and 20 days. Furthermore, regarding the mode of delivery, the percentages of cesarean (44/94) and vaginal delivery (50/94) (46.8% vs. 53.2%, respectively) were similar.

Among the 94 patients participating in the study, the percentage of chorioamnionitis was 4.3% (4/94), puerperal infection 1.1% (1/94), Apgar < 7 at the 5th minute 3.2% (3 /94), 11.7% of admission to the ICU (11/94) and 0% neonatal death (0/94).

The gestational age of PPROM and the interval of days until birth were compared. It was observed that there is no significant difference between the gestational age of the PROM and the interval until birth (p=0.240).

When analyzing the distribution of patients in terms of gestational age of PPROM and admission of the NB to the ICU, Chorioamnionitis and Apgar of the NB < 7 in the 5th minute, there was not enough sample for the test (Tables 3, 4 and 5).

The interval of days until birth was compared with the occurrence of chorioamnionitis, Apgar < 7 in the 5th minute and admission of the NB to the ICU. In none of these comparisons there was a significant difference (p=0.371, p=0.324 and p=0.226, respectively).

The occurrence of chorioamnionitis and the NB admission to the ICU were also compared. It was observed that there is no significant difference between chorioamnionitis and admission of the NB to the ICU (p=0.599).

DISCUSSION

In the present study, a low prevalence of chorioamnionitis (4.3%) was observed. Furthermore, there was no statis-

tical significance of the time interval between PPROM and birth and chorioamnionitis (p=0.371). However, according to a meta-analysis published in 2018, which included 3 randomized clinical trials, there was a higher prevalence of chorioamnionitis in expectant management compared to immediate delivery (6.4% x 1.3%), with statistical significance (p < 0.0001).[24,25,26]

At the Hospital Materno Infantil de Goiás, prophylactic antibiotics are routinely administered to all pregnant women who have PPROM, in order to increase the latency period between the rupture of the bag and birth. Although it was not the objective of this study to evaluate the effects of prophylactic antibiotics, a low rate of puerperal infection was evidenced (only one case, corresponding to 1.1% of the sample). Similarly, a meta-analysis containing five clinical trials with 2,699 patients described that patients who received prophylactic antibiotic had the same risk of chorioamnionitis (2.7% versus 3.7%; relative risk [RR]: 0.73), endometritis (0.4% versus 0.9%; RR: 0.44), maternal infection (3.1% versus 4.6% RR: 0.48) and neonatal sepsis (1.0% versus 1.4%; RR: 0.69).[28]

Studies that analyzed the rate of admission to the maternal ICU for complications of PPROM were not found in the literature. However, there is data in the literature regarding severe maternal outcomes. In a retrospective cohort study with 118 participants, 78 underwent active management (group I) and 40 underwent expectant management (group II). In both groups there were no cases of sepsis and/or maternal death, which indirectly meets the results found in the present study, which did not present any case of admission to a maternal ICU, where, in general, critically ill and/or life-threatening patients are referred. [27]

As mentioned above, it was not possible to use tests to assess whether there was statistical significance in the comparison between the gestational age of PPROM and Apgar < 7 in the 5th minute.

Regarding the comparison between the time interval until birth and Apgar < 7 in the 5th minute, it was possible to use the test and it did not show any statistical difference. In agreement with the aforementioned meta-analysis, with 2572 cases of PPROM, which also did not present a statistically significant difference between the groups undergoing immediate delivery or expectant management.[24-27]

The admission rate of NBs to the ICU in the studied sample was 11.7% (11/94). In the above-mentioned meta-analysis, there were higher rates of this outcome and with a statistically significant difference between the groups, and in the immediate delivery group there was a higher rate (69%) and expectant management (59%), p value < .0001.[24-27]

When comparing the gestational age of PPROM and the newborn's admission to the ICU, the sample was not sufficient for statistical testing. Regarding the interval of days between PPROM and birth versus admission of the NB to the ICU, there was no statistically significant difference.[24,25,26]

Finally, neonatal death was not observed in our sample. In the aforementioned meta-analysis, published in 2018, one neonatal death was observed in the group undergoing expectant management (1/1281) and two deaths in the group undergoing immediate delivery (2/1291). Therefore, due to the low prevalence of this outcome, it was not possible to apply tests to assess the statistical significance.[24,25,26]

CONCLUSION

In women with late PPROM, expectant management, as well as immediate delivery, are acceptable alternatives, given the balance, so far known in the literature, of advantages and disadvantages for the maternal-fetal binomial.

In addition, we suggest extending the study time and, consequently, the sample, so that the expectant approach, which is still little used in other services in Brazil, continues to be adopted at Hospital Estadual Materno Infantil Dr. Jurandir no Nascimento, once that it will be possible to apply statistical tests on all analyzed outcomes and/or find statistical differences that justify a change in conduct.

BIBLIOGRAPHIC REFERENCES

1. ZUGAIB, Marcelo. Obstetrícia. 4ª ed. Barueri, São Paulo: Manole, 2018.
2. K, Marian; C, David. Late preterm rupture of membranes: it pays to wait. The Lancet, Wolverhampton, v.387, p 406-408, janeiro, 2016.
3. Mercer BM, Goldenberg RL, Meis PJ, Moawad AH, Shellhaas C, Das A, et al.; The National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. The Preterm Prediction Study: prediction of preterm premature rupture of membranes through clinical findings and ancillary testing. Am J Obstet Gynecol. 2000;183(3):738–45.
4. Tristão EG. Fatores de risco para parto pré-termo da maternidade do Hospital de Clínicas da Universidade Federal do Paraná no período de 1994 a 1995 [dissertação]. Curitiba: Universidade Federal do Paraná, Brasil, Faculdade de Medicina, Doutor em Ciências; 1996.
5. Khade SA, Bava AK. Preterm premature rupture of membranes: maternal and perinatal outcome. Int J Reprod Contracept Obstet Gynecol 2018;7:4499-505.
6. Ramsey, PS, Lieman, JM, Brumfield, CG, & Carlo, W. (2005). A corioamnionite aumenta a morbidade neonatal em gestações complicadas por ruptura prematura de membranas. American Journal of Obstetrics and Gynecology, 192 (4), 1162-1166.
7. Newton E. Preterm labor,Preterm Premature Rupture of Membranes and chorioamnionitis. Clin Perinatol, 2005; 32 (3): 571-600
8. Ananth CV, Oyelese Y, Srinivas N, Yeo L, Vintzileos AM. Preterm premature rupture of membranes, intrauterine infection, and oligohydramnios: risk factors for placental abruption. ObstetGynecol2004;104:71–7.
9. Galletta MA. Rotura prematura das membranas ovulares. In: Zugaib M, Bittar RE, Francisco RP. Protocolos assistenciais da clinica obstétrica. 5a ed. São Paulo: Manole; 2015. p. 505-13.
10. Lecerf M, Vardon D, Morello R, Lamendour N, Dreyfus M. Comparaison des performances diagnostiques de deux tests de rupture prématurée des membranes (IGFBP-1/PAMG-1) en pratique clinique [Comparison of diagnostic performance of two tests of premature rupture of membranes (IGFBP-1/PAMG-1) in clinical practice]. J Gynecol Obstet Biol Reprod (Paris). 2015;44(9):832–9.
11. Ramsauer B, Duwe W, Schlehe B, Pitts R, Wagner D, Wutkewicz K. Effect of blood on ROM diagnosis accuracy of PAMG-1 and IGFBP-1 detecting rapid tests. J Perinat Med. 2015;43(4):417–22.
12. Eleje GU, Ezugwu EC, Eke AC, Ikechebelu JI, Ezeama CO, Ezebialu IU. Accuracy and response time of dual biomarker model of insulin-like growth factor binding protein-1/ alpha fetoprotein (Amnioquick duo+) in comparison to placental alpha-microglobulin-1 test in diagnosis of premature rupture of membranes. J Obstet Gynaecol Res. 2017;43(5):825–33.
13. Manning FA, Platt LD, Sipos L. Antepartum fetal evaluation: development of a fetal biophysical profile. Am J Obstet Gynecol. 1980;136(6):787–95.
14. Abou El Senoun G, Dowswell T, Mousa HA. Planned home versus hospital

care for preterm pre labour rupture of the membranes (PPROM) prior to 37 weeks' gestation. Cochrane Database of Systematic Reviews 2014, Issue4. Art. No.: CD008053.

15. Kenyon, S., Boulvain, M., & Neilson, JP (2010). Antibióticos para ruptura prematura de membranas. Banco de Dados Cochrane de Revisões Sistemáticas.

16. Mercer BM, Miodovnik M, Thurnau GR, Goldenberg RL, Das AF, Ramsey RD. National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. Antibiotic therapy for reduction of infant morbidity after preterm premature rupture of the membranes. A randomized controlled trial. JAMA. 1997; 278(12):989–95.

17. Brownfoot, FC, Gagliardi, DI, Bain, E., Middleton, P., &Crowther, CA (2013). Diferentes corticosteroides e regimes para acelerar a maturação pulmonar fetal para mulheres com risco de parto prematuro. Banco de Dados Cochrane de Revisões Sistemáticas.

18. Nomura ML, Passini Júnior R, Oliveira UM, Calil R. Colonização materna e neonatal por estreptococo do grupo B em situações de ruptura pré-termo de membranas e no trabalho de parto prematuro. Rev Bras Ginecol Obstet. 2009;31(8): 397–403.

19. Vintzileos AM, Campbell WA, Nochimson DJ, Connolly ME, Fuenfer MM, Hoehn GJ. The fetal biophysical profile in patients with premature rupture of the membranes—an early predictor of fetal infection. Am J Obstet Gynecol. 1985;152(5):510–6.

20. Carlan SJ, O'Brien WF, Parsons MT, Lense JJ. Ruptura prematura de membranas: um estudo randomizado de gestão domiciliar versus hospitalar. Obstetrics & Gynecology 1993 ; 81 : 61 4.

21. Ryan G, Oskamp M, Seaward PGR, Kitch T, Barrett J, Brennan B. Ensaio controlado randomizado de internação vs gestão ambulatorial de PPROM . American Journal of Obstetrics and Gynecology 1999 ; 180 (1 Pt 1): S95.

22. Petit, C., Deruelle, P., Behal, H., Rakza, T., Balagny, S., Subtil, D. Garabedian, C. (2018). Preterm premature rupture of membranes: which criteria contraindicate home care management? Acta Obstetricia et Gynecologica Scandinavica.

23. Quist-Nelson, J., de Ruigh, A. A., Seidler, A. L., van der Ham, D. P., Willekes, C., Berghella, V., Pajkrt, E., Patterson, J., Espinoza, D., Morris, J., Mol, B., Askie, L., & Preterm Premature Rupture of Membranes Metaanalysis (PPROMM) Collaboration (2018). Immediate Delivery Compared With Expectant Management in Late Preterm Prelabor Rupture of Membranes: An Individual Participant Data Meta-analysis. Obstetrics and gynecology,131(2),269–279.

24. J. M., Roberts, C. L., Bowen, J. R., Patterson, J. A., Bond, D. M., Algert, C. S., Thornton, J. G., Crowther, C. A., & PPROMT Collaboration (2016). Immediate delivery compared with expectant management after preterm prelabour rupture of the membranes close to term (PPROMT trial): a randomized controlled trial. Lancet (London, England), 387(10017), 444–452.

25. Van der Ham, D. P., van der Heyden, J. L., Opmeer, B. C., Mulder, A. L., Moonen, R. M., van Beek, J. H., Franssen, M. T., Bloemenkamp, K. W., Sikkema, J. M., de Groot, C. J., Porath, M., Kwee, A., Woiski, M. D., Duvekot, J. H., Akerboom, B. M., van Loon, A. J., de Leeuw, J. W., Willekes, C., Mol, B. W., &Nijhuis, J. G. (2012). Management of late preterm premature rupture of membranes: the PPROMEXIL-2 trial. American journal of obstetrics and gynecology, 207(4).

26. Van der Ham, D. P., Nijhuis, J. G., Mol, B. W., van Beek, J. J., Opmeer, B. C., Bijlenga, D., Groenewout, M., Arabin, B., Bloemenkamp, K. W., van Wijngaarden, W. J., Wouters, M. G., Pernet, P. J., Porath, M. M., Molkenboer, J. F., Derks, J. B., Kars, M. M., Scheepers, H. C., Weinans, M. J., Woiski, M. D., Wildschut, H. I., ª Willekes, C. (2007). Induction of labour versus expectant management in women with preterm prelabour rupture of membranes between 34 and 37 weeks (the PPROMEXIL-trial). BMC pregnancy and child birth, 7, 11. https://doi.org/10.1186/1471-2393-7-11

27. Ferraz, M. F., Lima, T. D. S., Cintra, S. M., Araujo Júnior, E., Petrini, C. G., Caetano, M. S. S. G., Paschoini, M. C., Peixoto, A. B. (2020). Active Versus Expectant Management for Preterm Premature Rupture of Membranes at 34–36 Weeks of Gestation and the Associated Adverse Perinatal Outcomes. Revista Brasileira de Ginecologia e Obstetrícia / RBGO Gynecology and Obstetrics, 42(11), 717–725.

Saccone G; Berghella V. Antibiotic prophylaxis for term or near term premature rupture of membranes: metaanalysis of randomized trials. Am J Obstet Gynecol. 2015; 212 (05): 627.e1-627.e9. DOI: 10.1016/j.ajog.2014.12.034