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ECOCARDIOGRAPHIC CHANGES IN CHILDREN OF DIABETIC MOTHERS HOSPITALISED IN A NEONATAL ICU

MIDIÃ FONSECA LIMA¹, SIMONE CARRIJO SANTOS¹, LORENA CABRAL DE CASTRO LOURENZO¹,
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ABSTRACT

Introduction: Pregnancy is a period where various endocrine metabolic changes occur. With the progressive increase of newborn (NB) survival, echocardiography has become an essential tool for a good diagnosis. **Objectives:** The objective of the present study is to describe the echocardiographic alterations of the children of diabetic mothers and characteristics of these newborns who were admitted in the neonatal intensive care unit. **Methods:** This is a retrospective descriptive study. The variables were extracted from medical records of patients hospitalized in this period. The sample consisted of 782 medical records, but only 37 were children of mothers with diabetes, from January 2017 to July 2019, using inclusion and exclusion criteria to achieve the proposed objective. **Results:** It was observed in the study that most women had on average 2-3 pregnancies equivalent to (46%), 13 patients had 1 equivalent pregnancy (35%), and patients with more than 4 pregnancies were 7, totaling an average of (19%). Regarding abortions, 7 patients showed having had an abortion and 30 patients (81%) had no abortion. Of the 37 deliveries performed, 26 of them were cesarean sections equivalent to (70%). 25 babies (68%) were born preterm. Regarding size, 14 newborns (38%) were GIG (large for gestational age). As for the length of the hospital stay among the 37 newborns 15 of them (41%) were from 1 to 5 days in hospital, 16 newborns (43%) had to stay 6-10 days in hospital, while 6 (16%) had hospitalization over 11 days. Regarding the echocardiographic changes found in the present study, it is worth mentioning that some of the newborns presented more than one alteration in the exams, which differs in the means found. **Conclusion:** The changes in the echocardiograms that prevailed were FOP and PCA with a higher incidence in the children of diabetic mothers. Only 5 showed no changes in echocardiograms.

KEYWORDS: ECHOCARDIOGRAPHIC CHANGES, DIABETIC MOTHERS, NEONATAL.

INTRODUCTION

The pregnancy is a period in which there are several metabolic endocrine changes, the purpose of which is to meet both maternal and fetal needs. These changes in the organism require adaptations to favor the pregnancy and health of both mother and child, and if these demands are not met, they can damage the maternal-fetal prognosis. There is a greater performance of the pancreas and the whole endocrine system, which when not activated, can lead to glucose intolerance¹. The most common metabolic alteration in pregnancy is dysglycemia, with gestational diabetes mellitus (GDM) being the most prevalent form (Guidelines of the Brazilian Society of Diabetes: 2014-2015).

Gestational diabetes is defined as any degree of impaired glucose tolerance, whose onset or detection occurs during pregnancy². It occurs in women whose

pancreatic function is insufficient to overcome insulin resistance due to the secretion of diabetogenic hormones by the placenta.

According to FRANCO (2008)³, gestational diabetes affects globally 5% to 10% of pregnancies and according to population studies carried out in the last decades, the prevalence of gestational diabetes mellitus varies from 1% to 37.7%, with a world average of 16.2% (HOD, et al., 2015)⁴. Still according to FRANCO (2008)³ nowadays, it is estimated that one in six births occurs in women with some form of hyperglycemia during pregnancy, and 84% of these cases would be due to the GDM.

Pregnant women diagnosed with type 1 and type 2 diabetes mellitus are at increased risk of severe congenital malformations⁵, as their effects start already in organogenesis (Guidelines of the Brazilian Society of Diabetes: 2014-2015). Among these complications is

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congenital heart disease, which occurs in 3 to 9% of pregnancies. The most frequent are: transposition of large arteries, double outflow tract of the right ventricle, atrioventricular septal defect, truncus arteriosus, tricuspid atresia, patent ductus arteriosus and hypertrophic cardiomyopathy⁶.

Diabetes screening is performed from the first prenatal consultation, using fasting glucose measurement and with the aim of detecting the presence of pre-existing diabetes. From the 20th week of pregnancy, another measurement of fasting plasma glucose⁷ is performed, with a cut-off point of 92mg/dl to detect gestational diabetes (Guidelines of the Brazilian Society of Diabetes 2017-2018). This cutoff point has a sensitivity of 69% and a specificity of 68% for the diagnosis of diabetes and, therefore, about 35% of pregnant women should undergo a definitive diagnostic test⁷. The oral glucose tolerance test (OGTT) is the procedure of choice and requested between the 24th and 28th weeks of pregnancy⁸.

In the son of a diabetic mother, all organs and tissues may be affected due to hyperglycemia, with no predominance of a specific cardiac malformation. There is evidence that adequate maternal metabolic control at this stage of pregnancy would reduce the incidence of malformations to the levels observed in the general population, which is one of the current goals of treatment for diabetic pregnant women⁹. Therefore, it is worth emphasizing the importance of adequate care for pregnant women and of the conceptus.

The aim of the present study is to describe the echocardiographic changes of the children of diabetic mothers who were admitted at the Neonatal Intensive Care Unit (NICU) of the Hospital e Maternidade Dona Iris (HMDI) in the period between January 1st, 2017 and July 31st, 2019.

METHODS

This is a retrospective descriptive study. The study was carried out with newborns admitted at the NICU of the Hospital e Maternidade Dona Íris, in the city of Goiânia, in the period between January 1st, 2017 and July 31st, 2019. The Hospital e Maternidade Dona Íris is considered a reference for the care of pregnant women and high-risk newborns in the city of Goiânia. Approved by the Ethics and Research Committee of the Hospital e Maternidade Dona Íris (CAAE: 25748719.4.0000.8058).

RESULTS

A total of 782 newborns were admitted to the HMDI NICU during the study period. Of this total, 37 patients were selected for the study.

As for parity, most were multiparous with around 2-3 pregnancies. Regarding abortions, most pregnant women have never had an abortion (table 1).

	Number of patients (N=37)	
	N	%
QUANTITY OF PREGNANCIES		
1	13	35
2-3	17	46
>4	7	19
QUANTITY OF ABORTIONS		
0	30	81
1	6	16
2	1	3

Table 1. Obstetric data regarding number of pregnancies, amount of abortions at HMDI, Goiânia (GO), Brazil, 2017-2019.

Regarding the type of delivery, most were cesarean. The sex of the most prevalent concepts was male. And most of the newborns were premature, but with appropriate weight for gestational age, as shown in Table 2.

	Number of patients (N=37)	
	N	%
TYPES OF DELIVERIES		
Cesarean	26	70
Vaginal	11	30
SEX		
Female	9	25
Male	28	75
CLASSIFICATION FOR GESTATIONAL AGE		
Pre-term (<37sem)	25	68
Term (37s a 41sem)	12	32
Post-term (>42sem)	0	0
CLASSIFICATION BY WEIGHT:		
> 2.501g	24	65
1.500 – 2500g	8	22
Low weight: <1.500	5	13
CLASSIFICATION FOR WEIGHT AND GESTATIONAL AGE:		
AGA (appropriate for gestational age)	22	59
LGA (large for gestational age)	14	38
SGA (small for gestational age)	1	3

Table 2. Classification of newborns in relation to the variables covered in the study: childbirth, sex, gestational age, weight, at HMDI, Goiânia (GO), Brazil, 2017-2019.

Most babies were hospitalized between 1 and 10 days in the neonatal intensive care unit (table 3).

DURATION OF HOSPITALIZATION IN NEONATAL ICU:		
	Number of patients (N=37)	
	N	%
1-5 days	15	41
6-10 days	16	43
>11 days	6	16

Table 3. Number of days spent in a neonatal ICU at HMDI, Goiânia (GO), Brazil, 2017-2019

The most prevalent echocardiographic changes found in these newborns were PFO and ACP as shown in table 4.

ECOCARDIOGRAPHIC CHANGES FOUND:		
	Number of patients	Percentage (%)
Normal: no changes	5	14
PFO (Patent foramen ovale)	28	76
ACP (Artery Channel Persistence)	16	43
PH (Pulmonary hypertension)	5	14
Septum defect	3	8
Hypertrophic cardiomyopathy	3	8
Tricuspid valve insufficiency	1	3

Tabela 4. Resultados das alterações ecocardiográficas obtidas no HMDI, Goiânia (GO), Brasil, 2017-2019

DISCUSSION

When analyzing the amount of pregnancies, it was observed in the study that most women had an average of 2-3 pregnancies equivalent to (46%), in general, pregnancy is poorly tolerated in women with severe autonomic dysfunction, due to the increased risk hypoglycemia, especially in early pregnancy, and increased instability in glycemic control throughout the rest of the pregnancy (American Diabetes Association, 2004).

It appears that of the 37 deliveries performed, 70% of them were cesarean sections. This data is similar to the percentage of cesarean sections in Brazilian studies¹⁰, but in the international scenario the rates are lower¹¹. The increase in deliveries by cesarean section is another of the main complications of GDM. One of the main indications for cesarean delivery is fetal macrosomia and, consequently, a greater chance of tocotraumatism (brachial plexus injuries, clavicle fractures, shoulder dystocia and lacerations of the birth canal) and instru-

mentalization during vaginal delivery¹².

It is important that medical monitoring takes place regardless of the mode of delivery and gestational age, as GDM increases the morbidity and mortality of both the pregnant woman and the newborn.

The classification of newborns was adopted in Brazil by the Ministry of Health in 1994, being recommended by the World Health Organization (WHO), where the parameters related to the weight and gestational age of the newborn are listed. The WHO committee of specialists in Maternal and Child Health divides the gestational age of newborns into three basic categories, namely: pre-term: where all children born alive below 37 weeks of gestational age are described; term: defined for all children born alive between 37 and 41 weeks of gestational age and, finally, post-term: all children born alive with more than 42 weeks of gestational age.

In the present study, from 37 newborns 25 were premature, which is in line with the literature, since one of the complications of a diabetic pregnant woman is premature delivery. About 2/3 of premature births are due to premature labor or premature rupture of membranes and 1/3 due to the maternal and/or fetal indication of birth¹³. It was possible to verify that premature and underweight children when receiving follow-up multidisciplinary team throughout their development have fewer behavior problems than unaccompanied children. We must provide adequate support for these children to achieve a good neuropsychomotor development. Most of the babies were premature, which can be explained by the fact that it was a group of high-risk pregnant women.

In low birth weight newborns (birth weight less than 2500 grams) intrauterine growth restriction (IUGR) is the second leading cause of perinatal morbidity, surpassed only by prematurity¹⁴. In the present study, it was observed that 8 newborns presented that diagnosis. Newborns with very low birth weight are those with birth weight less than 1500 grams, which corresponded to 13% of the studied population. Most newborns had a birth weight greater than 2500g, representing 65% of the studied population. This finding was in agreement with the pathophysiology of diabetes in the management that leads to an increase in insulin levels in the fetus and consequently greater weight gain.

In the study, the number of newborns large for gestational age (LGA) was ¹⁴, which corresponds to 38% of the total. One of the most common complications of gestational diabetes is the birth of a LGA baby. These have a higher risk of tocotrauma, shoulder dystocia, hypoglycemia and respiratory dysfunction. Since the diabetic pregnant woman is more likely to have a LGA child, the indication for cesarean deliveries tends to increase¹⁵.

Due to the different complications that the newborn

of a mother with gestational diabetes is subject to, at various times it is necessary refer them to the neonatal ICU to provide extra intensive care. In our study, 41% of newborns were hospitalized for 1 to 5 days, 43% had to be hospitalized for 6 to 10 days while 16% were hospitalized for more than 11 days. The reasons for admission to the neonatal ICU can be due to congenital abnormalities such as cardiovascular malformations, prematurity, perinatal asphyxia, respiratory distress, metabolic complications (hypoglycemia, hypocalcemia, polycythemia, hyperbilirubinemia), among others¹⁶.

Regarding the echocardiographic alterations found in the studied population, only 14% of the patients had no echocardiographic alterations and some of the newborns presented more than one alteration in the exam.

The incidence of patent foramen ovale (PFO) was 76% in our study. The foramen ovale is an opening in the atrial septum allowing blood to pass from the right atrium to the left atrium in fetal life, which is essential for intrauterine life. Small deviations of blood from the left atrium to the right atrium can occur in the first days of life, which is practically normal. When the newborn's first breath occurs, the foramen ovale gradually closes and, in a few months, completely closes in about 75% of newborns.

Another structure that is essential for fetal life is the ductus arteriosus. This structure allows the blood present in the pulmonary artery to be diverted to the aortic artery, as in intrauterine life blood is not oxygenated in the lungs. Just after birth and the baby's first breaths, the ductus arteriosus becomes unnecessary with its closure occurring in the first days or weeks of life. However, sometimes the ductus arteriosus does not close completely, remaining open, and can cause important clinical repercussions, especially in premature infants. This cardiopathy is called patent ductus arteriosus (PDA). The more premature the baby is, the greater the prevalence of PDA. Some clinical data may suggest the condition, but the diagnosis of certainty is performed by echocardiogram¹⁷.

Of the newborns selected for the study, 43% had a diagnosis of patent ductus arteriosus. In premature infants, especially those with very low birth weight, there is a high risk of patent ductus arteriosus, occurring in 20-40% of babies with birth weight below 1000g. In healthy term newborns, patent ductus arteriosus may be a normal finding in the first 48 hours of life¹⁵.

The incidence of PDA decreases with the increase of the GA. There is a wide variation in this incidence depending on the degree of prematurity and the criteria for defining the disease. When studying 116 NBs with BW below 1,500g, in 1995, it was detected a 36% incidence of PDA and only one patient with GA greater than 28 weeks had the disease¹⁸.

Although PDA is not among the main causes of

death in the neonatal period¹⁹, it can be inferred that the early identification of a hemodynamically significant arterial channel represents a warning sign for a potentially fatal evolution, even when the patient is asymptomatic.

Persistent pulmonary hypertension of the newborn (PPHN) is a syndrome that, despite being recognized for more than 30 years, continues to challenge the clinician, and little is known about its etiology, pathogenesis and prevention. Of the 37 newborns evaluated, 5 of them (14%), had the diagnosis of PH confirmed.

Contrary to adult's primary pulmonary arterial hypertension, the newborn's syndrome is not defined by a specific pulmonary circulation pressure. Whatever the pulmonary arterial pressure, provided it is accompanied by a right-to-left shunt and the absence of congenital anomalies of the heart, confirms the diagnosis of PPHN²⁰.

Certain maternal conditions, such as obesity, diabetes, asthma, black or Asian race, and other neonatal conditions, such as post-maturity and large for gestational age newborns, are associated with a higher incidence of PPHN²¹.

The risk of congenital heart disease among children of diabetic mothers is related to the quality of health care provided to these pregnant women²². Type 1 and type 2 DM are associated with an increased risk of congenital malformations. Heart defects or congenital cardiomyopathies may be associated with syndromes or genetic malformations²³. Among fetal malformations, heart disease affects approximately 8.5 out of 100 born to diabetic mothers, particularly those with inadequate metabolic control in the periconceptional period and the first trimester²⁴. The same author states that the prenatal diagnosis of heart disease has implications that are important for delivery planning in specialized centers and adequate maternal counseling. It is known that hypertrophic cardiomyopathy, which has a genetic inheritance in 20% to 60% of cases, can be asymptomatic for years and manifest only in special situations, hence the concern with adolescents who have this background and who choose physical competitive activities²⁵.

Fetal cardiomyopathy is usually temporary with no apparent consequences in most children, but it can account for a greater susceptibility to hypoxia and fetal death in this population²⁶. The findings of hypertrophic cardiomyopathy in the study were in 3 newborns (8%) of the total evaluated in the study.

The knowledge of functional disorders of the fetal heart, frequent in fetuses of diabetic pregnant women, was acquired with the use of quantitative indices of assessment of ventricular function, mainly using the analysis of the echocardiogram with Doppler in the flows of the mitral and tricuspid valves²⁷. The findings of tricuspid valve in this study were 1 among 37 newborns.

It is essential to have glycemic control, because if there

is poor monitoring, there may be an increase in heart disease rates, making it necessary to control it through assessments and realizations of glycemic profiles, glycat-ed hemoglobin, in addition to having all the appropriate treatment with diet and insulin, when needed.

CONCLUSION

This study showed a high prevalence of cardiac disorders in children of diabetic mothers. Only 5 patients in the total did not show changes in the echocardiogram, which shows the importance of this test in the care of children of diabetic mothers.

An echocardiographic evaluation is able to have high value information correlated to the impact when related to the therapeutic measures used. The echocardiogram is a precision tool for the neonatologist regarding the clinical treatment that will be used, since these newborns may present a complex cardiac alteration or even more than one echocardiographic alteration.

The practice of the neonatologist in performing functional echocardiography is necessary for a cardiac assessment to be carried out dynamically and in sequence to assess the imposed treatments. The support of the pediatric cardiologist is essential to better care for the children of diabetic mothers.

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SERIOUS PRE-ECLAMPSY: URGENCY ASSISTANCE ASPECTS

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ABSTRACT

Introduction: Preeclampsia (PE) is defined as the appearance, after the twentieth week of gestation, of systemic arterial hypertension (systolic arterial pressure - SBP - greater than or equal to 140 mmHg or Diastolic - DBP - greater than or equal to 90 mmHg as measured in two occasions at 4 hours interval) associated with daily proteinuria above 300 milligrams (mg). The severity of this condition involves the failure of several organs associated with peak pressure and may cause deleterious effects of multiple systems, especially vascular, renal, hepatic and cerebral. **Objective:** To establish the clinical and epidemiological profile of pregnant women with severe pre-eclampsia. **Methods:** This is an observational, retrospective, analytical study with patients seen in the emergency room from January to June of 2017, in a total of 12,712. Being selected those with gestational age greater than 20 weeks, presenting hypertensive crisis at the time of hospitalization in the HMDI totaling 81 patients. **Results:** This group was limited to the study of pregnant women presenting only severe preeclampsia. The number of pregnancies in this group was multiparous with 58% and primipara of 32%. Regarding gestational age, it was of over 20 weeks. Regarding the use of previous home medication 59% did not use any medication. Regarding the clinical picture, 60% did not present imminent signs for preeclampsia. The interruption of pregnancy was prescribed in 51% of the patients, being 68% by cesarean section. They did not perform sulfate in 84% of the patients and in those who were hospitalized also did not perform in 78% of the patients. **Conclusion:** The frequency of imminent eclampsia within a group of patients with severe preeclampsia was 39.5%. The frequency of sulfate use in patients with severe preeclampsia presented in this study was 16%. The preferred delivery route was cesarean section with 68% and fetal lethality rate was 5%.

KEYWORDS: PRE-ECLAMPSIA, SEVERE, SCREENING.

INTRODUCTION

Gestational hypertensive syndromes are classified, according to the National Heart, Lung and Blood Institute in 2000, as chronic hypertension, gestational hypertension, eclampsia, superimposed preeclampsia and preeclampsia, which is further subdivided into mild and severe. Pre-eclampsia (PE) means the appearance, after the twentieth week of gestation, of systemic arterial hypertension (Systolic Arterial Pressure - SBP - greater than or equal to 140 mmHg or Diastolic - DBP - greater than or equal to 90 mmHg measured on two occasions with a 4-hour interval) associated with daily proteinuria greater than 300 milligrams. Eclampsia, in turn, is understood when pre-eclampsia is accompanied by seizures. Chronic hypertension is defined as the increase in the aforementioned blood pressure levels, in the preconception period or before the twentieth week of gestation, or even when the pressure remains high after the twelfth week postpartum. When pre-eclampsia does not develop or the pressure normalizes after delivery, it is called transient hypertension. Ges-

tational hypertension is one that also appears after half a gestation in previously normotensive women, but does not have proteinuria above 300 mg. Superimposed pre-eclampsia is characterized by chronic hypertension that presents a sudden increase in proteinuria, and / or pressure or some organic dysfunction (which may also have an increase in uric acid) ¹.

Preeclampsia occurs in the 20th week of pregnancy, it is considered a specific condition of pregnancy, involving the failure of several organs, associated with hypertension, in which there are deleterious effects on multiple systems, particularly the vascular, renal, hepatic and cerebral ².

Some are the severity criteria of pre-eclampsia, being oliguria (less than 500 ml in 24 hours); proteinuria greater than or equal to 3g in 24 hours; Systolic Blood Pressure greater than or equal to 160 mmHg; Diastolic Blood Pressure greater than or equal to 110 mmHg; serum creatinine greater than 1.1mg/dL; thrombocytopenia less than one hundred thousand; increased liver transaminases; presence of visual clouding, scotomas, headache, epigastric pain¹. Due to

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the syndromic aspect of pre-eclampsia, in the absence of proteinuria, it is still diagnosed when there is hypertension associated with some evidence of target organ involvement. Complications make preeclampsia one of the main causes of maternal fetal mortality in the country ².

The diagnosis is made through clinical and complementary exams. An exam widely used in pregnant women at risk is Doppler ultrasonography, it has been widely used as a test to detect preeclampsia in the first and second trimester of pregnancy, well before the appearance of clinical symptoms. This examination will check the blood flow velocity of the uterine artery ⁴.

Preventing pre-eclampsia is not possible due to the lack of knowledge of its etiology, and low-dose aspirin can be used for this purpose in high-risk cases.³

The treatment of pre-eclampsia is with antihypertensive drugs appropriate for pregnant women, where its effects promote the relaxation of the smooth muscle of the peripheral arteries and the decrease in vascular resistance, which can state that the prevention of pre-eclampsia is done through early diagnosis. In some cases, anticonvulsant medications should be used, when premonitory symptoms of the seizure are identified and having a confirmation in this situation, the medication must be used and the eclampsia eminence is confirmed, the obstetric conduct can cause the interruption of pregnancy. Thus, the mechanisms that trigger the disease must be determined and corroborated by public health ⁵.

As it is a pathogenesis with great relevance due to important and serious maternal and perinatal repercussions, it is necessary to determine the best conduct of hypertensive crises in the pregnancy, based on evidence.

The aim of this study is to establish the clinical and epidemiological profile of pregnant women with severe pre-eclampsia.

METHODS

This is a retrospective observational analytical study with patients seen in the emergency from January to June 2018, totaling 12,712. Those with gestational age greater than 20 weeks were selected, presenting hypertensive crisis at the time of admission to the HMDI, totaling 81 patients. Data were collected on a specific form. As for ethical aspects, it is highlighted that the research was based on Resolution no. 466/2012, and the rights of those involved are ensured, with the approval of the CAEE Ethics Committee 89798318.2.0000.8058.

RESULTS

There were 12,712 visits in the emergency department of the Hospital e Maternidade Dona Íris between January and June 2018, the screening was carried out based on the attendance form, 128 patients were screened and due to the lack of data, 47 files were excluded. The mean arterial pressure found in the study was 165 x 105 mmHg.

Aspect	Number of patients (N=81)	
	n	%
AGE		
< 18 years	5	6
18-35 years	64	79
> 35 years	12	15
TOTAL	81	100
PARITY		
1	26	32
2 to 4	48	58
≥ 5	8	10
TOTAL	81	100
GESTATIONAL AGE		
20w – 27w6d	10	12
>28w	71	88
TOTAL	81	100
USE OF PREVIOUS HOME MEDICATION / COMORBIDITIES		
No medication / comorbidity	48	59
With medication / comorbidity	33	41
TOTAL	81	100
MAIN PREVIOUS MEDICATIONS		
Methyldopa	29	88
Nifedipine	2	6
Atenolol	1	3
Cocktail (AIDS)	1	3
TOTAL	33	100

Table 1 - Distribution of cases of severe pre-eclampsia, according to the profile of pregnant women evaluated at Hospital e Maternidade Dona Íris, Goiânia, 2018.

CLINICAL CONDITION	Number of patients (N=81)	
	N	%
NO IMMINENCE SIGNS	49	60
WITH IMMINENCE SIGNS	32	40
TOTAL	81	100
EMERGENCY MEDICATION		
Yes	52	67
No	29	33
TOTAL	81	100
MEDICATIONS USED IN EMERGENCY		
Hydralazine	30	57
Hydralazine + nifedipine	9	17
Hydralazine + methyldopa	4	8
Nifedipine	4	8
Methyldopa	4	8
Hydralazine + nifedipine + methyldopa	1	2
TOTAL	52	100
INTERRUPTION OF PREGNANCY		
Yes	41	51
No	40	49
TOTAL	81	100
ROUTE OF DELIVERY		
CESARIAN DELIVERY	28	68
NORMAL DELIVERY	13	32
TOTAL	41	100
USE OF MAGNESIUM SULFATE		
Yes	13	16
No	68	84
TOTAL	81	100
USE OF MAGNESIUM SULFATE IN HOSPITALIZED PATIENTS		
Yes	13	22
No	47	78
TOTAL	60	100
FETAL DEATH		
Yes	4	5
No	77	95
TOTAL	81	100

Table 2 - Distribution of clinical data on severe pre-eclampsia, according to the profile of pregnant women evaluated at Hospital e Maternidade Dona Íris, Goiânia, 2018.

DISCUSSION

Pre-eclampsia occurs when there is an increase in blood pressure in pregnancy along with the presence of protein in the urine at any time after the 20th week ⁶.

The classification between preeclampsia ranges from mild to overlapping where mild: BP >140/90 (2 occasions spaced by 4h) proteinuria > 300 mg/24h, severe BP > 160/110 (2 occasions spaced by 4h) proteinuria > 5 g/24h; oliguria (<500 ml/24h); epigastric or upper right quadrant pain; visual or brain disorders or small amount of platelets in the blood < 100,000/mm³; lung edema or cyanosis; superimposed: unexpected sudden elevated BP, appearance or sudden increase in proteinuria, hyperuricemia, HELLP Syndrome ⁷. This group was limited to the study of pregnant women who have only severe pre-eclampsia.

Moura et al (2010) ⁸ says that maternal age is a determining factor of complications during the pregnancy period. The gestation of a young woman, as well as the pregnancy that occurs in old age, are considered of gestational risk for preeclampsia. In this context, the age of the studied group ranged from 15 to 42 years, thus representing the extremes of reproductive age, however the group with the highest prevalence was between 18 and 25 years. The study was carried out at Hospital das Clínicas, Universidade Federal de Goiás (HC-UFG), in 2005. It showed that of the 890 births at the Maternity Hospital of HC-UFG, and 129 pregnant women were diagnosed with Hypertensive Syndrome in Pregnancy, with obesity as a risk factor for pre eclampsia. Age over 30 years was a protective factor for pre-eclampsia⁹.

Although hypertension may be the most common symptom of pre-eclampsia, it should not be seen as the initial pathogenic process. The mechanisms by which pre-eclampsia occurs are not determined ⁶.

The number of pregnancies in this group was multiparous with 58% and primiparous with 32%. Badria and Amarin (2005) ¹⁰ reveal that the values referring to mean arterial pressure do not change between primiparous and multiparous.

Regarding gestational age, women over 20 weeks were selected but divided into groups with the third semester having the highest prevalence, corresponding to 88%. Reis et al (2010)¹¹ reveal that there is still no consensus about the classification of pre-eclampsia as far as the moment of its onset during pregnancy is concerned. The most frequently used criterion for early/late differentiation has been the cutoff at 34 gestational weeks. However, onset before the 24th week is associated with high maternal and perinatal morbidity and a 50% chance of recurrence in subsequent pregnancies.

Regarding the use of previous home medication, 59% did not use any medication. In prenatal care, the identification of risk factors related to the development of pre-eclampsia is essential, in order to promote more careful surveillance in order to diagnose the first signs and symptoms

of the disease. This assistance should be aimed at preventing the disease from getting worse and thus reducing maternal death ¹².

Pascoal (2002)⁶ em pacientes que progridem para pré-eclâmpsia grave ou eclâmpsia (convulsões), morte materna pode ocorrer, devido, principalmente, à hemorragia intracerebral. Regarding the clinical picture, 60% had no imminent signs of pre-eclampsia. Pascoal (2002) ⁶ reveal that patients who progress to severe pre-eclampsia or eclampsia (convulsions), maternal death can occur, mainly due to intracerebral hemorrhage. Severe persistent hypertension (diastolic above 110 mmHg), headache, visual disturbances, deterioration of renal function and HELLP syndrome are other signs of serious illness that require immediate termination of pregnancy, these being the main imminent symptoms. Termination of pregnancy was prescribed in 51% of the patients, 68% by cesarean delivery, it is known that in women with preeclampsia, it is recommended to induce labor with misoprostol¹³. Linhares et al (2014)¹⁴ demonstrated that pregnant women with a history of pre-eclampsia or high blood pressure were 2.5 times more likely to evolve to cesarean delivery, when compared to patients who did not have such a history.

Some studies show contradictory results regarding the treatment of pre-eclampsia and it is admitted that some factors are important in the therapeutic decision. It is known that the best treatment is childbirth since a woman's symptoms usually seem to resolve after the baby is born. However, there are other treatments available to prevent peaks in blood pressure that can damage the woman's organs and prevent the fetus from being born prematurely. In severe cases, the best treatment is magnesium sulphate, as its use is proven to prevent and avoid seizures ¹⁵. No sulphate treatment was performed in 84% of patients and in those who were hospitalized, it was not performed in 78% of patients. Magnesium sulfate (MgSO₄) is the most commonly used agent for the treatment of eclampsia, however it should be used in severe pre-eclampsia to avoid complications ¹⁶. According to ACOG and SOGESP recommendations in 2012, magnesium sulfate should be administered in patients with severe preeclampsia. The administration of magnesium sulfate should be suspended if the respiratory rate is less than 16 incursions/min, the parallel reflexes are completely absent and the diuresis is less than 100ml in the previous 4 hours, thus the importance of the patient being properly monitored when using this drug¹⁷. Eclampsia is estimated to occur in 1 in 200 cases of pre-eclampsia when magnesium sulfate is not used (PASCOAL, 2002)⁵. Orcy et al (2007)¹⁸ the appropriate treatment for pre-eclampsia is focused on reducing the incidence of complications in these mothers, such as strokes and mortality from eclampsia. In addition, it reduces the prematurity rates and the length of stay of the newborn baby in the hospital environment. The only definitive treatment for

pre-eclampsia and eclampsia is childbirth; however the prevention and control of seizures are important in reducing maternal complications, including death.

There are many efforts to find an efficient method that reduces the incidence and severity of pre-eclampsia and some possible forms of prevention or benefits, but without evidence for its recommendation, it is the diet with protein or salt restriction, exercises, supplementation with zinc, magnesium, antioxidant vitamins which are C and E and fish oil or other sources of fatty acids, low molecular weight heparin and heparin and antihypertensive drugs.⁴

For Couto and Kaiser (2003)¹⁹ the use of aspirin in low doses and calcium replacement in high-risk women as a treatment for effective prevention and calcium supplementation showing the reduction of blood pressure in pregnant women. Early detection, careful monitoring and treatment of pre-eclampsia are crucial in preventing mortality related to this disorder.

CONCLUSION

The frequency of impending eclampsia within a group of patients with severe preeclampsia is 39.5%.

The frequency of the use of sulfate in patients with severe preeclampsia presented in this study was 16%.

The preferred mode of delivery was cesarean with 68% and the fetal lethality rate was 5%.

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NEONATAL ANOXIA: A PREVALENCE STUDY

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ABSTRACT

Introduction: Anoxia is characterized by the decrease or insufficiency of oxygenation in the blood, which cannot properly supply the metabolic requirements. Neonatal Anoxia is one of the leading causes of death in children under two months of age and its incidence varies from 1 to 1,5% in several centers. Objectives: To determine the prevalence of neonatal anoxia in a reference public maternity hospital in Goiânia, Goiás; to identify the clinical profile of the newborns (NBs) affected with neonatal anoxia in both birth routes; to trace the profile of the infants born with anoxia in both birth routes; to determine the most incident risk factors for neonatal anoxia in both birth routes. Methodology: It was analyzed the prevalence and factors related to neonatal anoxia through the data collected in the newborn's admission form in a municipal maternity hospital in Goiânia, Goiás, from January 2017 to October 2018. Results: In this period, there were 7126 births, among which 36 newborns with Apgar scores from 0 to 5 were found for more than 5 minutes. Newborns younger than 37 weeks accounted for 26,7% in normal deliveries and 71,5% in cesarean deliveries. NBs smaller than 2500g totaled 33,3% in normal deliveries and 62% in cesarean deliveries. In both routes, the male gender was predominant. Urinary tract infection was present in 33,3% of pregnant women who had normal delivery and 38% of those who had cesarean sections. Meconial amniotic fluid was found in 9,5% of normal deliveries and 33% of cesarean. Conclusion: The prevalence of neonatal anoxia was 0,5% and is approaching the average of some Brazilian states. It was possible to relate prematurity, male gender, low birth weight, urinary tract infection, gestational hypertension and pre-eclampsia, meconium amniotic fluid and prolonged labor with neonatal asphyxia.

KEYWORDS: NEONATAL ANOXIA, PREVALENCE, RISK FACTORS.

INTRODUCTION

Anoxia is characterized by a decrease or insufficiency of oxygenation in the blood, which is unable to supply metabolic requirements correctly. The terms hypoxia and asphyxia can be used to characterize the same situation ¹. Adequate oxygen supply to tissues is essential for cells to maintain aerobic metabolism and vital functions ². Any process that compromises maternal oxygenation, decreasing blood flow from the mother to the placenta or from the placenta to the fetus, hinders gas exchange through the placenta or in the fetal tissue itself, or increases fetal oxygen requirements, can lead to perinatal asphyxia ³.

Neonatal anoxia contributes greatly to mortality rates. According to the Pan American Health Organization (PAHO), anoxia is a major cause of death in children under two months^{4,5}. The worldwide estimate is that four million newborns die each year, mostly due to preventable causes, the main causes of deaths in the neonatal period being premature birth (28%), serious infections (26%) and perinatal asphyxia (23%)⁶. The incidence of neonatal asphyxia varies from 1 to 1.5% in several centers and is directly correlated with gestational age and birth weight ⁷.

The American Academy of Pediatrics reserves the term severe asphyxia for patients who meet the following criteria: metabolic or deep mixed acidosis (pH <7.0) in umbilical cord blood; Apgar score of 0-3 for more than 5 minutes; neonatal neurological manifestations (convulsions, coma or hypotonia);

multisystemic organ dysfunction: cardiovascular, gastrointestinal, hematological, pulmonary or renal systems ⁷. For the American College of Obstetricians and Gynecologists, an Apgar less than 5 in the fifth and tenth minutes of life clearly increases the relative risk of cerebral palsy. The degree of Apgar abnormality in the fifth and tenth minutes correlates with the risk of cerebral palsy ⁸.

Asphyxia is known to be the most important cause of cerebral palsy, an irreversible sequel characterized by a lesion of focal origin that occurs in the developing brain. Although the sequelae are more often neurological, it is necessary to emphasize that in perinatal asphyxia, the involvement is multi-organ ⁷. In addition, the degree of perinatal asphyxia reflects the quality of care provided to pregnant women in the prenatal period and during delivery, as well as the immediate care of the newborn ⁹.

Therefore, the objective of this study is to determine the prevalence of neonatal anoxia in a public maternity of reference in Goiânia, Goiás.

METHODOLOGY

Cross-sectional and retrospective observational study. The research was developed at Hospital e Maternidade Dona Iris (HMDI), Goiânia-GO, from May to November 2018. The hospital in question is part of the municipal health network in Goiânia and specializes in humanized care in gynecology, obstetrics and low, medium and high risk neonatology, with the

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objective of developing health care for women and children, on an outpatient or hospital basis, to users of the Unified Health System (SUS). It also acts as a teaching, research and extension hospital. The research was approved by the Research Ethics Committee CAEE 99642918.9.0000.8058.7210.

The sample consisted of newborns assisted at the institution of choice, from January 2017 to October 2018, chosen for convenience through the Apgar scores.

Inclusion criteria: Newborns between January 2017 to October 2018 with Apgar scores from 0 to 5 for more than 5 minutes.

Exclusion criteria: Newborns with an Apgar score greater than 5 in the 5th minute of life, newborns with gestational age less than 22 weeks and/or 500 grams, newborns with medical records and inconsistent data.

Tabela de cálculo			
Pontos	0	1	2
Frequência cardíaca	Ausente	< 100/min	> 100/min
Respiração	Ausente	Irregular/bradipneia	Forte/choro
Tônus muscular	Flácido	Flexão de pernas e braços	Movimento ativo/boa flexão
Prontidão reflexa	Ausente	Alguns movimentos/careta	Expíritos/choros
Cor da pele	Cianose central/palidez	Cianose de extremidades	Rosado

The medical records of newborns were analyzed and the following variables were collected:

Variables in relation to newborns

- Gestational age
- Gender
- Birth weight

Variables in relation to mothers

- Prenatal care
- Congenital infections (STORCH)
- Drug use
- Pathological history

Variables in relation to childbirth

- Amniotic fluid
- Intercurrences (bleeding, placental abruption, prolonged expulsive period, difficult extraction, use of forceps, others)

RESULTS

In this period, there were 7126 deliveries (adding the cesarean deliveries to the normal deliveries), among which 36 newborns were found who met the inclusion criteria.

NBs variables	Normal		Cesarean	
	Less than 37 weeks	More than 37 weeks	Less than 37 weeks	More than 37 weeks
Gestational age	26,7%	73,3%	71,5%	28,5%
Gender	Female 40%	Male 60%	Female 43%	Male 57%
Weight	Less than 2500g 33,3%	More than 2500g 66,7%	Less than 2500g 62%	More than 2500g 38%

Table 1: Distribution of variables of newborns born at HMDI, Goiânia, 2018.

Variables	Normal	Cesarean
Prenatal		
Had prenatal care	80%	85,7%
Had no prenatal care	6,7%	9,5%
No information	13,3%	4,8%
Congenital infections		
Did not have STORCH	73,3%	95,2%
Syphilis	6,7%	-
No information	20%	4,8%
Use of alcohol and legal or illegal drugs		
Yes	-	9,5%
No	93,3%	90,5%
No information	6,7%	-
Pathological history		
UTI at some point during pregnancy	33,3%	38%
SAH/SHGD	6,7%	28,5%
PROM	13,3%	-
Fever before labour	6,7%	-
Cerclage	6,7%	4,8%
No disease	33,3%	28,5%
GDM	-	9,5%
Leukocytosis before delivery	-	4,8%
Hypothyroidism	-	4,8%
Placenta previa	-	4,8%

Tabela 2: Distribuição das variáveis maternas no HMDI, Goiânia, 2018.

Variables	Normal	Cesarean
Characteristics of amniotic fluid		
Clear amniotic fluid	33,3%	47,6%
Meconium amniotic fluid	33,3%	9,5%
Purulent amniotic fluid	6,8%	4,8%
Smelly amniotic fluid	6,8%	-
Bloody amniotic fluid	-	9,5%
No information	20%	28,5%
Complications		
Extended expulsive period	20%	-
Difficult extraction	20%	4,8%
Tight nuchal Cord	20%	-
Pelvic NB	13,3%	4,8%
Labor over 12 hours	6,8%	-
Shoulder Dystocia	6,8%	-
Fetal bradycardia	6,8%	-
Limb prolapsed	6,8%	-
No complications	26,6%	23,8
Use of forceps	-	4,8%
PPA	-	19%
Fetal bradycardia	-	14,2%
Transverse NB	-	4,8%
Fetal centralization	-	4,8%
Bleeding	-	4,8%
No information	-	4,8%

Table 3: Distribution of delivery variables at HMDI, Goiânia, 2018.

DISCUSSION

The prevalence found in the research unit is 0.5% of newborns with this condition. Souza¹⁰ found that the prevalence of neonatal asphyxia in Brazil was between 1.4% to 6.2% among the states of the federation. In other countries, the prevalence varied between 1 and 1.5%, being directly related to gestational age and birth weight³. Herrmann¹¹ concluded that neonatal anoxia affects 2 to 4 newborns per 1,000 live births. Of the affected newborns, 20% to 50% may have hypoxic-ischemic encephalopathy and, among the survivors, 25% evolve with permanent neurological sequelae, with or without mental retardation, learning disorders, seizure disorders and cerebral palsy.

Regarding the type of delivery, 41.7% of newborns with neonatal anoxia were born by normal delivery and 58.3% by cesarean delivery. This result is in agreement with studies by Bailit et al¹², in which the practice of cesarean section, in contrast to being protective of the low Apgar score, was considered a risk factor when the number of cesareans exceeded the predicted number of cesareans. This view, however, has a bias, since most cesarean sections already have fetal impairment or premature delivery, possibly iatrogenic, in the presence of fetal distress that requires early delivery, that is, asphyxia is prior to the cesarean section and not determined by it. Therefore, the operation is done as a way of treating asphyxia.

Regarding gestational age, this study demonstrated a relationship between prematurity and anoxia in newborns delivered by cesarean section, totaling 71.4%. It was not possible to establish a relationship between prematurity and anoxia in newborns with normal birth. Currently, gestational age less than 37 weeks is considered one of the main risk factors for neonatal asphyxia. In Souza¹⁰ it was observed that as the gestational age and weight increase, the risk of suffocation is reduced. Other studies such as Santa Helena et al¹³ corroborate that prematurity is a risk factor for neonatal mortality, with a risk 27 times higher for mortality in the neonatal period than newborns with gestational age above 37 weeks.

Male gender was associated with the occurrence of neonatal anoxia, with 60% of newborns delivered by normal delivery and 57% of newborns delivered by cesarean section being male. These data is corroborated by the study by Bekedam et al¹⁴ and Cunha et al¹⁵, in which there was a strong association between males and the increased risk of fetal distress and consequent asphyxia, with females being a protective factor. Other studies such as Sutton et al¹⁶ and Heinonen and Saarikoski¹⁷ also indicate male gender as a risk factor for neonatal anoxia.

Regarding birth weight, there was a relationship with neonatal asphyxia, totaling 62% of newborns delivered by cesarean section. It was not possible to establish a relationship between birth weight and neonatal asphyxia among newborns with normal birth. There is a consensus among the authors that low birth weight (<2500g) is a factor that contributes to neonatal asphyxia. The World Health Organi-

zation has established birth weight as an isolated factor of the greatest importance for child survival. It is known that deaths in newborns with adequate weight are considered preventable by simple and low-cost interventions during childbirth^{18,19}. Such measures include good neonatal care, making it possible to reduce neonatal mortality from asphyxia in up to 45% of cases.

Regarding prenatal care, this study showed no relationship with neonatal asphyxia. However, there is a bias, since it was not counted how many consultations performed by each pregnant woman and, mainly, the quality of care provided during prenatal care. Prenatal care is an important intervention tool during pregnancy, ensuring health and satisfactory care throughout pregnancy. The number of prenatal visits is a variable that is directly related to the risk of perinatal asphyxia^{15,20}.

It was not possible to associate neonatal asphyxia and congenital infections in the present study, despite the well-known repercussions of toxoplasmosis, rubella, cytomegalovirus, herpes and syphilis described in the literature. There was also no association between the use of alcohol, tobacco and drugs during pregnancy and neonatal asphyxia, although there is consensus among previous studies that the use of alcoholic beverages during pregnancy brings harm to the fetus, such as abnormalities and changes in the central nervous system, being dose-dependent²¹ and that perinatal and neonatal outcomes are unfavorable in pregnant women using legal or illegal drugs^{22,23}.

In the present study, urinary tract infection (UTI) was considered the biggest complication in the gestational period, affecting 33.3% of pregnant women who evolved to normal delivery and 38% of pregnant women who had a cesarean delivery. It is known that the frequency of maternal disorders can trigger perinatal complications such as asphyxia, contributing to neonatal mortality in 10 to 20% of cases²⁴. Still on perinatal complications, studies by Mazor-Dray et al²⁵, highlighted cerebral palsy/mental retardation and perinatal death as consequences of urinary tract infection in pregnancy. Hypertension and specific hypertensive gestation syndrome (SHGS) were also factors associated with perinatal asphyxia, present in 6.7% of pregnant women who progressed to normal delivery and 28.5% of pregnant women who had cesarean delivery, corroborated by previous studies on the subject^{26,27}.

Regarding amniotic fluid, in this study there was an association between meconium amniotic fluid and neonatal asphyxia, being present in 33.3% of normal deliveries and 9.5% of cesarean deliveries. Milsom²⁸, Souza¹⁰ and Batista²⁹ concluded that meconium fluid is related to perinatal asphyxia. Meconium fluid is considered an indicator of fetal distress, especially in the presence of hypoxia or acidosis. According to Beligere & Rao³⁰, preterm infants with meconium amniotic fluid at the time of delivery have a greater risk of neurological disorders in the future when compared to term newborns. Approximately 40% of newborns who are born amid meconium amniotic fluid had cerebral palsy compared to 10% of the

same group with clear fluid.

Prolonged labor was related to neonatal asphyxia in this study, having occurred in 20% of normal births. Although the influence of prolonged labor on fetal well-being is considered controversial, some studies consider that attention to conducting labor can reduce perinatal mortality by reducing asphyxia^{31,32}. Intrapartum asphyxia can be prevented by standard procedure (fetal auscultation every 30 minutes during the first period and every 5 minutes during the expulsion period).

CONCLUSIONS

The prevalence of anoxia in this health unit is 0.5% of newborns.

The profile of the NBs found for normal delivery was of gestational age greater than 37 weeks, male and weighing more than 2500g. The profile of newborns born surgically was of gestational age less than 37 weeks, male and weighing less than 2500g.

The maternal profile found for normal delivery was that of mothers who had UTI at some point during pregnancy, performed prenatal care, denied use of alcohol or licit/illicit drugs and had no infections (STORCH). In surgical delivery, UTI was also considered a risk factor, as well as SAH / SHGS.

It was possible to associate prematurity, male gender and low birth weight with neonatal anoxia among newborn variables, just as it was possible to associate neonatal anoxia with urinary tract infection and SAH/SHGS among maternal variables. Regarding obstetric variables, there was an association between meconium amniotic fluid and prolonged labor with neonatal asphyxia.

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CASE REPORT

MALIGNANT BREAST NEOPLASM WITH POSSIBLE PLEURAL METASTASIS: A CASE REPORT

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ABSTRACT

Introduction: In patients diagnosed with breast cancer, distant metastases occur mainly in the brain, lungs, liver and bones. With regard to cases of pulmonary metastasis, neoplastic pleural effusions are common and are associated with a worse prognosis^{2,3}, and for diagnosis the analysis of pleural fluid is used, in addition to biopsy results of the parietal pleura. Early diagnosis and treatment of malignant pleural effusion are essential to promote a better quality of life for patients with advanced cancer. **Case report:** female patient, 52 years old, diagnosed with malignant breast cancer diagnosed in 2004. Undergoing surgical and chemotherapy treatment of the tumor. Evolved with recurrent pleural effusion secondary to probable pleural metastasis, which interfered with the patient's quality of life. Relief and diagnostic thoracentesis was performed at first with evidence of good pulmonary expandability at control chest x-rays after the procedure. Therefore, we opted to perform videothoracoscopic pleuroscopy, pleurodesis with sterile talc, pleural biopsy and thoracoscopy with closed pleural drainage in a water seal. The patient evolved well in the postoperative period and showed excellent results after the procedure. **Discussion:** Pleural effusion due to metastatic malignancy causes significant impairment of respiratory function, compromising the quality of life of patients, due to strenuous symptoms such as dyspnea, chest pain, anorexia and weight loss. Although a cure is not possible, palliative treatment performed successfully, as in the case presented above, allows months to years of productive life, avoiding the need for hospitalization and recurrent thoracentesis.

KEYWORDS: PLEURAL METASTASIS; MALIGNANT NEOPLASM; BREAST CANCER; PLEURODESIS, MALIGNANT PLEURAL EFFUSION.

INTRODUCTION

The incidence of breast cancer in the world, according to the latest worldwide estimate, in the year 2018, indicates 2.1 million new cases. In Brazil, it is assumed that for each year of the 2020-2022 triennium there will be 66,280 new cases of breast cancer. This increase in the incidence rate is due to the best strategies for early detection, increased diagnostic capacity and improvements in cancer care. Malignant neoplasm of the female breast, disregarding non-melanoma skin tumors, is the most frequent tumor in all regions of Brazil, with an estimated risk of 45.24 per 100 thousand in the Midwest Region¹. Distant metastases in patients diagnosed with breast cancer occur mainly in the brain, lungs, liver and bones. With regard to cases of lung metastasis, neoplastic pleural effusions are common and are associated with a worse prognosis^{2,3}. In these cases, pleural fluid analysis is used for diagnosis to identify malignant cells, in addition to biopsy results of the parietal pleura, which provide evidence of the spread or progression of the primary disease, with a consequent reduction in the expectation and quality of life. Early diagnosis and treat-

ment of malignant pleural effusion are essential to promote a better quality of life for patients with advanced cancer.

CASE REPORT

A 52-year-old female patient was admitted to the emergency room (ER) of the Hospital das Clínicas of the Federal University of Goiás (HC-UFG) with dyspnea, due to long-standing minimal efforts, which had worsened two days before. She referred numerous visits to the ER with this same complaint, with repeated thoracentesis due to pleural effusion with cytology suggesting neoplasia. She had a previous history of breast cancer treated in 2004 with total mastectomy, axillary emptying and breast reconstruction in 2005, in addition to bone metastasis under treatment with xeloda. Relief thoracentesis was then performed with the removal of 2 liters of serous fluid. A chest X-ray after thoracentesis is shown in Figure 2 with good lung expansion. The patient was admitted for pleurodesis. She brought a control CT scan of the chest shown in figure 1, which showed a moderate hydropneumothorax on the right, associated with atelectatic bands

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in the right lower lobe, also noting some areas of ground glass adjacent to the atelectasis area, pleural effusion, increased lymph nodes in number in the mediastinal chains with associated adenomegalies, the largest being subcarinal. These findings favor the possibility of neoplastic involvement secondary to the previously known neoplastic comorbidity. She underwent videothoracoscopic pleuroscopy, pleurodesis with sterile talc, pleural biopsy and thoracoscopy with closed pleural water seal drainage. There was a favorable evolution in the immediate postoperative period, chest X-ray shown in Figure 3, with pleura almost entirely on the periphery. Respiratory and motor physiotherapy were intensified, asymptomatic patient, drainage of 200 ml of serous aspect, discharged to return in one week to the clinic. The patient remains asymptomatic, undergoing chemotherapy again and awaiting the result of a pleural biopsy.

DISCUSSION

Pleural effusion due to metastatic malignancy causes significant impairment of respiratory function in many people, compromising the quality of life of patients, due to strenuous symptoms such as dyspnea, chest pain, anorexia and weight loss. Although a cure is not possible, palliative treatment performed successfully, as in the case presented above, allows months to years of productive life, avoiding the need for hospitalization and repeated thoracentesis^{2,4}. Successful palliative treatment requires the obliteration of the pleural space, either by pleurectomy or by antineoplastic, antimicrobial or radioisotope agents. Pleurodesis, as performed in this case, fuses the parietal and visceral pleura, leading to the obliteration of that space, and thus preventing the accumulation of fluid. The detailed mechanism of this procedure is unknown, but it is suspected that inflammation or fibrosis by activating the transforming growth factor beta plays a crucial role³.

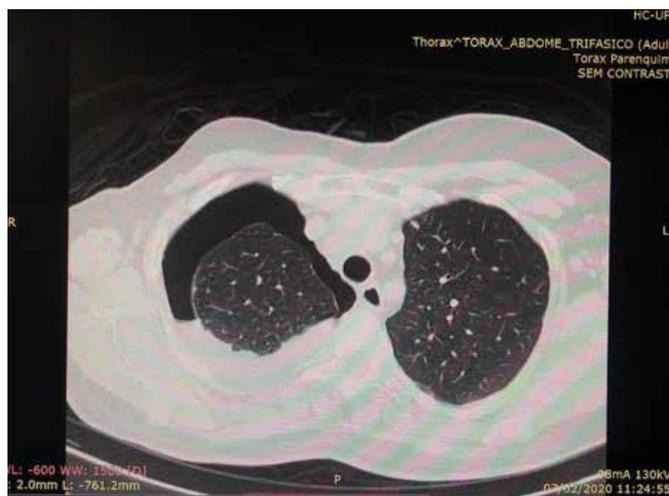


Figure 1: Moderate hydropneumothorax associated with pleural effusion on the right.



Figure 2: Anteroposterior chest x-ray after relief thoracentesis.

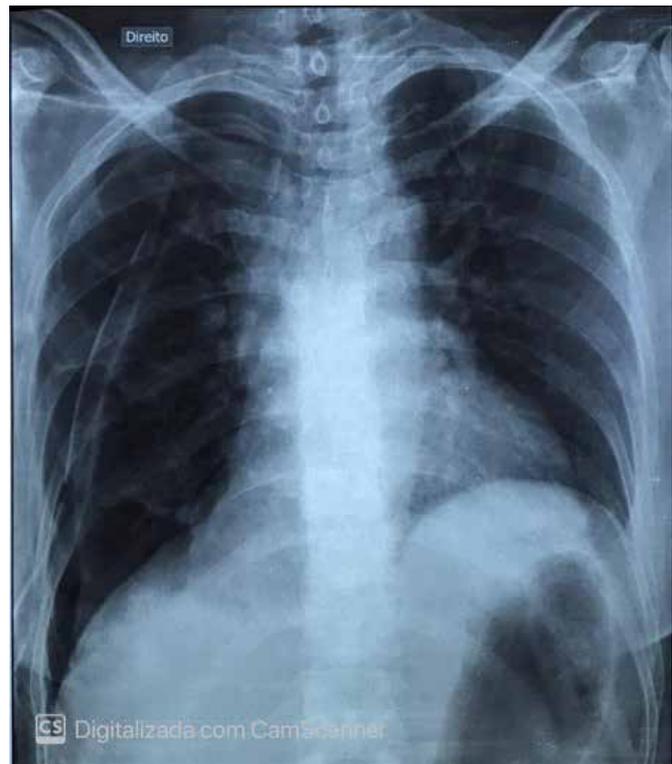


Figure 3: Anteroposterior chest x-ray in the immediate postoperative period of laparoscopic pleuroscopy, pleurodesis with sterile talc, pleural biopsy and thoracoscopy with closed pleural water seal drainage.

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CASE REPORT

CASE REPORT: HETEROTOPIC PREGNANCY WITH OVARIAN IMPLANTATION

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ABSTRACT

Heterotopic pregnancy is an extremely rare condition characterized by an ectopic pregnancy combined with eutopic pregnancy. Assisted reproduction treatment is responsible for the incidence increase of this condition. Our case presents a patient first diagnosed with only ovarian pregnancy which is a rare type of ectopic pregnancy, being considered a gynecological emergency and a risk to maternal life. After surgical treatment the obstetric ultrasound showed a simultaneous eutopic pregnancy, characterizing a case of heterotopic implantation. In the case presented, there was difficulty in the diagnosis, with eutopic pregnancy being suspected only after the resolution of the ovarian pregnancy. This case highlights the importance of conducting post-resolution clinical follow-up of ectopic pregnancies and also that valuing the patient symptoms is essential. It also highlights the relevance of excluding an ectopic pregnancy, especially when the patient has many risk factors, such as assisted reproduction. In addition, our case emphasizes that the presence of an ectopic pregnancy in the existence of a eutopic one should not be disregarded, being the inverse fact true.

KEYWORDS: ECTOPIC PREGNANCY; OVARIAN PREGNANCY; HETEROTOPIC PREGNANCY; DIAGNOSTIC; ULTRASOUND

INTRODUCTION

Heterotopic pregnancies (HP) are defined as the simultaneous presence of eutopic and ectopic pregnancies. The first description of a pregnancy of this type was made in 1708. There are few estimates of incidence in the literature, the most accepted being that of 1 for 30,000 spontaneous pregnancies¹. However, this incidence is related to natural pregnancies. With the advancement and increasing use of assisted reproduction techniques, the incidence of heterotopic pregnancy has been increasing a lot. When using such methods, it can vary from 0.09% to 1.00%²⁻⁵.

The risk factors for the heterotopic pregnancy are the same for the ectopic pregnancy, including tubal dysfunction, pelvic inflammatory disease, surgical manipulation of the uterus, previous ectopic pregnancy, infertility (which in itself can indicate tubal dysfunction)⁶ and use of assisted reproduction techniques, the latter being an increasing risk factor in this scenario, being the main target of discussion in recent publications on heterotopic pregnancy².

Ovarian pregnancy is the most common form of non-tubal ectopic pregnancy, occurring in about 0.5% to 3% of ectopic pregnancies, and its causes are not fully understood⁷. It is considered a gynecological emergency, being one of the main complications of pregnancy in the first trimester⁸.

According to the Spiegelberg criteria, an ovarian pregnancy is the one that occurs in the presence of a gestational sac in an ovarian position and partially surrounded by the ovarian parenchyma, this set being connected to the uterus by the ovarian ligament⁸.

The diagnosis of this condition usually occurs mainly during surgery, being still confused with a ruptured corpus luteum, requiring anatomopathological examination to close the diagnosis⁹.

In the case presented, we will see a heterotopic pregnancy in which the patient has an embryo implanted in the ovary (characterizing an ectopic ovarian pregnancy) and the other embryo in its typical place.

CASE REPORT

Patient, D.A.R, 37 years old, nulligravid, with complaint of infertility for two years, started monitoring to become pregnant after myomectomy by video hysteroscopy. After two months of the rest period, a measurement of plasma b-HCG was performed with a positive result. However, the patient presented with severe abdominal pain in the following week. The performance of transvaginal ultrasonography (US) showed the presence of free fluid in the abdominal cavity and the presence of a left adnexal mass with a diagnosis of ruptured ectopic pregnancy.

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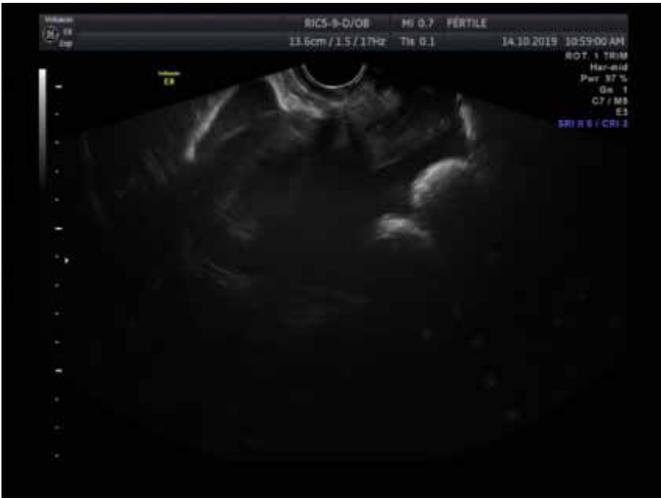


Figure 1: Obstetric ultrasound showing the presence of free fluid in the abdominal cavity
Source: Fértilé diagnósticos



Figures 3 and 4: Healthy newborn
Source: Author's Files

Patient underwent laparoscopic surgical treatment. However, in the following week, she sought care because she reported continuation of gestational symptoms, and a new transvaginal US was performed. This showed the presence of a normal inserted gestational sac, indicating possible heterotopic pregnancy. The 6-week-old fetus was visualized the following week on a new obstetric USG. The evolution of topical pregnancy was usual, without complications.



Figure 2: 12-week obstetric ultrasound
Source: Fértilé Diagnósticos

The delivery took place at term, with 39 weeks by cesarean section, a newborn male with 3,245 kg and APGAR 9 and 10.

DISCUSSION

The challenge regarding HP is its diagnostic difficulty. In the case in question, for example, the ovarian pregnancy became evident (which is rare in itself, occurring in 1-3% of ectopic pregnancies and 0.15% of pregnancies as a whole) and only after its resolution and maintenance of the symptoms the eutopic pregnancy was suspected. Transvaginal ultrasound is the method of choice in the diagnosis of HP, which, being performed by an experienced professional, has important sensitivity in the diagnosis⁵. Laboratory tests fail to diagnose due to the presence of two overlapping pregnancies.

The case shows the importance of carrying out clinical follow-up, with armed propaedeutics, in the follow-up of patients after resolution of ectopic pregnancy, in addition to shedding light on the valorization of the patient's symptoms.

The management of an ectopic pregnancy is controversial and full of nuances. The objective is to preserve the life of the mother and the viable intrauterine fetus, which contraindicates conventional treatments for ectopic pregnancies, such as the use of methotrexate. The resolution of an ovarian pregnancy is usually done by oophorectomy, however conservative methods such as cystectomy or wedge resection have proven to be good in treating this condition. The laparoscopic approach is always preferred due to better recovery and less risk. However, in unstable patients or those who would have difficult access, laparotomy is the best option¹⁰. Early diagnosis and early treatment are key points in this regard because laparoscopic management leads to less manipulation of the pregnant uterus and better prognosis for viable pregnancy.

The case draws attention due to the fact that the eutopic pregnancy was only diagnosed after resolution of the ectopic pregnancy. The viability and conclusion of the

pregnancy show the importance of an adequate management of ectopic pregnancy and the case highlights the importance of excluding an ectopic pregnancy whenever possible, especially when there are risk factors for this, including the use of techniques of assisted reproduction having gigantic importance. It is alert to the fact of never disregarding an ectopic pregnancy due to the presence of eutopic pregnancy, the opposite being also true.

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CASE REPORT

EPIDEMIOLOGICAL PROFILE OF PARTURIENTS ATTENDED IN THE NORMAL CHILDREN CENTER IN A REFERENCE HOSPITAL IN GOIÂNIA

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ABSTRACT

Aim: To describe the epidemiological profile of parturients treated at Hospital e Maternidade Dona Íris in Goiânia, Goiás. **Materials and Methods:** Epidemiological, retrospective, cross-sectional, descriptive study of quantitative approach. Data from the natural birth book of pregnant women attended between September 1, 2018 and July 29, 2019 who underwent normal birth were included. The variables studied were age, type of pregnancy, health problems, gestational age, type of delivery, sex, and weight of the newborn, as well as Apgar scores at 1 and 5 minutes. **Results:** The average age was 24.25 ± 6.01 years, 51% were multiparous and 99% with single pregnancy. Prematurity was present in 11.2% and the extreme prematurity rate was 36.6% when we considered both adolescents and young adults. Concerning the comorbidities identified, 1.3% was due to hypertension and 0.3% to Diabetes Mellitus. Most newborns were male (51.2%) and weighing more than 2500 g (90.9%). Apgar score ≥ 7 was present in 92% of newborns and 98.5% in the 5th minute. **Conclusions:** The majority of the parturients were between 22 and 29 years old, multiparous, with single pregnancy and gestational age above 37 weeks. Extreme prematurity was present in 1.7% and 9.6% were premature. Most newborns were male (51.2%) and Apgar at 1 and 5 minutes greater than or equal to 7 was above 90%.

KEYWORDS: APGAR COEFFICIENT. CHILDBIRTH PREMATURE LABOR. RETROSPECTIVE STUDY. BIRTH WEIGHT.

INTRODUCTION

The pregnancy is a unique moment in a woman's life. Several physiological, social and mental changes occur during this period and quality prenatal care is essential for the pregnant woman to feel protected so that health professionals can act at the right time. Knowing how to identify potential risk factors for health complications of the mother-fetus and mother-newborn binomial allows preventing and acting on adverse events related to the obstetric health of patients and their concepts¹.

Among the risk factors for complications during pregnancy, arterial hypertension and diabetes can be highlighted. AH has already been associated with premature births, low birth weight at birth and maternal death^{2,3}. In the case of maternal diabetes, it has already been associated with a higher occurrence of stillbirths⁴, early newborn hypocalcemia and prematurity, among other complications⁵.

The World Health Organization defines preterm birth as that which occurs before the 37th gestational

week. Prematurity can be further subdivided into extreme prematurity (< 28 weeks), true preterm (28-32 weeks) and late preterm (32-37 weeks)¹. This definition is the most widely used and accepted in relation to prematurity rating nowadays^{1,6}.

In Goiânia, in the year 2017, 5956 babies were born by vaginal delivery. Of these, 11% were preterm (GA <37 weeks), 86% at term (GA ≥ 37 weeks) and 3% post-term (GA ≥ 42 weeks)⁷. If stratification according to WHO is performed, extreme prematurity in Goiânia in 2017 was of 8%, true preterm 9% and late preterm 82%. Most pregnancies were single (99%) and as for the sex of babies, both male and female accounted for 50% each. The birth weight <2,500 g was 9% and > 2,500 g was 91%, and the Apgar score in the 1st minute ≥ 7 was 14% and the score <7 was 86%⁷.

Worldwide, approximately 0.5% of all births occur before the third trimester of pregnancy. These births mostly result in neonatal deaths and correspond to 40% of infant deaths⁸.

In about 75% of prematurity cases, the etiology is

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multifactorial. Studies indicate as risk factors a previous case of prematurity, in addition to infections during pregnancy, structural abnormalities of the uterus, especially cervical failure, lifestyle (stress, strenuous work, long standing work), lifestyle habits (smoking, alcoholism and illicit drugs), very young or advanced maternal age, short interval between pregnancies, low body mass index, multiparity, among others ⁵.

Bearing in mind that innumerable variables can interfere in the health-disease process, it is necessary to characterize the epidemiological profile of parturients and newborns in order to obtain data that can serve as an auxiliary instrument in the planning of more effective actions, actions those that will provide improvements in the quality of health care for the mother-fetus and mother-newborn binomial. Understanding the epidemiology of this population will provide subsidies for comprehensive and effective care in the attention of these patients and their concepts.

Therefore, the objective of this study is to describe the epidemiological profile of parturients attended at Hospital e Maternidade Dona Íris (HMDI).

MATERIALS AND METHODS

This is a epidemiological, retrospective, cross-sectional, descriptive study with a quantitative approach. With pregnant women attended at HMDI Normal Childbirth Center in the period from September ¹, 2018 to July 29, 2019 who underwent normal delivery. Data were extracted from the normal delivery book of pregnant women attended at HMDI from September ¹, 2018 to July 29, 2019. The variables studied were age, type of pregnancy (single or multiple), risk classification at admission (diabetes, hypertension, extreme prematurity, habitual risk, fetal distress, prolonged expulsive period, fetal death and others), gestational age, characterization of obstetric history, type of previous delivery (cesarean or normal) and number of deliveries. Regarding neonates, the following characteristics were noted: sex, preterm, low weight, Apgar in the 1st and 5th minutes. The identification of the responsible professional was also noted. Pregnancy with gestational age ≥ 37 weeks was considered term, ≥ 28 weeks and <37 weeks preterm, and <28 weeks extreme prematurity^{1,6,9,10}. The data obtained were stored in the Excel® program for statistical analysis.

Continuous variables were described by mean and standard deviation, categorical by frequencies and percentiles. Comparisons of categorical variables were performed using the Chi-Square or Kolmogorov Smirnov tests. Continuous variables were compared using the Kruskal Wallis test. Correlations of nonparametric data were performed using Pearson’s correlation test and parametric correlations were performed with Spearman’s test. Multivariate logistic regression

was used to assess independent associations. The level of significance adopted was α = 0.05, and a 95% confidence interval.

RESULTS

The mean age of the patients was 24.25 ± 6.01 with an average gestational age of 38.31±2.57. Most patients were multiparous (52%) and had a single pregnancy (99.1%). Considering the personal history of the parturients in relation to the registered health problems, 84.9% presented habitual risk and 1.7% extreme prematurity (Table 1).

Variable	n	\bar{x} ±SD	Minimum	Maximum
Maternal Age	2769	24,25± 6,01	12,00	45,00
GA	2773	38,31±2,57	16,00	42,00
		N	%	
GA				
< 28	46			1,7
28 l- 37	265			9,6
>37	2462			88,7
Type of pregnancy				
Single	2751			99,1
Twin	24			0,9
Obstetric Background				
As for childbirth	1330			48,0
Primiparous	1442			52,0
Multiparous				
As for previous diseases				
Usual Risk	2343			84,9
Others	201			7,3
Extreme Prematurity	74			2,7
Extended Expulsive Period	38			1,4
Hypertension	35			1,3
Fetal suffering	29			1,1
Fetal Death	22			0,8
Twinning	10			0,4
Diabetes	8			0,3

\bar{x} = average. SD: Standard deviation. NB: Newborn. GA: Gestational age.

Table 1: Distribution of parturients attended at the HMDI normal delivery center in Goiânia, regarding maternal age, gestational age and obstetric history. Goiania, 2019..

Taking into account the age group and the gestational age, 47.6% of the parturients aged between 22 and 29 years were in the range of extreme prematurity, while for the parturients in the age group between 18 and 25 years, 49.5% fit into prematurity and 53.5% in the term range (Table 2).

Age range	Gestational Age						p*
	< 34		34 l- 37		≥ 37		
	n	%	n	%	N	%	
< 18	17	16,8	27	12,9	262	10,7	
18 l- 22	20	19,8	54	25,7	694	28,2	
22 l- 26	24	23,8	50	23,8	622	25,3	
26 l- 30	24	23,8	34	16,2	371	15,1	0,974
30 l- 34	8	7,9	25	11,9	292	11,9	
≥ 34	8	7,9	20	9,5	216	8,8	

*Test: Kruskal Wallis

Table 2: Distribution of parturients according to age group and GA attended at the HMDI normal delivery center. Goiania, 2019.

As for newborns, the average birth weight was 3085.90 ± 553.10 and the APGAR score ≥ 7 in the first minute was 92% and 98% in the fifth minute. General prematurity at delivery was present in 11.3% of parturients. The majority of newborns were male (51%). (Table 3).

Variable	n	%
Apgar 1st min		
≥ 7	2550	92,0
< 7	213	8,0
Apgar 5th min		
≥ 7	2722	98,5
< 7	42	1,5
NB Sex		
Male	1422	51,2
Female	1354	48,8

NB: Newborn. Source: Normal Delivery Book of the Normal Delivery Center of a reference hospital in Goiânia.

Table 3: Distribution of newborns regarding birth weight, APGAR and gender attended at the HMDI normal delivery center. Goiânia, 2019.

Variable	Diabetes Mellitus				p*
	No (n=2706)		Yes (n=8)		
	n	%	n	%	
Low weight					
Yes	246	9,1	–	0,0	
No	2460	90,9	8	100,0	0,371
Prematurity					
Yes	74	2,7	–	0,0	0,638
No	2678	97,3	8	100,0	
Death					
Yes	400	14,6	1	12,5	0,869
No	2346	85,4	7	87,5	

*Chi-Square Test

Table 5: Analysis of the presence of maternal Diabetes Mellitus with low weight, prematurity and fetal death identified in the HMDI's book on normal birth center. Goiânia, 2019.

In the bivariate analysis of the presence of maternal hypertension with low weight, prematurity and fetal death, there was no statistically significant difference (Table 4).

Variable	Hypertension				p*
	No (n=2681)		Yes (n=35)		
	n	%	n	%	
Low weight					
Yes	242	9,0	4	12,1	
No	2439	91,0	29	87,9	0,538
Prematurity					
Yes	74	2,7	–	0,0	0,323
No	2651	97,3	35	100,0	
Death					
Yes	396	14,6	5	14,3	1,000
No	2323	85,4	30	85,7	

*Chi-Square Test

Table 4: Analysis of the presence of maternal hypertension with low weight, prematurity and fetal death identified in the book of the normal birth center of HMDI. Goiânia, 2019.

Likewise, when the presence of maternal diabetes with low weight, prematurity and fetal death was analyzed, no statistically significant difference was found (Table 5).

When trying to correlate extreme prematurity with maternal age and previous history (previous pregnancies, types and number of previous births), no statistically significant difference was found.

Maternal age did not influence the Apgar score in the first minute, however, gestational age and the number of previous births had a significant influence on the Apgar score 5 in the first minute ($p < 0.001$). Likewise, in the analysis of the Apgar score in the fifth minute, an association with gestational age ($p < 0.001$) and previous deliveries ($p < 0.007$) was verified.

DISCUSSION

In the present study, the mean age of the patients was 24.25 ± 6.01 years. This data is similar to other epidemiological studies published in Brazil 11–13, Saudi Arabia (Wahabi et al., 2016) and the United States¹⁴. However, when it was broken down by age group, the prevalence of adolescents in the sample was higher than other studies. While the present study pointed to a rate of 11% of parturients who gave birth by normal delivery, others found rates of 2.3% to 2.7%^{4,13,14}. Regarding the parturients identified as young adults, the rate of the present study was lower than that found in the study by Kawakita et al (2016).

In the analysis of the number of previous pregnancies, the rate of primiparous pregnancies (42.7%) was lower than that of other Brazilian studies that found values ranging from 46.8%¹⁵, to 57.6%¹⁶ and higher than the rate found by Guerra, Valete and Alves (2018)¹¹. Regarding the multiparous, Santos et al. (2014)¹⁵ and Menetrier and Almeida (2016)¹⁷ identified 52.9% and 53.1% of pregnant

women, respectively. Dias and Santos, on the other hand, found a rate of 41.7%, much lower than that measured in the present study. Moreover, Guerra, Valete and Alves (2018)¹¹ found 69.7% multiparous parturients.

The 52% multiparous rate was below that found by other studies¹⁸ that identified 77.6% of multiparous women in the sample. However, the rate was higher than that of the study by Ferreira Jr et al. (2018)¹⁹ which was 36.7%. In the case of primiparous women, the value is below those found by Ferreira Jr et al. (2018)¹⁹ which was 64.3% and higher than those of Wahabi et al. (2016)⁴ and Fayed et al. (2017)¹⁸ who identified 22.4% of pregnant women as primiparous.

Considering the type of pregnancy, whether multiple or single, the data in the present study are similar to those by Wahabi et al. (2016)⁴ and de Reis et al. (2014)¹³ for single pregnancies. For multiple pregnancies, the rate was much lower than the studies by Wahabi et al. (2016)⁴ and Fayed et al. (2017)¹⁸.

The data on prematurity is similar to those of Passini Jr et al. (2014)⁵ and higher than those of Fayed et al. (2017)¹⁸, Wahabi et al. (2016)⁴, Sevnikov, Brudin and Blomberg²⁰ who found rates of 8.7%, 9% and 7.74%, respectively. Menetrier and Almeida¹⁷ found a higher rate of prematurity, 18.6%.

In the case of extreme prematurity, Fayed et al. (2017)¹⁸ and Kawakita et al. (2016)¹⁴ found that parturients under the age of 20 years presented 5.2% and 9.6% of extreme prematurity. These values are higher than the ones in the present study.

The rate of hypertension in the present study was 1.3% and that of diabetes was 0.3%. There was no association between hypertension, low birth weight, prematurity and death. The same occurred for DM.

Most NBs were male (51.2%) and this finding is confirmed in other studies that found a higher prevalence of males^{13,19,21} compared to females. On the other hand, Renner et al. (2015)²² found a higher prevalence of female newborns (51.9%) compared to the opposite sex (40.8%).

When hypertension was analyzed with the presence of low birth weight, prematurity and fetal death, there was no statistical difference in the sample. Adu-Bonsaffoh et al. (2017)² also did not find an association of hypertension with low birth weight, however, the presence of preeclampsia was associated with low birth weight in 40.7% of newborns and 35% of prematurity. Bridewell et al. (2019) also did not find an association between low birth weight, prematurity and hypertension³.

In the analysis of newborn weight, the prevalence of low birth weight (9.1%) was much lower than other studies published in Brazil^{13,17,23} and Nepal²¹, which ranged from 33.9% to 99.34%. However, the weight above 2500 g in the present study was 90.9%, well above the aforementioned studies that ranged from 0.66% to 66.1%.

Regarding the results of Apgar scores in the 1st and 5th minute equal to or greater than 7, they were 92% and

98.5%, respectively. These values were higher than Brazilian studies published between 2014 and 2016. Reis et al. (2014)¹³ found a score of 82.1% whereas in the study by Renner et al. (2015)²² the rate was 85% and Menetrier and Almeida (2016)¹⁷ found a rate of 81.5%. The score rate below 7 in the first minute was 8%. This value is below that found in the study by Adu-Bonsaffoh et al. (2017)² (34%).

In the case of a score below 7 in the fifth minute, the rate found was lower (1.5%) than that found in the studies analyzed, which ranged from 1.7% to 14.9%

CONCLUSIONS

Most parturients were in the 22 to 29 age group, were multiparous (52%), single gestation (99.1%) with gestational age over 37 weeks (88.8%).

Extreme prematurity was present in 1.7% of parturients and 9.6% are in the prematurity range.

Regarding the gender of the newborns, the majority were male (51.2%) and the Apgar score in the 1st and 5th minute greater than or equal to 7 was above 90%.

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CASE REPORT

PRIMARY SYNOVIAL SARCOMA OF THE GASTROINTESTINAL TRACT: A CASE REPORT

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ABSTRACT

Synovial sarcoma is a malignant neoplasm of soft tissues, traditionally known for its biphasic histological pattern and relatively high rate of occurrence near the joints. Primary gastric synovial sarcomas are extremely rare^{3, 4}. The present report shows a case of a 58-year-old female patient diagnosed with primary Biphasic Synovial Sarcoma of the stomach that has presented satisfactory evolution after surgical treatment. The patient is being followed up with Oncological Surgery at HC-UFG and has had no evidence of illness for 5 years.

KEYWORDS: STOMACH; MALIGNANT NEOPLASM; SYNOVIAL SARCOMA; GASTRIC NEOPLASM, GASTRIC SARCOMA.

INTRODUCTION

Synovial sarcoma is a malignant neoplasm of soft tissues, traditionally known for its biphasic histological pattern and relatively high rate of occurrence near the joints. The nomenclature is, however, an improper term, as there was no evidence of differentiation in relation to the synovium and the tumor can occur in almost any part of the body¹. Primary gastric synovial sarcomas are extremely rare^{3, 4}. Correct and early diagnosis is essential for proper treatment and prognosis prediction. Here, we report a case of primary synovial sarcoma that appears in the stomach.

CASE REPORT

A 58-year-old female patient was admitted to the Hospital das Clínicas of the Federal University of Goiás (HC-UFG) with a history of abdominal pain for 2 months. During clinical investigation, Total Abdominal Tomography with Contrast (CT) showed lesion in the distal third of the stomach compatible with neoplasia, having interrogated Gastrointestinal Stromal Tumor (GIST) and Leiomyoma. Upper Digestive Endoscopy (EDA), in turn, identified sub-epithelial antrum lesion (suggestive of GIST) and Sakita A1 gastric ulcer. A mucosal biopsy was performed and histological examination revealed mild chronic gastritis with a focus on mucosal erosion, a positive search for *H. pylori* and failed to rule out the clinical hypothesis of GIST. Therefore, the patient underwent subtotal gastrectomy with lymphadenectomy at D2. The morphological and

immunohistochemical findings of the surgical specimen showed Biphasic Synovial Sarcoma and 42 free lymph nodes. The patient is being followed up with Oncological Surgery at HC-UFG and has had no evidence of illness for 5 years.

DISCUSSION

Synovial sarcoma is a malignant mesenchymal tumor that tends to appear in the limbs, especially in the vicinity of the knee joints¹, although it has been found in a wide variety of locations, including the internal organs. A synovial differentiation tumor was mistakenly considered, probably due to the typically biphasic growth pattern, in addition to its usual just-articular location⁵. Immunohistochemically, synovial sarcomas are often focally reactive to cytokeratins and / or epithelial membrane antigen, ¹ showing epithelial differentiation. When a pathologist deals with a spindle cell tumor arising in the gastrointestinal tract, GISTs usually come to mind first. Generally, it is possible to differentiate a GIST from synovial sarcoma, since c-KIT (CD117) is expressed in most GISTs, although c-KIT also stains mast cells, which tend to be numerous in synovial sarcomas. Fusiform cell leiomyosarcomas are characterized by a greater degree of pleomorphism, and a panel of smooth muscle and melanocytic markers. Morphology and immunohistochemistry often distinguish these mimics from synovial sarcomas, but molecular genetic studies may be necessary to confirm them in difficult cases. To date, there are few reports of primary synovial sarcomas in the gas-

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trointestinal tract in the literature. Among these, the majority of primary gastric tumors were of the single-phase fibrous type, and most of them were confirmed with RT-PCR or fluorescence in situ hybridization. These gastrointestinal synovial sarcomas have only been reported in recent years, probably reflecting the fact that a broader application of immunohistochemistry and molecular techniques allows for the identification of these unusually localized tumors that may have been misdiagnosed as other spindle cell tumors in the past. Thus, it is concluded that primary synovial sarcoma of the gastrointestinal tract is rare and prone to diagnostic errors. When facing a malignant spindle cell tumor of the gastrointestinal tract, synovial sarcoma should not be neglected when listing differential diagnoses. The use of molecular techniques, such as RT-PCR, to detect pathognomonic translocation is the key to the correct diagnosis in doubtful cases.

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CASE REPORT

FALLEN FOOT CORRECTION: AN EXPERIENCE REPORT

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ABSTRACT

Objectives: To expose a case of correction of fallen foot, due to fibular nerve paralysis, by transferring the posterior tibial tendon to the dorsum of the foot via the interosseous membrane and to analyze the clinical result with the proposed treatment. Materials and Methods: Case report with bibliographic review. Results: Patient, 17 years old, male, victim of a motorcycle accident, without fractures caused by trauma. It evolved with a non-actively reducing horse foot. Using a suropodalic orthosis for 6 months, there was no clinical return of function or electroneuromyographic activity of the common fibular nerve. Surgical treatment was chosen. The stitches were removed at three weeks and suropodalic immobilization was maintained for six weeks. After this period, physiotherapy was started and walking was allowed, initially with a 90 ° PVC orthosis daily for four weeks and nightly for three additional hours. In 12 weeks, the patient had improved gait and returned to his work activities. Conclusions: It is possible to obtain a good functional result, improved gait, abandoning the orthosis and improving the quality of life of patients with foot drop due to traumatic foot injury. Fibular nerve after the surgical procedure for transferring the posterior tibial tendon via the interosseous membrane.

KEYWORDS: FIBULAR NERVE INJURY, DROOPING FOOT, ORTHOPEDICS, TENDON TRANSFER, PARALYSIS.

INTRODUCTION

The dorsiflexor muscles of the foot act as agonists in the swing phase of the gait cycle, having the function of not letting the forefoot touch the ground, thus a dysfunction of these muscles will result in a gait with the foot down. In patients with dysfunction of the dorsal flexor muscles, the action of the plantar flexors in the swing phase will predominate and the forefoot will tend to be stuck to the ground. In this condition, the patient uses an increased hip and knee flexion to perform the gait in this phase.¹

Complications of the fallen foot in the patient's quality of life are varied, such as frequent falls, walking with difficulty, social embarrassment.± The fibular nerve can be injured due to leg fractures, superficial knee injuries, knee adduction dislocations and , also, inadvertently, during knee surgery or by the use of tourniquets in the vicinity of the nerve². Although the most common cause of foot drop is traumatic injury to the common fibular nerve at the height of the proximal fibula, other causes, such as injury to the anterior horn

of the spinal cord, injury to the lumbar plexus, radiculopathy in L5, partial injury to the sciatic nerve and some neuromuscular disorders, such as Guillain-Barré syndrome and peripheral neuropathies, can lead to deformity³.

The conservative treatment of the fallen foot consists of the use of orthoses and functional electrostimulation of the fibular nerve. Surgical treatment includes dynamic and static techniques. Dynamic techniques are performed by means of tendon and muscle transfers or, by changing bone insertions, resulting in restoring function and movement of the foot. Static techniques are generally used when dynamic techniques fail or are contraindicated. In this case, arthrodesis, osteotomy and tenodesis are chosen⁴.

Some studies have shown an improvement in the quality of life of patients with fallen feet, due to fibular nerve damage, by transferring the posterior tibial tendon to the dorsal region of the foot. Improvement in gait, return to physical and daily activities and the use of any type of footwear are among the main ben-

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efits acquired by patients undergoing this technique². Prerequisites for this procedure are the presence of a fallen foot, with the tibialis posterior presenting grade IV or V strength according to Lysholm and Gillquist⁵, tibiotarsal joint with good range of motion and fibular nerve injury without clinical return of nerve function after a period of at least six months.

CASE REPORT

Patient, I.G.N.R, 17 years old, male, victim of a motorcycle accident, without fractures caused by trauma. It evolved with a non-actively reducing clubfoot. Using a suropodalic orthosis for 6 months, there was no clinical return of the function or electroneuromyographic activity of the common fibular nerve. Surgical treatment was then chosen.

The procedure was performed with the patient in horizontal supine position, under regional spinal anesthesia, with the placement of a tourniquet on the thigh. With a medial incision in the topography of the navicular tuberosity, the posterior tibial tendon was disinserted, with the aid of an osteotome, attached to a small osteoperiosteal fragment. (FIGURE 1)



Figure 1 - Disinsertion of the posterior tibial tendon in the navicular
Source: Photographed by the authors

The end of the tendon was secured with a resistant multiflament thread of the Ethibond 2 type and pulled in such a way as to allow the release of adhesions within the sheath. Then, the tendon was moved proximally through a second incision on the medial side of the leg, 8 cm above the medial malleolus, along the posterior edge of the tibia. (FIGURE 2)



Figure 2 - Medial access
Source: Photographed by the authors.

A third incision was made on the lateral face of the distal region of the leg at the same height as the medial incision. After deeply locating the interosseous membrane, a wide opening was performed, with the aid of a Kelly-type forceps, to allow easy excursion of the muscular belly in a direct traction line, without changing the course, to the posterior tibial tendon. The repair sutures were placed on the posterior tibial tendon and then passed with curved forceps bordering the posterior edge of the tibia through the interosseous membrane. The posterior tibial tendon was safely pulled to the anterior leg compartment. (FIGURE 3)



Figure 3 - Transposition of the posterior tibial tendon to the anterior compartment.
Source: Photographed by the authors.

A fourth incision on the dorsum of the foot at the level of the lateral cuneiform was made and the posterior tibial tendon repair suture was pierced with forceps under the extensor retinaculum in the midfoot incision. (Figure 4)



Figure 4 - Transposition from the posterior Tibial tendon to the midfoot.
Source: Photographed by the authors.

A bone tunnel was made, wide enough to accommodate the posterior tibial tendon together with the osteoperiosteal fragment, from the dorsal region to the plantar region, in the lateral cuneiform, with the aid of drills and curettes. With a perforated steel wire, the repair suture was passed to the plantar region, through the bone tunnel. The repair suture is pulled until the tendon lodges in the bone tunnel under the desired tension, leaving the foot in the neutral position or 10° of dorsiflexion. The posterior tibial tendon was fixed with a 4.5 mm anchor that was inserted in the dorsal region of the lateral cuneiform. (Figure 5)



Figure 5 - Fixation of the posterior tibial tendon with anchor in the lateral wedge.
Source: Photographed by the authors.

The posterior tibial tendon repair suture was fixed to the plantar surface with a sterile button properly protected and accommodated with gauze to prevent skin lesions, providing additional fixation, considering that the fixation performed only by the button could be insufficient and potentially damaging to the soft parts. Incisions were sutured with non-absorbable Nylon 3.0 monofilament threads. A sterile dressing was performed and a plastered suropodalic immobilization of the plantigrade type or with a slight dorsiflexion was made.

The stitches were removed at three weeks and suropodalic immobilization was maintained for six weeks. After that period, the button was removed, physiotherapy was started with passive and active mobility exercises of the ankle and the gait was allowed, initially with a 90° PVC orthosis daily for four weeks and at night for three additional ones. In 12 weeks, the patient had improved gait, returned to his work activities and used different shoes.

DISCUSSION

The presence of the fallen foot, caused by injury to the fibular nerve, significantly impairs the quality of life of a patient by limiting most of the simple activities of daily life. The transfer of the posterior tibial tendon via the interosseous membrane was described, for the first time,

in 1954 by Watkins, for the treatment of paralytic foot in patients affected by polio⁶. The use of the path via the interosseous membrane prevents the occurrence of inversion deformity reported in several studies that used the circumferential path⁷. In this study, we used the path via the interosseous membrane, passing the posterior tibial tendon under the extensor retinaculum.

Prahinski et al.⁸ performed the transfer of the posterior tibial tendon via the interosseous membrane in ten patients and none of them required the use of orthosis for walking after the rehabilitation period. However, over the follow-up period, which was from one to six years, four of the ten patients needed to return to using an orthosis. One of the patients had a stroke, two had sudden loss of dorsiflexion due to loosening of the tendon from its place of origin and one patient had progressive loss of dorsiflexion, possibly due to tendon laxity. In this study, after 1 year of follow-up, the patient remains free from using orthosis for walking.

Of the ten patients studied by Prahinski et al.⁸, five initially returned to physical activity, such as running, but only two managed to maintain this activity in the long term. In this study, the patient has been performing physical activities routinely.

Pinzur et al.⁹ used electroneuromyography in nine patients to compare the electrical activity of the posterior tibial tendon in the pre and postoperative period during gait. The authors observed restoration of the electrical activity of the posterior tibial tendon in the final phase of the gait balance, recovering the normal pattern of the same in the postoperative period in seven patients. In this study, electroneuromyography was used before and after the surgical procedure, being verified the damage to the fibular nerve in the first and normal in the last, twelve months after the surgery.

Carayon et al.¹⁰, with a sample of 31 patients in their study, based their results according to the range of motion acquired by the patient in the postoperative period. Only five patients had unsatisfactory results. The patient in this study reported a high degree of satisfaction with the result presented.

CONCLUSION

It is possible to obtain a good functional result, improvement in gait, abandonment of the orthosis and improvement in the quality of life of patients with fallen foot by traumatic injury to the fibular nerve after the surgical procedure of transferring the posterior tibial tendon via the interosseous membrane.

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ADVANCES IN ADJUVANT SYSTEMIC THERAPY FOR EARLY BREAST CANCER: 'ESCALATION' OR 'DE-ESCALATION'

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ABSTRACT

This article focuses on 'escalation' or 'de-escalation' in early breast cancer scenario. In other words, identifying areas where optimal care may be achieved with 'less' or 'more' treatment. The needs of a specific patient may be better defined through consideration of subset analyses or other individualized approaches to care. Adjuvant therapies for the patient nowadays imply that the treatments need to be adjusted to the patient's tumor characteristics, co-morbidities, economic constraints and acceptance of available therapies.

KEYWORDS: ADJUVANT TREATMENT; BREAST CANCER; ESCALATION; DE-ESCALATION.

INTRODUCTION

The use of systemic adjuvant therapy, along with the progress in surgery, radiation therapy and early diagnosis, improved the prognosis of patients with early breast cancer. With the discovery of new therapeutic targets, some protocols were reformulated and became more intense and/or lasting, more toxic and also more expensive. Examples of escalation in practice in our country are:

1 - The use of dense dose chemotherapy regimens (AC regimen - doxorubicin and cyclophosphamide - 4 cycles every 14 days with granulocyte growth factor support instead of every 21 days) which results in a reduced risk of relapse at 10 years and cancer-specific mortality even for hormone-positive tumors¹;

2 - The use of adjuvant capecitabine for 6 months for triple-negative tumors that did not reach a complete pathological response after neoadjuvant chemotherapy, based on the Asian study CREATE-X. This study demonstrated a gain in disease-free survival and overall survival of the experimental arm compared to placebo²;

3 - The use of dual HER-2 blockade with trastuzumab and pertuzumab in neoadjuvancy and/or adjuvancy, especially for tumors larger than 2 cm and/or with a compromised armpit. It is worth noting that, in adjuvancy, the results for double block were modestly better for disease-

-free survival compared to trastuzumab alone. Long-term follow-up shows greater benefit for those with positive lymph nodes.^{3,4}

4 - The use of extended endocrine therapy, that is, beyond the 5 years of standard therapy, reaching 10 years of anti-hormone therapy; this strategy has not yet demonstrated a gain in overall survival, only disease-free survival, especially for patients at high risk of recurrence^{5,6,7};

5 - The performance of ovarian blockade (permanent or temporary) for premenopausal patients based on the results of the SOFT and TEXT studies updated in 2018, showed gain of recurrence-free survival and overall survival for high-risk patients with indication for chemotherapy^{8,9};

6 - The use of platinum (mainly carboplatin) for patients undergoing neoadjuvant chemotherapy, which results in an increased probability of a complete pathological response regardless of the presence of a mutation in the BRCA1/2 genes. It must be considered the need for dose adjustments and treatment interruptions due to toxicity, in most cases hematological^{10,11}.

At the same time that more patients are being cured due to improvements in the therapeutic arsenal, a considerable portion of them are being exposed to treatments with potential toxicities in the short and long term without a justifiable clinical benefit. The main challenge is to pro-

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perly select the true low-risk patients and thus offer less intense therapies, with less sequelae and also with less costs. The most important examples of current de-escalation in systemic therapy are:

1 - The isolated use of paclitaxel weekly for 3 months and trastuzumab for 1 year for HER2-positive breast cancer patients, with less than 3 cm (especially less than 2 cm and with positive hormone receptors). The phase II APT trial, updated in 2017, showed a recurrence-free survival of 93.3% in 7 years with this scheme^{12,13};

2 - The omission of adjuvant anthracyclines, highly effective drugs for the treatment of breast cancer but with a not insignificant risk of heart failure and leukemia. In HER2 negative patients, at least 2 studies and a meta-analysis showed similar efficacy of the docetaxel and cyclophosphamide protocol for 6 cycles compared to the anthracyclinc and taxane-based regimen mainly for patients with negative lymph nodes^{14,15,16}. In HER2-positive patients, the use of the TCH protocol (docetaxel, carboplatin and trastuzumab) showed similar efficacy and less cardiac toxicity compared to the anthracycline regime. The same was observed in neoadjuvance when the TCH scheme with pertuzumab (TCHP) was compared to the schemes with anthracyclines¹⁷.

3 - The use of genetic signatures for patients with initial tumors, smaller than 5 cm, positive hormone receptors and HER-2 negative in order to avoid the use of adjuvant chemotherapy. The most requested in Brazil are Oncotype Dx and Mammaprint. Such tools classify the tumor in different categories according to the likelihood of recurrence, saving low-risk patients from chemotherapy¹⁸⁻²¹.

Studies point to a possible therapeutic equivalence between the use of 6 months and 12 months of adjuvant trastuzumab. However, the publication of data from the PHARE and PERSEPHONE studies, as they are divergent, did not lead to a change in global practice in relation to the current 12-month treatment^{22,23}.

CONCLUSION

Despite the complexity in understanding the various variables that permeate the treatment of breast cancer, efforts continue so that more and more patients increase their chances of cure and receive treatments proportional to their risk of recurrence, avoiding unnecessary toxicities without compromising the effectiveness of the treatment.

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URINARY TRACT INFECTION IN PREGNANT WOMEN A LITERATURE REVIEW

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ABSTRACT

Urinary tract infection (UTI) is the second most common complication during pregnancy. Because it is seen as an urgent matter, the treatment of UTIs is often done in an empirical way, which may not always be efficient and provoke resistance from these bacteria. This study aims to collect information about urinary tract infection and its treatment. The articles included in the work were published between 2016 and 2019, totaling 25 files, which after being found were evaluated for their relevance to the work, using 18 works for the production of the study. This literature review reinforces the importance of early diagnosis of urinary tract infections in pregnant women. The treatment of this disease is another key point for the absence of complications with the mother and the fetus. Since not all antibiotics can be used in this period, and the sensitivity of microorganisms to some predilection drugs is low. Thus, the combination of early diagnosis with appropriate and immediate therapy is essential during pregnancy.

KEYWORDS: INFECTION, PREGNANT WOMAN, URINARY TRACT INFECTION.

INTRODUCTION

Urinary tract infection (UTI) is the second most common complication in the gestational period, with a prevalence of 20%, being only behind anemia.¹ It is associated with increased pre-delivery, low birth weight newborn, pre-eclampsia and perinatal death.²

These infections can be classified as asymptomatic or symptomatic, according to the presence or absence of signs, symptoms and complaints, even with a simple positive urine test (>10⁵ organisms/mL). Symptomatic UTIs include cystitis (lower urinary tract) or pyelonephritis (upper urinary tract).^{3,4}

The most common etiologic agent is the uropathogen *Escherichia coli*, followed by *Proteus mirabilis* (ranging from second to fifth place), *Klebsiella pneumoniae*, *Enterococcus* spp, *Staphylococcus saprophyticus* and *Streptococcus agalactiae*.³

The occurrence of urinary infections is more common in women, due to the shorter extension of the urethra and the greater proximity of the anus with the urethra and vaginal vestibule. In the gestational period there are anatomical, physiological and hormonal transformations that contribute to the occurrence of UTI by favoring bacterial proliferation, reducing the antibacterial activity of urine and the adhesion of strains to the urinary tract.⁴

During this period, urinary infections can cause several consequences for the mother and fetus, ranging from pre-

mature labor to perinatal death.²

Considering the frequency of UTI during pregnancy and its complications for the mother and fetus, treatment may require urgency, starting without confirmation by culture and antibiogram. However, this empirical treatment can further increase the prevalence of resistant strains, since not all antibiotics can be offered to this woman.⁵

In order for the antibiotic used to be more sensitive when the empirical treatment is performed, the prescriber must have knowledge of the main etiological agents and the antibiotic resistance profile. This monitoring must be periodic and regional, since it has been noticed the reduction of more employed antimicrobials.⁶

In Brazil, there are few studies on this topic, making it difficult to decide on an outpatient basis, thus resorting to international guidelines, which are inadequate for developing countries.⁶

Based on this need, the present study aims to conduct a literature review on urinary tract infection in pregnant women, the prevalence of etiologic agents, sensitivity to antibiotics and the use of norfloxacin in this period, since inadequate treatment can bring serious complications. .

METHODOLOGY

This research included scientific publications of national and international scope published between 2016 and 2019. The methodology adopted in this work was a biblio-

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graphic review, through search of articles and journals published in the database of SCIELO (Scientific Electronic Library Online), NCBI (National Center for Biotechnology Information) and LILACS (Latin American and Caribbean Literature) to survey and analyze what has already occurred about urinary tract infections in pregnant women.

The research topics were Urinary infection in pregnant women, urinary infection, treatment of urinary infection in pregnant women, microorganisms urinary infection in pregnant women, use of norfloxacin in pregnant women, norfloxacin and urinary infection in pregnant women and norfloxacin.

The search resulted in 25 files that after being found were evaluated for their relevance to the work, using 18 files for the production of the study.

LITERATURE REVISION

3.1. URINARY TRACT INFECTION IN PREGNANT WOMEN

Urinary tract infection (UTI) is more prevalent in women. During pregnancy it is the second most common complication, after anemia. In this period, the UTI has an estimated prevalence between 17 and 20%, according to the Ministry of Health, causing maternal and fetal complications.^{1; 5; 4}

Many pregnant women with UTI participate in high-risk prenatal care due to the maternal and fetal complications of this condition. High-risk pregnancy occurs when the pregnant woman has a socio-biological condition or disease, which impairs the evolution of the pregnancy and can lead to maternal death (COSTA et al, 2016).

In a study by Costa et al. (2016)⁷ 14.8% of the 61 pregnant women participated in high-risk prenatal care due to UTI. Of the pregnant women interviewed, 52.5% stated that they had previous chronic diseases or recurrent urinary infections.

This infection presents itself as a clinical syndrome of acute infection that occurs when enterobacteria colonize and replicate in the vagina and ascend to the urinary tract. They are classified as asymptomatic bacteriuria, acute urethral syndrome, prostatitis, cystitis, pyelonephritis and recurrent infections.^{1; 8; 4}

In the pregnancy period, the most common UTIs are asymptomatic bacteriuria, low urinary tract infection (cystitis), acute pyelonephritis and chronic pyelonephritis. In this period, it is important to note that urinary tract infection can cause several complications, such as premature labor, premature rupture of amniotic membranes, restriction of intrauterine growth, low birth weight newborns, premature delivery, pre-eclampsia and perinatal death, being responsible for 10% of hospitalizations during pregnancy.^{1; 2; 4}

Regarding the correlation between the incidence of UTI during pregnancy and an increased rate of prematurity Veiga et al. (2017)⁹ observed that of the 10.1% of pregnant women participating in the study who had UTI, 18.2% had premature delivery. Of these, 10.4% of babies were born with low weight and 33.3% were born while pregnant

women had a urinary tract infection.

The classification of asymptomatic bacteriuria is due to the absence of signs, symptoms and complaints of urinary infection by the patient, even with positive urine culture, thus considered when exceeding the limit of 100,000 units forming bacterial colonies per milliliter of urine (CFU/mL). It is found in 4 to 7% of pregnant women, and if not treated properly it can progress to pyelonephritis.^{2; 1; 5}

When urinalysis reports the presence of bacteriuria or pyuria, it is advisable to request urine culture with a test of sensitivity to antimicrobials in vitro, which will guide more effective therapy. Since bacterial resistance to antibiotics used frequently is increasing significantly.^{3; 10; 6}

Symptomatic infections are defined when the pregnant woman has complaints, having different symptoms according to the location of the infection. When the infection is in the lower urinary tract (cystitis) the most frequent symptoms are dysuria (difficult, painful and urgent urination) and pyuria (leukocytes). Pregnant women with upper urinary tract infections (pyelonephritis) commonly present with fever, chills, flank or lumbar pain, nausea and vomiting.⁵

Urinary tract infections are more common in women due to their shorter length of the urethra and the greater proximity of the anus to the urethra and vaginal vestibule. Other situations that make it more prevalent in women are previous cystitis, sexual intercourse, use of spermicidal jellies, pregnancy, diabetes, age over 35, multiparous women, malnutrition, anatomical abnormalities of the urinary system and poor hygiene.^{2; 4; 5}

These characteristics and the anatomical and physiological changes in the urinary system contribute to the occurrence of UTI in pregnant women. In which the changes of the period favor the bacterial proliferation, the reduction of the antibacterial activity of the urine and the adhesion of strains to the urinary tract.⁴

Changes related to favoring bacterial proliferation include pelvic and urinary tract dilation and increased uterine size, as it partially obstructs the ureter, creating conditions to stop urinary flow, reducing the amount of potassium excreted and increasing the excretion of glucose and amino acids, urine with alkaline pH and change of bladder position to abdominal, reduction of bladder tone and relaxation of bladder and ureter smooth muscles.^{11; 5}

The reduction in the antibacterial activity of the urine occurs due to the greater production of urine and lower concentration of it. While it is gestational hyperestrogenism that favors the adhesion of *Escherichia coli* strains carrying type 1 adhesins to uroepithelial cells.⁵

Another situation that increases the susceptibility to both urinary infection and other infections is immunological changes, since in this period the cellular immunity decreases.¹¹

The UTI during pregnancy, according to Ramos et al. (2016)⁴ occurs with a prevalence of 8.33% in the first trimester and increases to 14.58% and 15.47% in the second

and third trimesters, respectively. Of the 432 pregnant women participating in this study, 25.46% had UTI in at least one of the trimesters of pregnancy, 5.32% in two trimesters and 0.93% in the three trimesters.

3.2 MOST PREVALENT MICROORGANISMS IN URINARY INFECTIONS IN PREGNANT WOMEN

ard for the diagnosis of urinary tract infection, being considered positive (significant bacteriuria) when the bacterial count is greater than 100,000 colony-forming units per milliliter of urine (CFU/mL). When symptomatic bacteriuria, bacterial counts between 100 to 10,000 CFU/mL can represent a true bacterial infection.⁵

The most common etiologic agent is the uropathogen *Escherichia coli*, followed by *Proteus mirabilis* (ranging from second to fifth place), *Klebsiella pneumoniae*, *Enterococcus* spp, *Staphylococcus saprophyticus* and *Streptococcus agalactiae*.³

The bacterium *Escherichia coli* commonly found in UTI episodes has a frequency of 63-85% of cases, a result observed by Ramos et al. (2016) and Pigosso et al. (2016). In these studies, the *E. coli* bacterium was diagnosed with a frequency of 98.2% and 77.8%, respectively. This bacterium inhabits the intestinal tract where it leads to an innocuous existence, until it finds a favorable niche for its replication, where it can cause diseases, such as the urinary tract.^{12; 2}

Other bacteria are also identified in these infections, with variable prevalence between studies. In the study by Ramos et al. (2016)⁴ in addition to *E. Coli*, the bacteria *Klebsiella pneumoniae*, *Enterococcus faecalis* and *Staphylococcus saprophyticus* were identified with a frequency of 0.6%. In comparison, the study by Pigosso et al. (2016)¹³ also performed in Brazil, presented *Streptococcus agalactiae* and *Enterococcus faecalis*, both with 11.1%. In a study carried out in Colombia by Amador et al. (2016)¹ the prevalence was equal to 46.7% *E. coli*, 17.93% *E. coli* positive for β -lactamase of the extensive spectrum and 10.86% aeruginous *Pseudomonas*.

Siqueira et al. (2016)¹⁴ when evaluating the microorganisms that cause UTI in pregnant women in Mato Grosso, found a result similar to other studies. The bacterium *Escherichia coli* was diagnosed in 75% of the samples, while *Enterococcus faecalis* in 16.67% and *Streptococcus agalactiae* in 6.25% of the samples.

3.3 ANTIBIOTIC THERAPY IN URINARY INFECTIONS IN PREGNANT WOMEN

The pathogens that cause urinary infections have different patterns of sensitivity and resistance to antibiotics for each region. Due to the urgency of treatment when pregnant, it is empirically prescribed by the doctor. This practice contributes significantly to the increase in the prevalence of antibiotic resistant strains, reason that reinforces the importance of performing urine culture to support microbiological confirmation regarding the etiological agent

and its resistance pattern in addition to the importance of the health professional being updated on the topic and the possible antibiotics to be used.⁵

According to Oliveira (2016)¹⁰ the drugs recommended by the Ministry of Health (MS) during pregnancy are: amoxicillin, cephalexin nitrofurantoin and ampicillin. In research carried out by Muanda et al (2017)¹⁵ on the use of antibiotics during pregnancy and the risk of malformation, the relationship between amoxicillin, cephalosporin, nitrofurantoin and penicillin with fetal malformations was not observed, in concordance with what was published by the MS.

In contrast, there are recommendations made by the American College of Obstetricians and Gynecologists on the non-use of nitrofurantoin and sulfonamides in the first trimester of pregnancy, due to the potential risk of birth defects, such as anencephaly, heart defects and orofacial fissures.¹⁶

Oliveira et al. (2016)¹⁰ when performing the bacteria sensitivity test in relation to antibiotics commonly used in treatments during pregnancy, found low sensitivity of *E. coli* and *P. aeruginosa* in relation to penicillin (ampicillin and amoxicillin).

This sensitivity relationship has been observed in other studies. Ferreira et al. (2017)¹⁷ researched the resistance of *E.coli*, *Klebsiella sp* and *Proteus sp*, finding results of 49.7%, 84.3% and 58.1%, respectively. A similar result was found by Gomes et al. (2017)³, who found ampicillin resistance of 43%, 100% and 27%, of *E.coli*, *K. pneumoniae* and *Pseudomonas mirabilis* bacteria.

The tests carried out by Oliveira et al. (2016)¹⁰ showed as a result the good sensitivity of gram negative bacteria to nitrofurantoin, a result consistent with that found by Gomes et al. (2017)³ in relation to *E. coli* samples where 4% showed resistance, but it differs from the results of this study for *K. pneumoniae*, which presented 55% resistance to this antibiotic.

An antibiotic commonly used by doctors in the empirical treatment of urinary tract infections in non-pregnant adults is norfloxacin. According to Ferreira et al. (2017)¹⁷, 56.1% of the 57 doctors interviewed prescribe this medication as the first antimicrobial choice and 19.3% prescribe sulfamethoxazole with trimethoprim.

According to a document by the Health Surveillance Agency (ANVISA) containing information on the drug, it is in risk category C due to the absence of studies carried out in pregnant women. Therefore, the safety of this medicine has not been established for this group.

Previous studies have detected this antibiotic in the umbilical cord and in the amniotic fluid. Even without authorization for use in pregnant women, a study carried out in the United States in 2014, by Ailes et al. (2018)¹⁶ analyzed Truven's health database and found a total of 34.7% of pregnant women with UTI with norfloxacin prescriptions.

Despite the few studies that bring the use of norfloxacin by pregnant women when evaluating forums for pregnant women, as is the case of the forum <https://brasil>.

babycenter.com and <https://medicoresponde.com.br> there are questions from women in the pregnancy period who received a prescription for the drug and do not know if they should use it.

CONCLUSION

This literature review reinforces the importance of early diagnosis of urinary tract infections in pregnant women with urine and urine culture tests which are recommended since the first trimester of pregnancy, from which the treatment of this infection will be effective, avoiding possible maternal and fetal complications.

The concern of health professionals about this disease is expressed in the appropriate classification of this pregnancy, thus starting to assist pregnant women as high-risk prenatal care when necessary.

The treatment of this disease is another key point for the absence of complications with the mother and the fetus. Since not all antibiotics can be used in this period, and the sensitivity of microorganisms to some predilection drugs is low.

The reduced sensitivity for some antibiotics is related to the excessive, uncontrolled and inappropriate use of these drugs, impacting the increase in microbial resistance. Therefore the appropriate choice of medication implies in reducing maternal and fetal complications of these infections.

Thus, the combination of early diagnosis with appropriate and immediate therapy is essential during pregnancy.

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