VOL. 03 Nº 08 - OCTOBER 2022

SCIENTIFIC JOURNAL

CEREM-GO

ISSN 2675-5009

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R416 Scientific Journal CEREM-GO: State Medical Residency Commission from Goiás. / Goiana Medical Residency Association. V.03, n. 08. – Goiânia:. D&D Communication Ltda,2022

49p. : il. (Editions October)
ISSN:

1. Magazine. 2. Cardiology. 3.Care- Trauma. 4. Pathology - Tumors. 5. Medicine. I.Título.

CDU: 616(52) =111

Impresso no Brasil
Printed in Brazil – 2022

Índice para catalogo sistemático:

CDU: 616(52) =111

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ACKNOWLEDGMENTS

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INDEX

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DOI -10.37951/2675-5009.2022.V3.I8.P7-19

ORIGINAL ARTICLE

USE OF BLOOD PATCH FOR MANAGEMENT OF POST-DURAL PUNCTURE HEADACHE IN A PEDIATRIC PATIENT

SAULO GONÇALVES FILHO[1]; LUCIANA HAHMANN ABREU[1]; MARCO TÚLIO JOSÉ DE OLIVEIRA FIGUEIREDO[1]; WESLEY SIDNEY GARCIA FRAGA[1]; GUSTAVO SIQUEIRA ELMIRO[1]; GIULLIANO GARDENGHI[1,2]

ABSTRACT

Neuroaxial anesthetic techniques are widespread in patients of all age groups for the most diverse types of surgeries. It is an extremely efficient technique for analgesia, as is the case with the epidural. Bearing in mind that correct execution and knowledge of possible complications minimize errors, but do not eliminate them. Post-dural puncture headache (PDPH) is a complication of dural perforation, in which, in the case of epidural, it is a puncture accident. Although it is more common in young women, it also affects other patients, including the pediatric population. In this article, we report the case of a child who presented with PDPH and evolved with satisfactory clinical improvement after being submitted to the blood patch.

KEYWORDS: ANESTHESIA, EPIDURAL; CEREBROSPINAL FLUID; POST-DURAL PUNCTURE HEADACHE

INTRODUCTION

Post-dural puncture headache (PDPH) is a complication that can occur, on average, between 24 and 48 hours after accidental perforation of the dura mater. Its pathophysiology is based on the loss of cerebrospinal fluid (CSF) through the dural orifice, resulting in intracranial hypotension. It is characterized by pain, usually in the occipital region, intense, of a positional nature, worsened in orthostasis, and may be associated with neck stiffness, photophobia, nausea or auditory symptoms.[1]

The most common risk factors include female gender, obstetric patients, larger needles, multiple punctures, low body mass index, and age between 18 and 50 years. Although post-puncture headaches in children do not occur frequently, an increase in epidural anesthesia has been observed in this population, which may imply an increasing number of these postoperative complications. [2,3]

Conservative therapy is recommended for 48 hours, however, if the headache is considered persistent or of moderate to severe intensity, the epidural blood patch (EBP) is one of the most effective methods for pain remission. However, it is not a routine procedure because it is an invasive approach and is not without complications. It is an aseptic epidural injection, with the patient in a sitting position, with approximately 20 mL of autologous blood, preferably in the same intervertebral space as the initial puncture, and then the least possible effort is recommended in the first 24 hours after the procedure. [1,4]

The aim of this study is to report a case of PDPH, in a 3-year-old child, submitted to a video laparoscopic pyeloplasty, which received BP as treatment.

CASE REPORT

Male patient, 3 years old, 18 kg, with stenosis of the pyeloureteral junction, submitted to videolaparoscopy pyeloplasty. Monitoring with non-invasive blood pressure, pulse oximetry, cardioscopy and level of consciousness, venoclysis and inhalational anesthetic induction with sevoflurane and intravenous with sufentanil and rocuronium were performed. This was followed with orotracheal intubation and coupling to controlled mechanical ventilation. Positioning in lateral decubitus and epidural performed at T10 - T11 level, using the Doglioti technique, with a Tuohy needle, 18 G, injecting 10 ml of 0.2% ropivacaine. The procedure was uneventful and the patient woke up without pain and was discharged the day after the surgery.

He returned, with admission to the emergency department, one day after discharge, with occipital headache, photophobia, irritability, nausea and an episode of vomiting. Hospitalization and pharmacological treatment with dipyrone, dexamethasone and ondansetron for 24 hours were performed, however, without improvement of the clinical picture. Therefore, the technique of applying the BP was chosen for the management of PDPH. [6] mL of autologous blood was collected through peripheral puncture in the upper limb (figure 1) and then the procedure was performed at the T10-T11 level (figure 2), the same anatomical topography in which epidural puncture was performed

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for the surgical procedure mentioned above, both under complete attire and rigorous antisepsis.

Figure 1. Peripheral venous access puncture for collecting blood to be used as a buffer on the patient.

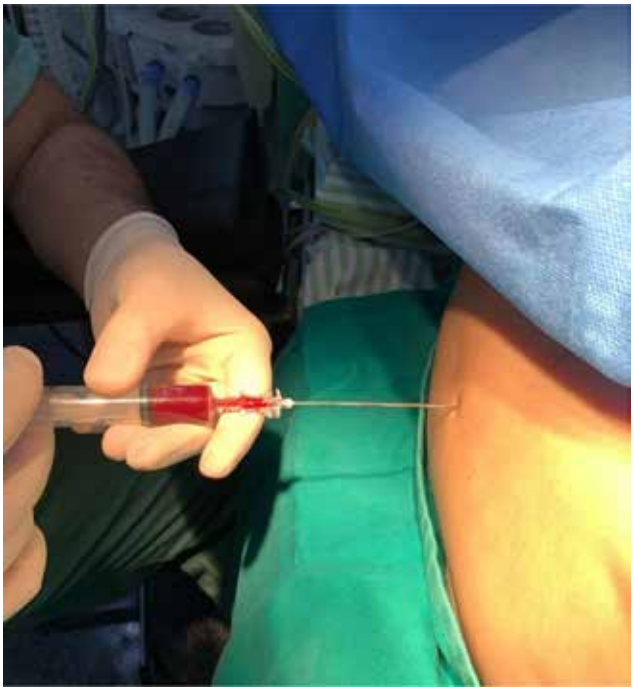

Figure 2. Application of the blood patch using a Tuohy 18G needle with puncture at the T10-T11 level with the patient in a sitting position.

After two hours of the procedure, the patient showed improvement in all signs and symptoms presented at admission, remained uneventful during hospitalization and was discharged the following day, showing an excellent general condition.

DISCUSSION

In the present study, epidural BP resulted in immediate improvement of all signs and symptoms presented by the patient, being clearly superior, even, to the pharmacological treatment of post-dural puncture complications.

The BP is a recurrent therapeutic option in the treatment of PDPH in adults, however the clinical reports of this procedure that predict its effectiveness in the child population remain insufficient. In view of the positive descriptions published so far, it is observed that the resolution of symptoms, in addition to offering diagnostic support, illustrates that this procedure can be useful in the treatment of both populations.[5] The side effects and long-term sequelae in children also are not fully understood, however, experience with adults suggests that they have a minimal incidence when discussing risk versus benefit. There was a divergence in the incidence of complications in terms of age and height variations, which may be a consequence of variations in hydrostatic pressure according to each situation.[6,7]

In our work, the volume of BP applied was 6 mL, corresponding to a very close target of 0.2-0.3 mg.kg-1 as described by Ylonen and Kokki8; as for Roy et al. there was a good clinical response of PDPH in the administration of BP with a volume of 10 mL in a 7-year-old child[9]; and in the work by Silva et al. [8] mL were applied to a 10-year-old girl weighing 26 kg, also obtaining a good therapeutic response10. There are reports of even smaller volumes than what was administered to our patient, however a standardized dosage needs further studies.

In addition to the injected volume of autologous blood, in the treatment for PDPH, there are other considerations such as the insertion level for performing the BP and individual characteristics of each patient according to preexisting risk factors. However, in children, it is noteworthy that these risks are lower because they physiologically have lower CSF pressure and also low hydrostatic pressure in the lumbar region compared to an adult, when they assume an upright position, thus presenting a low incidence of PDPH .[11,12]

CONCLUSION

Epidural BP resulted in immediate improvement of all signs and symptoms presented by the patient, and should be considered as an alternative for the approach to PDPH.

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DOI - 10.37951/2675-5009.2022.V3.I7.P10-12

ORIGINAL ARTICLE

CASE REPORT OF ACUTE PULMONARY EDEMA DUE TO SYSTOLIC ANTERIOR MOVEMENT AFTER LIPOSUCTION

MATEUS MOREIRA DE MELO SILVA[1], DANIEL FERREIRA GUNDIM[1], FABRÍCIO RODRIGUES DE SOUZA[1], GIULLIANO GARDENGHI[1,2,3], GUSTAVO SIQUEIRA ELMIRO[1,3]

ABSTRACT

The systolic anterior motion is the dislocation of one or more of mitral valve leaflets anteriorly causing obstruction during the left ventricular outflow. Diagnose can demand transesophagic echocardiography or magnetic resonance and its treatment is majorly clinical. The objective of this text is to report a challenging case in plastic surgery postoperative, the clinical presentation was an acute pulmonary edema and recieved the diagnosis of Systolic Anterior Motions just after. It led to a necessity of a particular menagement, contrasting the menagement based on the nonspecific primary diagnosis.

KEYWORDS: PULMONARY EDEMA; LIPECTOMY; SYSTOLE; MITRAL VALVE; VENTRICULAR OUTFLOW OBSTRUCTION

INTRODUCTION

Systolic anterior motion (SAM) is a peri or intraoperative complication where there is movement of one or more leaflets of the mitral valve in the anterior direction, causing obstruction during the exit of systolic content from the left ventricle (LV) [1]. In the absence of previous heart disease, it can be caused by decreased preload, vasodilation caused by general anesthesia or neuraxial block [2]. SAM is a heart condition that has a varied manifestation from asymptomatic to severe cases [3]. It is clinically manifested by hypoxemia, hypotension and acute pulmonary edema (APE), being little remembered in the first differential diagnoses in the face of these clinical alterations, mainly in non-cardiac surgeries [1,3]. Its diagnosis can be made through transesophageal echocardiography (TEE) or magnetic resonance imaging [3] and the treatment varies according to the severity of the manifestation, with cardiac surgery being the last option, but the ideal approach remains without consensus in the literature [4]. The causal relationship between anesthesia and the condition in question has not been epidemiologically proven. The aim of this work is to present a clinical case of SAM managed in the postoperative period of plastic surgery on the day following the anesthetic procedure.

CASE REPORT

Patient 49 years old, denies allergies, reports controlled systemic arterial hypertension, associated with diabetes mellitus also compensated, with a history of right eye loss. On physical examination: blood pressure 128x82 mmHg and cardiac auscultation with regular rhythm in two stages, normophonetic sounds, systolic murmur of light intensity in the mitral focus. Transthoracic echocardiography (TTE) showing an ejection fraction of 67% by Teichholz, with mild mitral and tricuspid regurgitation, with more pronounced concentric LV hypertrophy in the septal region with 16 mm.

Patient admitted to the hospital for a liposculpture surgical procedure, fasting for eight hours and asymptomatic. In the operating room, monitoring with electrocardiography (ECG), plethysmography and non-invasive blood pressure was performed, followed by 20G jelco venoclysis. Patient sedated with midazolam 5 mg and sufentanil 5 micrograms, sitting, performed asepsis of the lumbar region, followed by sterile lumbar puncture with a 27 G Quincke needle at L3-L4 with spinal infusion of heavy bupivacaine 20 mg, after the sensory block level test analgesic on T4.

Anesthetic induction with sufentanil 10 micrograms, propofol 120 mg and cisatracurium 10 mg. Orotracheal intubation with a 7.5-inch cuffed cannula was performed, without adverse events. Anesthetic maintenance with 2% inspired sevoflurane and dexmedetomitin in a continuous infusion pump (CIP) 0.3 microgram/kg/minute. Surgical procedure performed without adverse events. Extubation after decurarization with 2 mg of neostigmine without physiological repercussions. Patient referred to the ward after two hours of post anesthetic recovery, without complaints.

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After discharge: she ate and, while still in the ward, she developed a complaint of dyspnea followed by chest pain. The hospital's emergency team was called. According to the emergency room physician, the patient was tachydyspneic with oximetry at 70%, complaining of excruciating retrosternal pain, radiating to the neck and back, ECG with ST-infralevelling (3-way ECG) and hypotension, and O2 was offered in a mask with reservoir at 15 l/min and norepinephrine in CIP.

Patient evaluated by an anesthesiologist who found acute respiratory failure and proceeded with emergency orotracheal intubation in rapid sequence, at laryngoscopy patient with abundant pink foamy secretion in the trachea. Bedside TTE showing moderate mitral regurgitation, concentric LV hypertrophy and pulmonary hypertension, with preserved LV function. Next, patient was transported for chest angiotomography, with signs of cor pulmonale, without signs suggestive of pulmonary thromboembolism as shown in Figure 1 and without signs suggestive of aortic dissection.

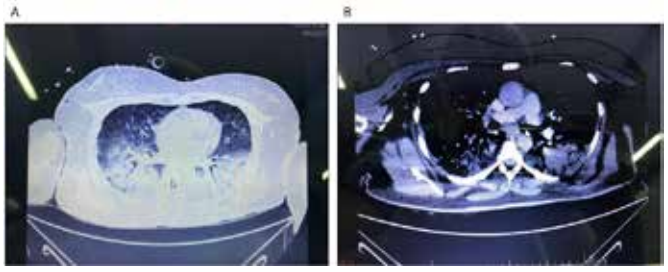

Figure 1. Chest angiotomography image. A: Ground-glass opacities and thickening of the peribronchovascular interstitium, compatible with pulmonary edema; B: Enlarged pulmonary arteries, attenuation of peripheral pulmonary vasculature and enlargement of the right ventricle, suggestive of pulmonary hypertension, without signs of arterial occlusion of grids or medium vessels.

She was also transported for coronary catheterization, which showed a sub-occlusive lesion of the marginal branch of the right coronary artery, already with collateral circulation, without signs of acute lesions in activity. Patient maintained clinical worsening during coronary catheterization, then arterial catheterization was performed to assess invasive blood pressure and started dobutamine 2.5 mcg/kg/min, without improvement. At the end of the procedure, the patient was referred to the Intensive Care Unit (ICU) without a diagnosis of the cause of clinical decompensation. The patient in the ICU was studied again, however, this time by TEE, which found moderate mitral regurgitation, LV concentric hypertrophy and pulmonary hypertension, with preserved LV function and tightening of the anterior leaflet of the mitral valve, producing marked obstruction of the outflow tract. of the LV (figures 02 and 03).

Figure 2. TEE image. A: Left ventricular outflow tract (LVOT) opened during ventricular diastole. B: LVOT obstructed by the anterior leaflet of the mitral valve during ventricular systole. C: Post-intervention result. Image of residual thrombus is observed, but without flow impairment.

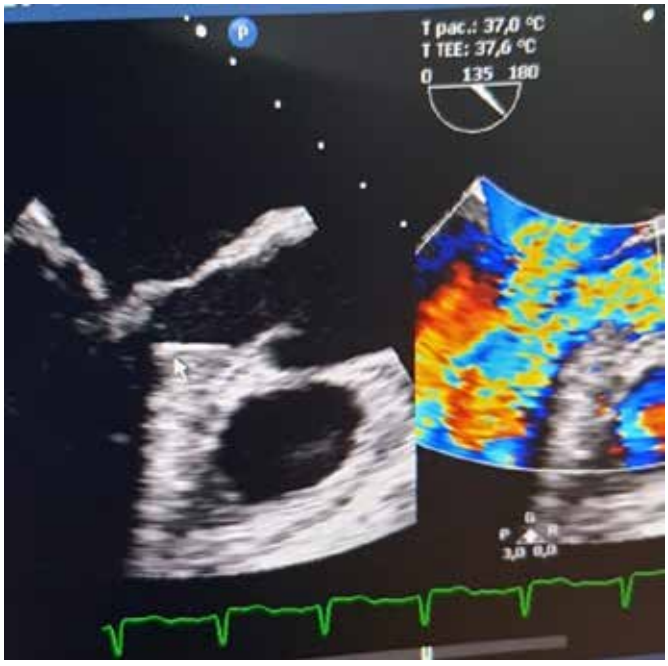

Figure 3. Transesophageal echocardiogram image demonstrating turbulent and disorganized flow due to LVOT narrowing.

The treatment was performed by discontinuing dobutamine, starting carvedilol and volume expansion with crystalloids aiming at a positive fluid balance. Due to the diagnosis of acute pulmonary edema, special follow-up and attention was needed to prevent them from restarting beta-adrenergic drugs and taking measures to negatively affect fluid balance.

DISCUSSION

The diagnosis of LV outflow tract obstruction is rare, but should be considered in patients who present with symptoms and ECG changes consistent with hypoxemia,

acute coronary syndrome, systolic murmur, PAE, and hypotension in the presence of a small elevation of serum creatine phosphate kinase, which were subjected to hypovolemic states, inotropic drugs, cardiac surgery and anesthetic states. [5]

The pathophysiology of SAM still remains uncertain, but the most accepted idea would be a Venturi effect (air flowing at a higher speed as it circulates through a thinner passage, creating negative pressure in the process, which causes a partial vacuum leading to fluid impulsion) through the narrowing of the LV outflow caused by the bulging of a hyperdynamic and hypertrophic septum, in a hypovolemic state [5]. Knowing this, the initial idea of treatment could involve volume increase, rate controls and cardiac contractility. Considering the perioperative period, neuraxial block, general anesthesia, hypovolemia, use of inotropes and bleeding can increase the risk or worsen this pathology [5] and are the daily routine of the anesthesiologist.

For diagnosis, TTE should be considered, however, if the images are suboptimal for diagnosis, TEE should be used [6]. In the case reported here, the use of TEE was necessary to properly perform the diagnosis of SAM.

Reasoning from the point of pre-anesthetic evaluation, the findings found by the physical and complementary exams were not considered sufficient for cancellation or postponement of the procedure, being released by the assistant team both before and on the day of the procedure, after reassessing the medical records.

Taking into account the anesthetic procedure itself, both general anesthesia and neuraxial block via spinal anesthesia are possible causes of SAM by causing relative or absolute hypovolemia; vasodilator effect, which in turn can cause an LV with low volume, reducing its own diameter and increasing the speed of blood flow in the region. However, other causes cannot be ruled out, nor can it be affirmed that anesthesia was the real cause of all the problems, because the patient already had some degree of mitral regurgitation and concentric LV hypertrophy.

Once the diagnosis is made, the clinical management of SAM, according to Ibrahim et al, consists of two steps, namely: step 01, which consists of ceasing inotropes plus volume expansion, and step 02, where beta-blockers should be started. In the clinical case, the patient presented progressive clinical worsening until the measures foreseen by the first step were taken. Once the diagnosis was made and treatment started in step 01, another challenge was to convince the ICU on-call team to maintain the previously discussed approach, since this APE was a consequence of pulmonary hypertension caused by a not so prevalent pathology, where inotropism added to the use of diuretics and consequent hypovolemia is exactly the opposite of ideal for SAM cases.

CONCLUSION

The case demonstrates that, faced with a challenging clinical presentation, one must have a range of differential diagnosis options. Multidisciplinary assistance and accessibility to complementary exams add up to a positive outcome, being of paramount importance for the case. Both the emergency, intensive, cardiological, anesthesiological and echocardiographic teams formed a vital group for the diagnosis and treatment of this patient and despite the potential diagnosis with TTE, the availability of TEE was essential. Without it, the etiological diagnosis would remain uncertain and without the multidisciplinary work, the clinical measures necessary to modify the outcome could be delayed or even not taken, resulting in a worse prognosis for the patient.

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DOI - 10.37951/2675-5009.2022.V3.I8.P13-16

ORIGINAL ARTICLE

TELEMEDICINE AND ITS CURRENT PERSPECTIVES AND APPLICATIONS IN BRAZIL, 2017-2021

GISELLE PULICE DE BARROS [1], MARCUS VINICIUS LOBO LOPES FILHO [2]

ABSTRACT

Evidence on telemedicine in Brazil is scarce. Telemedicine was evidenced by its application in the Covid-19 pandemic. Some telemedicine applications are for the country's economy. Objective: this research aims to investigate preliminary data from DATASUS on its current proposals and possible applications in the field of Medicine. Methods: The design of this study is descriptive epidemiological and was carried out with a retrospective survey as perspectives of the application of telemedicine in Brazil. The research consisted of consulting SINAM data from 2017 to 2022, available on DATASUS. Results: The role of the State of Santa Catarina in diagnostic imaging as an applicability of health services

KEYWORDS: STATE OF SANTA CATARINA. DIAGNOSTIC IMAGING. ULTRASOUND. SUS. DATASUS

INTRODUCTION

The impacts of Covid-19 had repercussions across the globe. Face-to-face medical care requires a request for the occupation of rooms and specialized personal care with structural and organizational health assistance. Given the facts associated with the condition of Covid-19, restrictive measures for contact between people and isolation measures were required, being the reasons for expanding the use of Telemedicine [1].

Telemedicine is shown as increasing evidence of its participation in developing countries as a government and partnership strategy in Covid-19 and has been associated with the ability to deliver quality care remotely as well as reduce costs as the Covid-19 epidemic strengthened the dissemination of telemedicine[2].

With the literary scarcity of telemedicine performance in the Brazilian system, the Unified Health System (SUS) completed 23 years of existence in 2021 and is a health milestone in Brazil. Based on Brazilian public health data, this research aims to investigate preliminary data from DATASUS on its current perspectives and possible applications in the field of Medicine.

METHODS

2.1. Search strategy

A retrospective descriptive epidemiological study was carried out with the aim of examining the prospects for the application of telemedicine in Brazil. The research consisted of consulting SINAM data from 2017 to 2022, available in DATASUS. The analyzed data were analyzed from the beginning of 2017 until the month of July 2022, which showed up as the last accounting of data available on the network, as complete data.

2.2. Study selection

Two independent investigations (prevalence in Brazilian macro-regions and main medical applications) were chosen for the screening investigation in TabNet Win32 3.0. The protocol established in this research for both investigations was in line, column, content and period selections available (Available at http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinannet/cnv/).

All options available on the platform were investigated, with the final filter, telemedicine. Among around 40 selection criteria in Row and around 20 selection criteria in Column, 2 criteria in content and variation of 21 years. A total of 33,600 data options were made available on DATA SUS, specifically on TabNet.

Following an exhaustive investigation with the recruitment for data related to Telemedicine, 38 selection criteria in Line, 18 selection criteria in Column and 1 criterion in content were excluded, obtaining the macro-region variables, which were funneled by the system into regions: South, North and Northeast Plateau, Midwest and Serra Catarinense, Grande Oeste, Grande Florianópolis, Foz do Rio Itajaí and Alto do Vale do Itajaí and their relationships with services provided by the medical network. Evidence found for services provided by the medical network, which corroborates the applicability of telemedicine.

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2.3. Data extraction

The years 2017 to 2022 were selected, where data from 2001 to 2022 are originally available in the DATASUS system, in order to reflect the current situation in 5 years of retrospection, since there are limited data on telemedicine in order to avoid any trends and important implications, some selection criteria were established for data extraction, based on DATASUS.

The selection criteria consisted of data between 2017 and 2022, data from the health network, by region/federation unit, by complexity and approved quantity. Scientific papers considered gold standard within the scope of the research were also included, as well as articles involving telemedicine and health in Brazil.

The exclusion criteria were all that did not fit the profile of the selection criteria and articles used for this research that were dated before 2001, excluding those that did not have an unclear methodology or other approaches that did not fit within the research objective.

2.4.Data analysis method

In order to identify published studies on telemedicine and current perspective and applicability, a bibliographic survey of scientific articles published in ScienceDirect, PubMed, Medline, Web of Science, EMBASE, LILACS, Scielo and Google Scholar databases was carried out in the study. between the years 2001 to 2022. For the research, the descriptors were used: "Telemedicina", "Telemedicina no Brasil", "Aplicabilidade da Telemedicina", and their corresponding words in English: "Telemedicine", "Telemedicine in Brazil"," Applicability of Telemedicine". The search took place between the months of July and September 2022, totaling 4 works used in media such as discussion.

After data collection, analysis and interpretation, the Microsoft® Excel 2020 program was used to tabulate data and expose the situation of telemedicine in Brazil in representation of the incidence of telemedicine in health services through tables.

Due to the fact that it is a public domain database, it was not necessary to submit it to the Research Ethics Committee.

RESULTS

3.1. The diagnostic imaging/ultrasound service using telemedicine stands out in the State of Santa Catarina

The main results for the application of telemedicine among the macro-regions associated with the use of the service were represented by Table 1.

In the last 5 years, the Alto Vale do Itajaí, located in the State of Santa Catarina, was presented with the highest proportion in the diagnostic imaging service in ultrasound, accounting for 97.11% of the service (n = 9,407) in a total of n = 9,868. The second highest result was also found in the area of diagnostic imaging in computed tomography, also in the region of Santa Catarina (Foz do Rio Itajaí n=145), followed by the Grande Oeste (n=133), the diagnosis by imaging in interventional radiology (n = 196 – total).

	Diagnostic imaging / telemedicine radiology service	Diagnostic Imaging / Telemedicine Ultrasound Service	Diagnostic Imaging Service / 009 telemedicine computed tomography	Diagnostic Imaging / MRI Telemedicine Service	Diagnostic imaging service / interventional radiology by telemedicine
TOTAL	30	9,686	458	45	196
SOUTH	-	-	6	-	87
NORTH AND NORTHEAST PLATEAU	10	18	60	2	-
MIDWEST AND SERRA CATARINENSE	16	61	98	22	-
GRANDE OESTE		27	133	-	-
GRANDE FLORIANÓPOLIS	3	2	8	5	-
FOZ DO RIO ITAJAÍ		161	145	16	-
ALTO VALE DO ITAJAÍ	1	9,407	8	-	109
Identification code			121007 121		

Source: Ministry of Health/SVS- Diseases Information System – SINAN NET.

*Subtitle:

Macro-regions and services provided – specification in telemedicine.
Period: 2017-2022.
Data made available on TABNET until July / 2022.

3.2. Diagnostic Imaging in Computed Tomography is the type of service most applied in the regions studied.

According to Table 2, the most provided service in telemedicine consists of computed tomography imaging diagnosis among the regions evaluated (n = 697,093), followed by ultrasound imaging diagnosis (n = 467,510) and home care services (n = 697,093). = 45,723). Figure 1 lists the nine major types of services provided by the health network.

	Attention service in neurology / trauma and anomalies neurosurgery	Spine and peripheral nerve neurology	Neurology and nervous system tumors	Vascular neurosurgery	Neurosurgery in pain management
TOTAL	30	9,686	458	45	196
SOUTH	-	-	10	6	87
NORTH AND NORTHEAST PLATEAU	10	18	60	2	-
MIDWEST AND SERRA CATARINENSE	16	61	98	22	-
GRANDE OESTE	4	27	133	-	-
GRANDE FLORIANÓPOLIS	3	2	8	5	-
FOZ DO RIO ITAJAÍ		161	145	16	-
ALTO VALE DO ITAJAÍ	1	9.407	8	-	109

	Neurology research and epilepsy surgery	Neurology endovascular treatment	Stereotactic functional neurology	Polysomnography neurosurgery	Hearing health care service/specialized care for people with hearing impairment
TOTAL	160	1666	135	369	292
SOUTH	82	71	-	-	-
NORTH AND NORTHEAST PLATEAU		455	5	-	-
MIDWEST AND SERRA CATARINENSE	19	171	-	-	-
GRANDE OESTE			-	-	-
GRANDE FLORIANÓPOLIS	58	263	130	369	292
FOZ DO RIO ITAJAÍ		216	-	-	-
ALTO VALE DO ITAJAÍ	1	490	-	-	-

	Home attention service / home care	Home attention service / home hospitalization	Home care service / multidisciplinary home care team – emad	Diagnostic Imaging Service / Unclassified	Diagnostic imaging / radiology service	
TOTAL	29,812	45,723	36	22,695	27,207	
SUL	47	-	-	6	2,858	
NORTH AND NORTHEAST PLATEAU	89	38		134	4,939	
MIDWEST AND SERRA CATARINENSE	1,993	9	25	12	3,053	
GRANDE OESTE	467	-	3	21,595	317	
GRANDE FLORIANÓPOLIS	26,540	45,507	-	131	10,349	
FOZ DO RIO ITAJAÍ	74	168	8	468	1,805	
ALTO VALE DO ITAJAÍ	602	1	-	349	3,886	

	Diagnostic imaging / ultrasound	Diagnostic imaging / CT scan	Diagnostic imaging / MRI	Diagnostic imaging/interventional radiology service	Diagnostic imaging / telemedicine radiology service	Diagnostic imaging / telemedicine radiology service
TOTAL	467,510	697,093	59,902	21	30	
SOUTH	57,808	116,327	13,808	-	-	
NORTH AND NORTHEAST PLATEAU	142,157	124,529	15,781	6	10	
MIDWEST AND SERRA CATARINENSE	43,942	121,616	8,884	4	16	
GRANDE OESTE	46,361	54,298	6,481	-	-	
GRANDE FLORIANÓPOLIS	96,583	103,589	7,780	6	3	
FOZ DO RIO ITAJAÍ	31,609	61,650	2,768	-	-	
ALTO VALE DO ITAJAÍ	49,050	115,084	4,400	5	1	

	Diagnostic imaging service/tele medicine ultrasound	Diagnostic imaging service / telemedicine computed tomography	Diagnostic Imaging / MRI Telemedicine Service	Diagnostic imaging service / interventional radiology by telemedicine	Diagnostic service by dynamic / unclassified graphic methods	Diagnostic service by dynamic graphic methods / electrocardiographic examination
TOTAL	9,686	458	45	2	2	4,636
SOUTH	10	6	-	-	-	816
NORTH AND NORTHEAST PLATEAU	18	60	2	-	-	1,659
MIDWEST AND SERRA CATARINENSE	61	98	22	-	-	103
GRANDE OESTE	27	133	-	-	-	199
GRANDE FLORIANÓPOLIS	2	8	5	-	-	1,145
FOZ DO RIO ITAJAÍ	161	145	16	2	2	562
ALTO VALE DO ITAJAÍ	9,407	8	-	-	-	152

Table 2. Services provided by the Health Network in the regions evaluated. Source: Ministry of Health/SVS- Diseases Information System – SINAN NET

*Subtitle:

Macro-regions and services provided - General

Period: 2017-2022.

Data made available on TABNET until July / 2022.

Figure 1. Representativeness of the services in greater number presented by the Medicine network. Source: DATASUS, prepared by the Author.

DISCUSSION

Current perspectives on telemedicine and its applicability in Brazil were listed mainly in the State of Santa Catarina and the main service available within the telemedicine service was diagnostic imaging/ultrasound (Table 1). Within that refers to the services provided by the health area, which was found in our research, which aimed to associate telemedicine in this context, the service by diagnostic imaging/computed tomography (Table 2). In the public health sector, the use of asynchronous care telemedicine on a large scale was evidenced in Santa Catarina by the implementation of the Santa Catarina Telemedicine Network, which began in 2005 and this evidenced the attention of the Ministry of Health in 2006 and encouraged the creation of the Telehealth Brazil Program. According to Savaris et al. (2008) the Telehealth nucleus was present in 145 municipalities in SC with evidence of sending 78 exam points of different modalities. Andrade et al. (2016) reports a prototype integrated to the Santa Catarina Telemedicine and Telehealth System in order to improve support for Electroencephalogram exams, which corroborates the evidence in diagnostic imaging found in our research [3]. Historically, telemedicine was implemented in Brazil by the National Telehealth Program by the Ministry of Health and expanded in 2011 to the National Telehealth Brasil Redes Program, which can be related to the strong evidence presented by the region of the State of Santa Catarina. The electrocardiogram (ECG) evaluation is relevant in the literature in the context of imaging exams and has been applied as a low-cost procedure with the potential to save lives, and this system has served a portion of the Santa Catarina population, especially the elderly [4]. Telemedicine is a beneficial technology that can provide preventive treatments and assist in long-term treatments, however, this application is still applied in early stages of health management and is expanding, as its application has already been reported worldwide [2]. Some limitations of this study were evident due to the low evidence of telemedicine performance in Brazil, which significantly delimited the selection criteria and the regions presented. Nevertheless, it shows up as a significant point of little-known regions and/or that show up with relevance for the distribution of this system in detailed regions, improving the availability of quality in health services.

CONCLUSION

This work highlights the role of the State of Santa Catarina and the dissemination of the diagnostic imaging service as an applicability of health services in Brazil, however, more studies are needed to account for a significance of data and presentations on relevant points about Brazilian telemedicine.

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DOI - 10.37951/2675-5009.2022.V3.I7.P17-21

CASE REPORT

ACUTE HEART FAILURE SECONDARY TO SEVERE THREE-VESSEL CORONARY ARTERY DISEASE IN A YOUNG INDIVIDUAL AND ALTERATION OF LIPOPROTEIN A.

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ABSTRACT

Atherosclerotic coronary artery disease is ranked as the leading cause of acute and chronic heart failure in the world. When we thoroughly evaluate the modifiable and non-modifiable risk factors for atherosclerosis, we are faced with global cardiovascular risk scores, which delimit preventive and later therapeutic goals, with the objective of reducing morbidity and mortality from cardiovascular diseases. The present case report shows us a severe coronary disease, with diffuse atherosclerosis, in a patient with a low global risk score and alteration of lipoprotein A (LpA), raising questions about the improvement of measures for global restratification of cardiovascular risk.

KEYWORDS: ATHEROSCLEROSIS; HEART FAILURE; LIPOPROTEIN(A); MYOCARDIAL INFARCTION; PATHOPHYSIOLOGY

INTRODUCTION

Despite significant advances in the diagnosis and therapy of cardiovascular disease (CVD), individuals continue to experience acute myocardial infarction, stroke, peripheral arterial disease, and the need for revascularization. Advances in the identification of modifiable risk factors for CVD, including smoking, hypertension, dyslipidemia, diabetes mellitus and obesity, allowed the development of evidence-based guidelines, with medical and revascularization therapies, which contributed to the reduction of cardiovascular mortality. However, despite advances, 40% of all deaths are attributed to CVD. Furthermore, only 20 to 30% of patients benefit from therapies, and more events occur in patients who are on active therapy than in prevention. These observations suggest the presence of additional modifiable risk factors that contribute to cardiovascular risk[1,2].

Among these risk factors, there is a recent highlight in the atherogenic scenario of dyslipidemias involving lipoprotein A (LpA), similar to LDL in lipid and protein composition. Dyslipidemias can be divided into four clinical categories: elevation of LDL, reduction of HDL, elevation of triglycerides and, finally, elevation of LpA. Currently, it is known that an isolated elevation of apolipoprotein B-100 (apoB), which contains lipoproteins (LDL, VLDL and LpA), can casually be associated with an increase in cardiovascular risk. In contrast, genes that elevate HDL or drugs that increase its concentration do not promote risk reduction. The main difference between LpA and LDL is the presence of apoA glycoprotein linked to apoB-100 [3,4]. Serum levels of LpA vary between populations and are determined by genetic factors. Serum values up to 30 mg/dL are considered normal, except in the black race, which presents much higher levels of this lipoprotein under normal conditions. ApoA is very similar to the plasminogen molecule. In vitro studies have shown that LpA, at high levels, competes with some functions of plasminogen in the coagulation and fibrinolysis cascade and, thus, may have thrombogenic properties. Because it is similar to the LDL particle, LpA also has atherogenic potential. Epidemiological studies have shown that high rates of LpA are associated with an increased incidence of atherosclerotic cardiovascular disease, especially in patients younger than 60 years of age. Furthermore, LpA particles were found in arterial intima, particularly in association with atherosclerotic plaque [5,6].

In view of this atherogenic process, coronary artery disease stands out, as the ischemic substrate is the main cause of acute and chronic heart failure (HF) in the world. Acute HF is one of the main causes of hospitalization in Brazil and in the world and is related to an increase in mortality and the need for short and long-term readmissions. When all this atherosclerotic process and subsequent cardiac dysfunction is triggered in young patients and apparently without risk factors, evaluated by global cardiovascular risk scores as low/intermediate, questions about additional measures and screenings – as well as LpA me-

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asurement – are put in agenda with the objective of risk restratification and change in preventive and therapeutic approaches [7,8].

The present report describes a young patient, with no previous risk factors (hypertension, diabetes, dyslipidemia, family history, obesity and smoking), with acute HF and severe, chronic, three-vessel atherosclerotic coronary artery disease, who would previously fit into low risk scores. for cardiovascular disease, showing a high value of LpA in the investigation.

The Research Ethics Committee of the Hospital de Urgências de Goiânia, linked to Plataforma Brasil, approved the present study (CAAE: 85497418.2.0000.0033).

CASE REPORT

Male patient, 42 years old, white, married, born in Goiânia-GO, commercial representative, BMI 29.62 Kg/m², sought the emergency room on 05/07/2022 reporting dyspnea on minimal exertion for three weeks, with orthopnea and paroxysmal nocturnal dyspnea, in addition to swelling in the lower limbs up to the middle third of the legs. Patient denied chest pain in the period, cough, fever and had no urinary complaints. He had been reporting diarrhea for 30 days, without blood or pus, without associated fever and without abdominal pain, with an average of four to five episodes in the period, not associated with prostration.

He was seen in the emergency room without signs of dehydration, with systemic congestion, with mild dyspnea and a respiratory rate of 19 bpm, saturating 96% to room air, pulmonary rales up to the middle third, bilateral, stable, with a blood pressure of 110 x 83 mmHg, good peripheral perfusion, conscious, and with edema in the lower limbs. An electrocardiogram was performed on admission, which showed sinus rhythm, with a heart rate of 98 bpm, low-amplitude QRS complex in the frontal plane, slow progression of the R wave in the horizontal plane, delay in the end of ventricular activation by the right branch and diffuse changes in ventricular repolarization (Figure 1).

Figure 1 - Electrocardiogram 05/07/2022

Ultrasensitive troponin was measured, with a value of 49.26 ng/L (reference value < 14 ng/L). The patient was hospitalized with diuretic therapy and a transthoracic echocardiogram and cardiac magnetic resonance imaging were requested to assess probable myocarditis.

The patient denied previous comorbidities, referred only to social drinking, on weekends, of mild intensity. He denied diabetes, high blood pressure, dyslipidemia and a previous history of thrombosis. No family history of early coronary artery disease and sudden death, as well as thrombophilia in relatives. He reported a lack of physical activity (sedentary lifestyle), but active due to his profession, and reported sporadic smoking, on weekends, for only one year (2019). The patient was overweight and had an abdominal circumference of 109 cm, without stigmata of chronic liver disease and chronic alcohol consumption. Unhealthy eating habits.

On 05/08/2022, a chest computed tomography was performed, which showed a small pleural effusion on the right, with compressive atelectasis over the adjacent lung parenchyma and enlargement of the left heart chambers. On the same day, he continued with serum tests, with a new troponin of 40.20 ng/L and normal renal function (creatinine 1.4 mg/dL and urea 41 mg/dL). Blood count with leukocytes of 15900 /µL, hemoglobin 15 g/dL, hematocrit 44.3%, platelets 219,000 /µL, C-reactive protein 22.7 mg/L, ESR 10 mm/h, d-dimer 1985 ng/mL, ck- mb 18.8 Ui/L, cpk 92 Ui/L, sodium 133 mmol/L, potassium 4.1 mmol/L, ionic calcium 4.63 g/dL, magnesium 1.88 mg/dL and urine summary without leukocyturia and negative nitrite. Thyroid functions within normal limits by laboratory reference (TSH 2.75 µUi/mL and free T4 8.8 µg/dL). A metabolic profile was performed with HbA1C 5.3%, LDL 90 mg/dL, HDL 28 mg/dL, triglycerides 133 mg/dL, total cholesterol 141 mg/dL.

Transthoracic echocardiogram of 05/09/2022 with 33 mm aorta, 49 mm left atrium with indexed volume of 45 ml/m², left ventricular end-diastolic diameter of 63 mm, left ventricular end-systolic diameter of 52 mm, with fraction Teicholz ejection rate of 33%. Diastolic septum thickness of 10 mm and diastolic thickness of the left ventricular posterior wall of 10 mm. Diffuse hypokinesia of the ventricles, with an estimated PASP of 34 mmHg, mild dilatation of the left ventricle and right atrium, impairment of right ventricular systolic function and marked left ventricular diastolic dysfunction. Simpson ejection fraction of 29%.

With therapy already optimized for heart failure with reduced ejection fraction, the patient underwent cardiac magnetic resonance imaging (05/09/2022) which showed mild dilatation of the right atrium and moderate dilatation of the left heart chambers. Left atrium with a diameter of 49 mm (rv 19 to 43 mm) and a volume of 66 ml/m² (rv 21 to 52 ml/m²). Right ventricle with diffuse hypokinesia of the walls and an ejection fraction of 38%, with a diameter smaller than 52 mm (rv: 22 to 44 mm) and larger than 76 mm (rv: 65 to 95 mm), and an end-diastolic volume of 156 ml (rv: 119 to 219 ml) and end-systolic of 96 ml (rv: 32 to 92 ml). Left ventricle with anterior septum of 7 mm and posterior wall of 7 mm, ejection fraction of 25%, end-diastolic diameter of 66 mm (rv: 37 to 53 mm) and end-systolic

diameter of 57 mm, with end-diastolic volume of 259 ml (rv 119 to 203 mm) and end-systolic of 194 ml (rv 33 to 77 ml) with thinning and akinesia of the basal lower segment and hypokinesia of its other segments, as well as mild pericardial effusion and moderate pleural effusion on the right (Figure 2A) . Absence of edema and lipomatous infiltration in the myocardium. Basal lower segment hypoperfusion during dynamic resting perfusion. Late enhancement (fibrosis/necrosis) of an ischemic, transmural pattern, in the lower basal segment and in part of the lower middle segment (Figures 2B and 2C), in addition to mild late non-ischemic, linear mesocardial enhancement in the basal inferoseptal segment. Mesocardial enhancement at right ventricular insertions at the basal portion of the interventricular (junctional) septum, often associated with cardiac chamber overload/pulmonary hypertension. In conclusion, myocardial fibrosis with a multivariate pattern and absence of alterations compatible with acute inflammatory activity in the myocardium/pericardium, which cannot exclude coronary artery disease and Chagas disease.

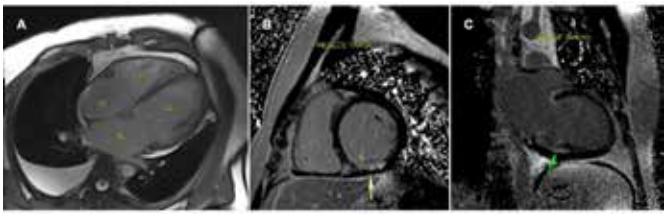

Figure 2 – Cardiac magnetic resonance 05/09/2022: (A) SSFP CINE in 4 chambers – mild dilatation of the right atrium and moderate dilatation of the left chambers, right ventricle with increased dimensions, showing mild pericardial effusion and moderate pleural effusion on the right. (B) delayed short-axis enhancement sequence – delayed transmural enhancement, with an ischemic pattern, in the lower basal segment of the LV. (C) late enhancement sequence, in two left ventricular chambers (2 ECH), ischemic pattern, transmural, of the lower basal segment of the LV.

Serology was performed for Chagas disease, with non-reactive IgM and IgG and negative hemagglutination. Serology for HIV, hepatitis B and C, VDRL, HTLV, all non-reactive. IgM negative for CMV and Epstein Barr virus, and IgG reagent for CMV and Epstein Barr. Non-reactive covid serology (IgG and IgM). Negative PCR for covid on admission.

On 05/12/2022, coronary angiography was performed, showing a severe multivessel obstructive pattern, with mild diffuse atherosclerosis in the right coronary artery, emitting posterior descending artery with 80% obstruction at its origin and right posterior ventricular with 90% obstruction at its origin (Figures 3 A and B). Anterior descending artery with 90% obstruction in the proximal third (Figures 3 C and D) and circumflex artery with 95% obstruction in the proximal third (Figure 3 E). First marginal with 70% obstruction at the origin and proximal third, second marginal with 60% obstruction at the origin and proximal third, and left posterior ventricular artery with 90% obstruction at its origin (Figure 3 F), showing a Syntax I score of 32.

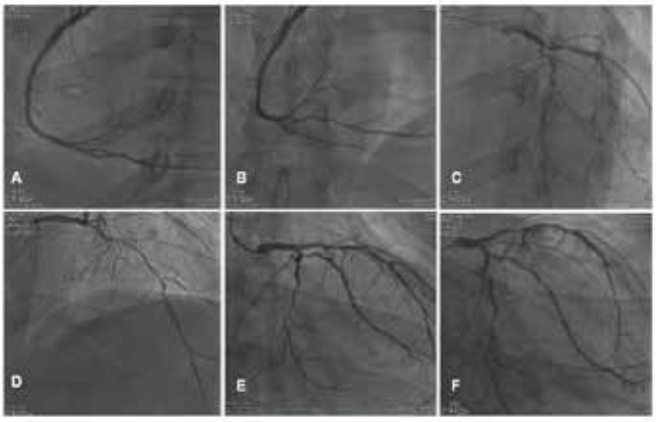

Figure 3 – Coronary angiography evaluation on 05/12/2022: (A) Right coronary artery with mild diffuse atherosclerosis. (B) posterior descending with 80% obstruction at its origin and right posterior ventricular with 90% obstruction at its origin. (C) and (D) anterior descending artery with 90% obstruction in the proximal third. (E) circumflex artery with 95% obstruction in the proximal third. (F) first marginal with 70% obstruction at the origin and proximal third, second marginal with 60% obstruction at the origin and proximal third, and left posterior ventricular artery with 90% obstruction at its origin.

Due to a complaint of pain in the right calf during hospitalization, followed a few days later by sudden and mild chest pain in the dorsal region, the patient was diagnosed with deep vein thrombosis in the right lower limb seen on Doppler US (05/10/2022) , and anticoagulation with full enoxaparin was started, and pulmonary thromboembolism was documented due to failure of filling of the subsegmental arterial branch at the right lung base (Chest angiotomography on 05/17/2022).

With the patient compensated, in profile A of heart failure, apoA 106 mg/dl (rv 79 to 169 mg/dl), apoB 72 mg/dl (rv 46 to 174 mg/dl) collection was performed on 05/18/2022 dl) and LpA 53.8 mg/dl (rv less than 30 mg/dl). He was discharged on 5/20/2022 with optimized therapy: sacubitril/valsartan 100 mg twice daily, carvedilol 50 mg twice daily, ASA 100 mg once daily, atorvastatin 80 mg once daily, spironolactone 25 mg once daily, dapagliflozin 10 mg once daily and warfarin 5 mg one and a half tablets daily. He was then evaluated by the gastroenterologist, being diagnosed with dysbiosis, receiving intestinal flora replacement treatment, with subsequent improvement of gastrointestinal symptoms.

On 06/29/2022, the patient was readmitted for myocardial revascularization surgery, with implantation of the left mammary artery in the anterior descending artery, implantation of the left radial artery in the marginal artery and left posterior ventricular artery, and a saphenous vein bypass in posterior descending artery and right posterior ventricular. The patient was extubated in the operating room, without complications during the surgery, with hospital discharge on 07/06/2022, maintaining previous medications and referred for clinical follow-up.

DISCUSSION

The present case report draws attention to the high morbidity and mortality risk in a young patient with low cardio-

vascular (CV) risk according to Framingham, but with diffuse and three-vessel coronary atherosclerosis, with signs and symptoms of acute heart failure, evidencing an increase in LpA . LpA contributes to CV risk through multiple pathways. Quantitatively, it carries the entire atherogenic risk of LDL particles, including a greater propensity for oxidation after entering vessel walls, creating highly immunogenic and proinflammatory particles[9]. However, its main pathognomonic component is found in apoA, a plasminogen-derived structure that potentiates the atherothrombosis process, including inflammation through oxidized phospholipids, as well as a decrease in its clearance by impairing the anchoring in LDL receptors and potentiating the antifibrinolytic effects by inhibition of plasminogen activation [10].

The CV risk mediated by LpA should be considered by its amount/absolute mass value, given that 70 to 80% of patients at risk have low levels of LpA and elevated LDL. However, as we observe increases above 25 to 30 mg/dl (which represents 30% of the population), a linear increase in CV risk is observed. In addition, oxidized phospholipids carry a high pro-inflammatory power by increasing monocyte-mediated cytokine production and their migration to vessel walls, resulting in atherothrombotic risks [11,12].

Recent data have shown that values above 30 mg/dl of LpA infer a higher risk of AMI13, and this observation is confirmed by a large meta-analysis of 124,634 participants, where an acceleration of risk was observed with values already above 24 mg/dl [14]. In light of these advances in dyslipidemia, in 2016, the Canadian Society of Cardiology scored a value > 30 mg/dl as a risk factor and recommended measuring LpA mainly for intermediate-risk patients, as well as individuals with an early history of coronary heart disease in the family. These findings are of great interest to physicians and patients as they would restratify intermediate risk patients to higher or lower risk, and would lead to changes in therapies and therapeutic targets [15]. The Bruneck study with a prospective follow-up of 15 years showed a reclassification risk in 39.6% of subjects (both high and low risk), and concluded change in risk in 4 out of 10 patients if the measurement was included in the Framingham score [16].

More than 90% of circulating LpA have their concentration genetically determined, with little influence by diet and external factors and with little fluctuation in their dosages 17. It is postulated that its measurement should be evaluated at least once, mainly in the first lipidogram of any individual, and a new collection is unnecessary in case of normality, regardless of changes in treatment. In 2010, the European Atherosclerosis Society recommended LpA measurement for all patients with premature CVD, familial hypercholesterolemia, early family history, CVD recurrence despite statin therapy, and for reclassification of patients at borderline risk [18].

Regarding drug therapy, previous studies suggested intensifying LDL control in view of the increase in LpA. However, new studies (such as AIM-HIGH, JUPITER and LIPID) demonstrated that the elevation of LpA alone reflected residual risks of CVD despite controlled LDL levels [19,20,21]. Another point highlighted by some pre- and post-treatment reports with statins corresponds to the paradoxical increase in LpA with these drugs, as observed by an analysis of 3,896 patients, in which the use of atorvastatin, pravastatin, rosuvastatin, pitavastatin and the addition of ezetimibe, raised LpA levels by up to 11%, and further studies are still needed to better understand this phenomenon [22,23].

CONCLUSION

The reported case reinforces the importance of new and large studies regarding the pathophysiology of the atherosclerotic process, a more accurate risk stratification of the evaluated population, and the application of more in-depth methods in the evaluation of obscure dyslipidemias in clinical practice as well as non-invasive exams (anatomical and/or functional) in individuals at low/moderate risk for changes in LpA. In addition, we must estabçish in high-risk patients, in the presence of optimized therapies and lifestyle changes, but with new atherosclerotic events, what are the non-modifiable risk factors where science and gene therapies could act.

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DOI - 10.37951/2675-5009.2022.V3.I8.P22-25

CASE REPORT

BILATERAL INFERIOR DISLOCATION OF THE PROXIMAL HUMERUS (LUXATIO ERECTA) IN A PILATES SESSION: A CASE REPORT

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ABSTRACT

Defined by partial or total loss of joint congruence, the most frequent dislocations are glenohumeral. Of these, the most uncommon have an inferior presentation, being even rarer if bilateral. Usually associated with little or no neurovascular loss, it has a typical presentation of "raised arms", making it impossible to reduce without sedation in the operating room, due to pain and difficulty in reduction maneuvering and patient cooperation. Here we present the case of a patient with luxatio erecta after a pilates session, who was well managed in the emergency department of a private hospital, with loss of range of motion and neurovascular alterations compatible with the available literature.

KEYWORDS: LUXATIO ERECTA, INFERIOR DISLOCATION, SHOULDER, PILATES, HUMERUS

INTRODUCTION

Dislocation is described as the phenomenon of total or partial loss of joint congruence, with the shoulder being the most frequent in the human body, with about 45% of all cases1. It was first described in 2000 BC. by Edwin Smith and later by Hippocrates, in 450 BC, the latter with more detail in his account[1].

It can occur for anterior, posterior, inferior and superior (theoretical). Inferior dislocation, also known by the term "luxatio erecta", is the type with the rarest real occurrence (only 0.5% of cases), it was first described by Middeldorf and Schram in 1859 [2,3]. Its bilateral presentation is even rarer, with no percentage report in the literature [3,4].

It does not usually have a specific prevalence of age, and can occur in any age group from 3 to 75 years 2. The clinical picture is characteristic, with the patient presenting with severe acute pain, being in the classic "arms raised" position [1, 2,3,4] (shoulder abduction between 100 and 160 degrees, elbow flexion around 90 degrees and full pronation of the forearm) [1], almost always with the forearm resting on the head or the contralateral hand holding the affected arm 5. It is often possible to palpate the head of the humerus in the axillary or anterior region of the thorax [3].

The causes or mechanisms of trauma can vary from the direct or indirect mechanism, the latter being more frequent. The first one occurs when a great load is sustained (sudden or not), with rupture of the inferior glenohumeral ligaments and the joint capsule, and the association with rotator cuff tears and/or fracture of the greater tuberosity of the humerus is common [1,3].

The second, described by Freudlinch (1983)[4], occurs through a mechanism of hyperabduction of the shoulder, not being related so much to the energy of the trauma, but rather to the position of the arm at the time of the trauma. This exacerbated movement impacts the proximal third of the humerus against the acromion, generating a leverage force that moves the humerus to the lower region. This mechanism can lead to rotator cuff injury, tearing of the middle and inferior glenohumeral ligaments, and the inferior border of the joint capsule [1].

The pectoralis major muscle is responsible for maintaining the erect position of the humerus. While the long portion of the triceps prevents posterior dislocation and the superior glenohumeral ligament prevents anterior dislocation. Thus, the humeral head is pulled downward by the teres minor and latissimus dorsi muscles [1,3,4].

The treatment is urgent, with closed reduction being performed in a surgical center under anesthesia (plexus block + sedation), in some there is difficulty in direct reduction, it is necessary to first obtain the change from inferior dislocation to anterior dislocation and from there classic maneuvers were used for reduction 7,8. There are cases that do not accompany complications such as ligament, neurovascular and muscle injuries, especially in cuff injuries in young patients, and direct surgical repair is chosen in a time to avoid morbidities and accelerate the patient's recovery [7].

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This article seeks to present a distinct case of luxatio erecta in order to compile the report and its association with the common practice of Pilates in elderly patients, which even under supervision, can lead to accidents and serious complications.

CASE REPORT

Male patient, MMT, 85 years old, was admitted to the emergency room of a private hospital in November 2021, brought by firefighters without trauma protocol, after indirect trauma to the shoulders during a pilates session.

The patient reports that he was in the prone position (ventral decubitus) on a pilates table, strengthening the upper limbs with a spring, with guidance and close monitoring by a physical therapist, when it escaped from both hands, resulting in chest trauma on the table with abducted upper limbs.

On physical examination, he was in a classic position with his arms raised, bilaterally, with his hands holding the contralateral forearms. He complained of intense pain on any attempt to manipulate the upper limbs. On palpation, the humeral head was felt in the bilateral axillary region. There were no neurovascular changes on admission.

A bilateral AP shoulder x-ray was taken, as shown below.

Figura 1 - radiografia da admissão

He was instructed on the urgency of the case, the condition and possible complications, and closed reduction in the operating room was chosen, after waiting the time requested by the anesthesiologist for fasting, despite the orientation of the urgency of the case.

In the operating room, a traction-countertraction maneuver was performed, obtaining the anterior dislocation and from there, a Spaso technique was performed for reductions. Fluoroscopic control with scopy showed bilateral reduction, so immobilization was applied in bilateral Velpeau bandage.

Below are the control x-rays after the patient was released from the Post-Anesthetic Recovery Room (PAR), which, per hospital protocol, were not performed in the operating room.

Figure 2 - AP radiograph - post reduction control, right side

Figure 3 - scapular lateral radiograph - post-reduction control, right side

Figure 4 - AP radiograph - post reduction control, left side

Figure 5 - X-ray in scapular profile - post-reduction control, left side

The patient was followed up at our service for 3 months.

On the first return visit with 13 days of evolution, he presented with active elevation of 145°, active external rotation (ER) of 50° and internal rotation (IR) in the lumbar, negative hornblower's sign in the right shoulder, and active elevation of 30°, passive 160° with crepitus, active ER 10° and IR in lower thoracic, positive lag sign in left shoulder.

He had a control x-ray with glenohumeral reduction, head elevation on the left and rotator cuff arthropathy on the right. Motor and proprioceptive physical therapy was oriented, with an option for conservative treatment of his injuries, and an MRI was requested for a better evaluation.

On the second return visit, 3 months after reduction, he reported improvement in the condition on the right, with persistence of pain on the left. On physical examination, on the right, he had active elevation of 155°, active ER 50°, thoracic-lumbar IR, positive jobe with reduced strength, no pain, positive infraspinatus tests with reduced strength, no pain, hornblower and gerber negative. The left had active elevation of 50°, passive elevation of 160° with crepitus, RE 40°, thoracolumbar IR, positive jobe, positive infraspinatus test with loss of strength and mild pain, negative hornblower and gerber.

Patient underwent infiltration with Triancil and local anesthetic, being instructed to remain with physiotherapy and return after 2 months. Patient did not return and we were unable to contact the patient and family.

CASE DISCUSSION

We present the case due to its peculiarity of occurrence in a pilates session, not being affected by load or high energy traumas. Patient with age above the standard presented in the reviewed articles (85 years old, against a maximum of 75 years old in the other articles) [2,3,4,5,6,7,9,10]. Something that we believe is due to the fact that patients have a great increase in life expectancy since the publications and updates of the age groups.

A rare entity, luxatio erecta presented in this case with a clinical picture and classic trauma mechanisms, with elevated limbs and hyperabduction trauma (indirect mechanism) 1,2,8,9,10. Not presenting nerve or vascular lesions, going against some presentations cited in articles read [5,6,7].

In his treatment, closed reduction was chosen in a surgical center under anesthesia (brachial plexus block) and sedation, as recommended by several authors [2,3,4,7,8].

In the follow-up of the patient, his condition improved, with evolution in his physiotherapy sessions, however, the patient probably already had a rotator cuff (RC) injury, due to rotator cuff arthropathy, which would hardly have been established in such a short time of injury.

In line with the literature [2,3,4,6,8,9,10], the patient did not have a large reduction in his shoulder range of motion, loss of sensitivity or major changes in strength. The patient had no new complaints during the follow-up period, with no associated vascular or skin changes.

Unfortunately, we did not perform follow-up long enough to determine a substantial improvement in the patient's condition, who had major changes in the physical examination, greater on the left, something that made comparison with the literature difficult.

CONCLUSION

With a rare presentation, we emphasize the importance of the article for the mechanism of trauma in an elderly patient,

requiring better follow-up and tracking of the patient, especially in pilates sessions, which appear to be simple, but can have severe complications such as the case mentioned.

We believe in the maxim "we only greet those we know", we emphasize the need for the report for better appreciation and knowledge of the orthopedic community about the unusual trauma condition and mechanism, in order to improve the recognition of the condition and management.

We hope that the article will also serve the relatively scarce database of the pathology and its presentations, contributing to its future studies and dissemination.

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DOI - 10.37951/2675-5009.2022.V3.I7.P26-31

REVIEW ARTICLE

CONGENITAL SYPHILIS AND ASSOCIATED FACTORS IN ANÁPOLIS – GOIÁS, 2017-2021

RHAYANNE CLAUDINE MENDES NETO, IZAURA COSTA RODRIGUES EMÍDIO

ABSTRACT

Congenital syphilis is an epidemiological case of increasing progression over the years. Reports of confirmed cases of congenital syphilis are frequently reported worldwide.

The Midwest region has scarce literature associated with the discovery of epidemiological parameters. Thus, the main objective of this work is to identify the prevalence and factors associated with congenital syphilis in the city of Anápolis - Goiás, between the years 2017 to 2021.

A concave curve was discovered in this period, showing a progressive increase and subsequent progressive decay, over the years studied, for the Midwest region.

These results showed a prominent place for the region of Anápolis (third place), among all other cities studied in the Midwest region. Despite presenting results, further studies on the city of Anápolis are needed to explore epidemiological knowledge about the region.

KEYWORDS: NOTIFICATIONS; MIDWEST; EPIDEMIOLOGY; PREVALENCE.

INTRODUCTION

Transmitted by the bacterium Treponema pallidum, syphilis is known as a Sexually Transmitted Infection (STI), transmitted by a microerophilic pathogenic spirochete, belonging to the order Spirochaetales, of the family Treponemataceae. This pathology can present in different stages (primary, secondary, latent and tertiary) and present with different clinical manifestations. It has a worldwide distribution and is characterized by being an infectious, systemic disease, with a chronic evolution and rapid dissemination [1,2].

Considered a pathology of systemic and chronic evolution, it can be acquired through unprotected sexual intercourse with an infected person, blood transfusion, or even transmitted from mother to child at any stage of pregnancy or at delivery (congenital form), with high vertical transmission rates [2].

Congenital syphilis is caused by the transmission of the T. pallidum agent from an untreated or inadequately treated infected pregnant woman to her fetus via the placenta. The determining factors of this type of transmission are the stage of the mother's disease and the exposure time of the fetus in the uterus. Epidemiological estimates show that the rate of vertical infection in untreated women is approximately 70%, being 30% in the late phase of infection and reaching 100% in the early stages [3].

According to data from the 2016 Epidemiological Bulletin on syphilis, the progression of acquired syphilis, between 2014 and 2015, had an increase of 32.7%, syphilis in pregnant women, 20.9% and congenital 19 % [4,5]. According to notifications to the Information System on Diseases and Notification (SINAN), around 169,546 cases of syphilis in pregnant women were recorded during the period from 2005 to 2016, in Brazil 5. The progression of cases is the result of insufficient preventive actions and treatment. Based on this, care for this population should be prioritized, with a focus on prenatal care. In this context, an accounting of cases in microregions such as Anápolis-Goiás can be of paramount importance, in order to, associated with other measures, reduce the prevalence of congenital syphilis throughout the national territory.

Based on this information, a numerical estimate of congenital syphilis cases in Anápolis - GO, in the period 2017-2021, emphasizes the real situation of the municipality and, in possession of this profile, it is possible to outline actions and strategies for focus groups. In this way, the possibilities of prevention can be increased and thus contribute to the reduction of the incidence of congenital syphilis. Thus, the main objective of this work is to identify the prevalence and factors associated with congenital syphilis in the city of Anápolis - Goiás between the years 2017 to 2021.

METHODS

This research is a retrospective descriptive epidemiological study, which aims to know the profile of congenital syphilis in the city of Anápolis, from 2017 to 2021. Data from SINAN, available in DATASUS, from 2017 to 2021 were

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consulted. In order to avoid notification delay errors, we analyzed the data available until 2021, which is considered the last year for which complete data are available.

In order to identify published studies on congenital syphilis, in the present study, a bibliographic survey of scientific articles published in the ScienceDirect, PubMed, Medline, Web of Science, EMBASE, LILACS, Scielo and Google Scholar databases was carried out, between the years from 2006 to 2022. For the research, the following descriptors were used: "Sífilis", "Sífilis congênita", "Sífilis e Anápolis", and their corresponding words in English: "Syphilis", "Congenital Syphilis", "Syphilis and Anápolis" . The search took place between April and May 2022, totaling 10 works, of which 10 were selected for the development of this research.

After data collection, analysis and interpretation, the Microsoft® Excel 2020 program was used to tabulate data and expose the real situation in the city of Anápolis, with representation of the incidence of congenital syphilis through tables and graphs.

Due to the fact that it is a public domain database, it was not necessary to submit it to the Research Ethics Committee.

RESULTS

3.1. THE YEAR 2019 WAS THE MOST RECORDED IN CASES OF CONGENITAL SYPHILIS IN BRAZIL

The results for confirmed cases of congenital syphilis throughout Brazil are shown in Table 1.

The year of greatest evidence in numbers, in the Midwest region, is the year 2019 (n = 365), followed by the year 2018 (n = 360) and 2020 (n = 320). However, we can see a curve in Figure 1, represented by the distribution of confirmed cases over the years studied by our research.

Year of Diagnosis	Midwest region	Total
2016	6	6
2017	295	295
2018	360	360
2019	365	365
2020	320	320
2021	157	157
Total	1503	1503

Table 1: Congenital syphilis – Confirmed cases reported in the Notifiable Diseases Information System in Brazil*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

Figure 1: Representation of the distribution of a five-year period (2016 to 2021) of confirmed cases of congenital syphilis in the Midwest Region
Source: Ministry of Health/SVS- Diseases Information System – SINAN NET

3.2. THE MONTH OF APRIL WAS THE MOST RECORDED MONTH IN THE PAST 5 YEARS IN BRAZIL

The distribution of results referring to the months compiled in the last five years is represented by Table 2.

The number of confirmed cases in April was 169, followed by March (n = 150), June (n = 147) and May (n = 141).

Month of diagnosis	Midwest region	Total
January	111	111
February	136	136
March	150	150
April	169	169
May	141	141
June	147	147
July	129	129
August	122	122
September	107	107
October	87	87
November	110	110
December	94	94
Total	1503	1503

Table 2. Congenital syphilis – Confirmed cases by month of diagnosis and region of notification*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET

*Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.

3.3. ANÁPOLIS IS REGISTERED AS THE 3rd LARGEST REGION IN NUMBERS OF CONGENITAL SYPHILIS CASES IN BRAZIL

Among all the municipalities analyzed within the Midwest Region, the most notified was the region of Goiânia

(n = 693), followed by Rio Verde (n = 270) and, with emphasis, we have the region of Anápolis (n = 184) , ranked as the third region with the most confirmed cases of congenital syphilis. Briefly, the complete data are presented in Table 3

Municipality of Notification	Midwest region	Total
TOTAL	1.503	1.503
Águas de Lindóia	2	2
Aloândia	1	1
Anápolis	184	184
Anicuns	1	1
Aparecida de Goiânia	77	77
Aragarças	1	1
Avelinópolis	1	1
Barro Alto	1	1
Bela Vista de Goiás	2	2
Bom Jesus de Goiás	5	5
Cachoeira Dourada	1	1
Caçu	2	2
Caiapônia	3	3
Caldas novas	1	1
Campinorte	1	1
Campos Belos	5	5
Catalão	11	11
Ceres	31	31
Chapadão do Céu	3	3
Cristalina	7	7
Divinópolis de Goiás	1	1
Faina	1	1
Firminópolis	1	1
Formosa	7	7
Goianésia	2	2
Goiânia	693	693
Goiatuba	2	2
Iporá	2	2
Itaberaí	2	2
Itajá	2	2
Itapaci	1	1
Itapuranga	2	2
Itumbiara	5	5
Jaraguá	1	1
Jataí	79	79
Luziânia	1	1
Mambaí	1	1
Mineiros	1	1
Morrinhos	7	7
Niquelândia	1	1
Novas Crixás	2	2
Novo Gama	1	1
Orizona	1	1
Palmeiras de Goiás	1	1
Paraúna	1	1
Pirenópolis	3	3
Pires do Rio	2	2
Planaltina	1	1
Pontalina	1	1
Posse	5	5
Quirinópolis	1	1
Rio Verde	270	270
Santa Helena de Goiás	2	2
São Luís de Montes Belos	1	1
Senador Canedo	18	18
Trindade	29	29
Uruaçu	9	9
Vicentinópolis	3	3

Table 3. Confirmed cases of congenital syphilis by Region of Notification, according to Municipality of notification*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET

***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.4. WHITE MOTHERS AND WITH INCOMPLETE HIGH SCHOOL ARE THE BIGGEST FACTORS ASSOCIATED WITH CONGENITAL SYPHILIS

Confirmed cases according to the mother's level of education are shown in Table 4.

In greater numbers (n = 295) there is Incomplete High

School, followed by incomplete 5th to 8th grades of Elementary School (n = 251) and, finally, complete High School (n = 206).

Mother's schooling	Midwest region	Total
Total	1.503	1.503
Ign/White	497	497
Illiterate	5	5
Incomplete 1st to 4th grade Elementary school	25	25
Complete 4th grade Elementary school	32	32
Incomplete 5th to 8th grade Elementary school	251	251
Complete primary education	132	132
Incomplete High school	295	295
Complete High school	206	206
Incomplete higher education	22	22
Complete higher education	15	15
Not applicable	23	23

Table 4. Confirmed cases of congenital syphilis by Notification Region according to mother's educational level*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.5. AMONG ALL AGE GROUPS, 80 YEAR OLD AND OLDER MOTHERS PREVAIL IN GENERATION OF CONFIRMED CASES

The relationship of the mother's age group in confirmed cases of congenital syphilis is shown in Table 5.

The cases in which the mothers are eighty years old or older (n = 1,430) are discrepant from the White ratio (n = 73).

Mother Age Group	Midwest region	Total
Total	1.503	1.503
White	73	73
80 and +	1.430	1.430

Table 5. Confirmed cases of congenital syphilis by Notification Region by age group of the mother*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.6. PRENATALS ARE PERFORMED FOR CONFIRMED CASES OF CONGENITAL SYPHILIS

The classifications of mothers who underwent prenatal care (n = 1,174) were associated with confirmed cases of congenital syphilis by Table 6.

In a majority and discrepant way, mothers who had prenatal care (n = 1,174) were in greater numbers when compared to those who did not have prenatal care (n = 243).

Underwent Prenatal Care	Midwest	Total
Total	1.503	1.503
Ign/White	86	86
Yes	1.174	1.174
No	243	243

Table 6. Confirmed cases of congenital syphilis by Notification Region according to prenatal care*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

.7. CHILDREN UP TO 6 DAYS OF AGE HAVE A HIGHER PREVALENCE OF CONGENITAL SYPHILIS

In Table 7, we have the confirmed cases in relation to the age group of the carrier. In these results, we highlight the age group of up to 6 days of age (n = 1,455), followed by 28 days to less than 1 year (n = 23) and, later, from 7 to 27 days (n = 20).

Age group	Midwest region	Total
Total	1.503	1.503
Up to 6 days	1.455	1.455
7-27 days	20	20
28 days to < 1 year	23	23
1 year (12 to 23 months)	5	5

Table 7. Confirmed cases by Notification region according to age group of carrier*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.8. PARTNERS DO NOT PERFORM TREATMENT

According to the results presented in Table 8, confirmed cases, according to the treatment of the mothers' partners, were reported, for the most part, with the non-treatment of the partner (n = 847), twice as much when compared to the positive partner treatment (n = 424).

Partner treatment	Midwest region	Total
Total	1.503	1.503
Ign/White	232	232
Yes	424	424
No	847	847

Table 8. Confirmed cases by Region of notification according to partner treatment*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.9. A LARGE PART OF CONGENITAL SYPHILIS CASES EVOLVE TO SURVIVAL

The evolution of cases of congenital syphilis is shown in Table 9. In discrepant numbers, we have the survival condition (n = 1,340) for confirmed cases of congenital syphilis and, in lower parameters, death by disease (n = 18) and death for other causes (n = 22).

Evolution	Midwest region	Total
Total	1.415	1.415
Ign/White	35	35
Alive	1.340	1.340
Death due to notified disease	18	18
Death from another cause	22	22

Table 9. Confirmed cases by Region of notification according to Evolution of cases with congenital syphilis*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

3.10. RECENT CONGENITAL SYPHILIS HAS A HIGHER PREVALENCE WITHIN MORBIMORTALITY

The final classification of congenital syphilis is shown in Table 10. The classification as recent reached higher numbers (n = 1,415) and, with lower numbers, stillbirth/abortion due to syphilis (n = 23) and discarded (n = 65).

Final classification	Midwest region	Total
Total	1.503	1.503
Recent Congenital Syphilis	1.415	1.415
Stillbirth/Abortion due to Syphilis	23	23
Discarded	65	65

Table 10. Confirmed cases by Notification Region according to Final Classification*
Source: Ministry of Health/SVS - Disease Information System - SINAN NET
***Confirmed cases by Year of Diagnosis and Region of Notification; Notification region: Midwest region; Notification State: Goiás; Period: 2017-2021; Data from 2007 to 2021 updated on 06/30/2021, data subject to review; Data made available on TABNET in December / 2021.**

DISCUSSION

The prevalence of congenital syphilis in the region of Anápolis-GO was high, as found in the results presented by our research, which point to Anápolis occupying the third place among all the cities evaluated in the Midwest Region. In this study, a total of 184 confirmed cases were identified in the municipality of Anápolis in the period from 2017 to 2021. In the study by Dias6, the region of Anápolis was identified with a total of 268 cases in the period from 2011 to 2016. Within this prevalence, they corresponded to a range of 54% general cases in mothers aged 20 to 29 years, 23% corresponded to incomplete secondary education, 38% were diagnosed in the 3rd trimester of pregnancy and, curiously, 65% prevailed in brown color people.6

In the results found by Bezerra et al. [7], as a measure of congenital syphilis and child health conditions in Brazil, in the years evaluated (2010 to 2015), the number of confirmed cases in children under one year of age increased in a proportion from 6,944 to 19,228 cases in five years. However, in his assessment of the Midwest region, this, among all Brazilian regions, had the lowest numbers of confirmed cases (n = 4,089) [7]. Recently, and corroborating this study, Dos Santos et al. [8], in a study on syphilis in Brazil, with a more epidemic perspective, showed an increasing progression of confirmed cases of syphilis during pregnancy (in greater proportions when compared to other types of syphilis), acquired syphilis and congenital syphilis, evidenced among the years from 2007 to 2020 and greater specifications between the years 2011 to 2017 8. In this study, also for congenital syphilis, evaluated between the years 2007 to 2017, the Midwest region showed significant rates (AAPC = 19.06%) on average percentage of annual changes.

The prevalence of congenital syphilis in Brazil, when compared to other countries such as Mexico, according to the study by García-Cisneros et al. [9], is in increasing progress, also corroborating the studies mentioned above. However, with a somewhat straight growth for evident increasing progress, from the year 2017 to 2019. In disagreement with our results (Figure 1), which show a concave curve for the distribution of cases of congenital syphilis, the cases presented by the study by García-Cisneros et al. 9, show a convex distribution (2010-2019) [9].

According to our results, factors that influence mothers' conditions, such as education classification, were prevalent for Incomplete High School (n = 295), eighty years or more (n = 1,430) and prenatal care (n = 1,174). Regarding the carrier's conditions, a prevalence of up to six days was identified in relation to age (n = 1,455). The acquisition of congenital syphilis was also attributed to the condition of the partner, where non-treatment was identified (n = 847). In addition, in relation to the carrier's conditions, it was observed that most children with congenital syphilis progress to survival (n = 1,340), and this pathology is, in most cases, classified as recent congenital syphilis (n = 1,415).

Services with prenatal care of quality can positively influence the outcomes of pregnancies. The significant increase found in different studies and also with a peak evidenced in our study (Figure 1), can be attributed to improvements in case notifications over the years, as well as advances in epidemiological surveillance in different ways around the world. In this context, we can highlight the implementation of the Project: No Syphilis! [10] and, in their estimates, congenital syphilis has a higher transmission ranking. The Midwest region, however, has lower reported cases when compared to other Brazilian regions.

In this epidemiological study, we can see that there was

increasing progression, followed by decreasing progression in recent years (2021), in the Brazilian Midwest region. Corroborating with several studies, it is worth emphasizing, mainly, that there is a progress in the notifications of congenital syphilis in different periods surveyed, over the years, in the regions studied. The region of Anápolis, despite occupying a prominent place in cases of notification, according to the database consulted, has few studies. As a result, further studies are needed to emphasize the importance of research and health centers aimed at acquiring notification data on confirmed cases of congenital syphilis and other types of syphilis in the region of Anápolis. This study, therefore, achieves an innovative objective in the discovery of recent parameters on the Midwest region, attributing characteristics to the Anápolis region for the present times.

ACKNOWLEDGEMENTS

To my son Gabriel, my husband Edson, my parents and brothers, who encouraged me in difficult times and understood my absence while I dedicated myself to carrying out this work.

To my colleagues and preceptors of the Medical Residency, in particular, to Dr. Izaura, for being my advisor and having performed this role with dedication and friendship.

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DOI - 10.37951/2675-5009.2022.V3.I8.P32-38

REVIEW ARTICLE

PREVALENCE AND TREATMENT OF CHRONIC PAIN IN ELDERLY BRAZILIANS WITH OSTEOARTHROSIS: AN INTEGRATIVE REVIEW

ANGELA ASSIS [1], JAQUELINE FREITAS [1], ROBSON EMILIANO [2]

ABSTRACT

Introduction: Osteoarthrosis is joint wear, it can evolve with deposits of marginal osteophytes, and is directly related to the aging process. Pain treatment is guided by etiological factors, which leads to conservative, drug, surgical or combined treatment. Objective: To analyze Brazilian literature, recent and free, in order to promote reflections on the subject. Guide physical therapists in their care practices on the impacts of treatments on OA, with the intention of optimizing and potentiating the effects of physical therapy. Methodology: An integrative literature review was carried out, where the guiding question is: What is the prevalence and treatment of chronic pain in Brazilian elderly with OA? An online search for articles on online platforms was carried out from October 2021 to February 2022. Results: Initially, the total number of articles found on the platforms was n=498, with n=492 being excluded because they did not meet the Inclusion criteria. After a thorough reading of the studies, n=6 articles were included for analysis and discussion, with treatments for surgical and conservative OA. Conclusion: OA treatments have a positive effect on chronic pain. The prevalence of chronic pain in Brazilian elderly with OA is high, especially in overweight elderly women, but Brazilian scientific production is not so satisfactory in terms of quantity and quality.

KEYWORDS: SCALES; FUNCTIONALITY; POLYPHARMACY; ARTHROPLASTY; PHYSIOTHERAPY

INTRODUCTION

Chronic Non-Communicable Diseases (CNCDs) can affect various systems and organs of the body, being more present in the elderly aged 60 years and over, generating a greater need for health care for this group. Among the health problems during aging, musculoskeletal disorders occupied the 5th position in the world ranking in 2017 of the disability-adjusted life years lost indicator and the 3rd place in Brazil 1. Data show that NCDs have a direct influence on 70% of all annual deaths, with low- and middle-income countries being the most affected in numbers. Style and QoL are determining factors for acquiring these diseases or not [2, 3].

Osteoarthrosis (OA) is part of the group of CNCDs and is defined as a progressive degeneration of the articular cartilage, caused by an imbalance between water and protein matrix. That is, the wear is greater than the body's natural repair process, resulting in some changes in the subchondral bone and synovial inflammation [4, 5, 6].

The elderly are more susceptible to the condition, as it is a progressive condition, but among this group, elderly women stand out after the climacteric (hormonal factors). The hip (coxarthrosis) and knee (gonarthrosis) joints are the most affected joints due to joint overload. Influencing factors that should be observed are age, time of exercise and type of work activity, family history of rheumatologic diseases, obesity, frequency, intensity and type of physical exercise [7].

Chronic pain can have several etiological factors, however the most common causes are musculoskeletal disorders and tissue injuries, negatively impacting the health of the elderly. The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with, or similar to that associated with, actual or potential tissue damage" [8, 9, 10, 11].

The time that the pain is referred to can tell about the evolution process of the injury or possible injury. Acute pain is referred to for a short period of time, usually in the inflammatory phase, which is eliminated by the time the etiology of the pain is treated. Chronic pain, on the other hand, is referred for a longer and indefinite period and, therefore, is not treated only as a symptom, but rather as the disease itself, according to some authors [11, 12].

Drug therapies are important for the prophylaxis of morbidities, as well as for the treatment of signs and

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symptoms. Elderly people tend to have polypharmacy included in their routine, as physiological factors of aging and some important conditions, already acquired during years of life, can cause chronic pain or become susceptible to it. In order to reduce symptoms and prevent disease, doctors prescribe, or the elderly themselves medicate. On the other hand, the patient may be more exposed to drug side effects, substance interactions, possible intoxications and even systemic overloads [13].

Pain treatment can be guided by etiological factors, preferably carrying out a detailed case study, composed of a multidisciplinary team, which directs a drug-free treatment (physical exercises and physiotherapy), with the prescription of drugs (anti-inflammatory or analgesics) or combined, in order to reduce chronic pain and obtain good therapeutic results [14, 15].

Souza and Lima (2020), concluded in their study that 100% of the participants reported improvement in pain after taking medication, of which 58.5% took drugs according to a medical prescription and 37.5% self-medicated [11]. Ferretti (2019) also studied chronic pain in the elderly and found that physical activity did not show a direct relationship with the reduction of chronic pain[10]. It also concluded that elderly people with chronic pain are more likely to be more sedentary, which is in line with the study by Barreto et al. (2018), reflecting that the greater the chronic pain, the greater the chances of non-adherence to physical therapy treatment [14].

When it comes to therapies in the health of the elderly, coexistence groups are used in order to maintain and control physical and mental disabilities as a health promotion and form of intervention, bringing well-being, autonomy, improving self-esteem and promoting social inclusion [14, 2]. It is necessary for the therapist responsible for the patient with OA to know the best form of treatment after the diagnosis, in addition to monitoring its evolution, since the risk factors for OA, if not treated correctly, can induce a generalized OA or cause joint biomechanical abnormalities [7].

The elderly are more sensitive to invasive or surgical therapies, so physical therapy is one of the professions sought after in order to treat conditions through more conservative therapies. Physiotherapeutic treatment in OA has several therapeutic goals, depending on the patient's main complaint, such as: maintaining or increasing functionality, maintaining or restoring Range of Motion (ROM), maintaining or achieving good performance in Activities of Daily Living (ADLs).), relieve symptoms of pain, stiffness and inflammation, improve QoL, improve prognosis, increase patient life expectancy, among others. For this, physiotherapy uses several therapeutic methods, including kinesiotherapy and mechanotherapy promoting muscle rebalancing, aerobic training, electrothermophototherapy, manual therapeutic resources, hydrotherapy, cardiorespiratory exercises, prescription of orthotics, guidelines, among others [6, 16, 17].

This study aimed to analyze the Brazilian literature, recent and free, in order to promote reflections on the subject that can be objectives of future studies, in addition to guiding physical therapists in their care practices on the impacts of treatments (drug, non-drug, surgical and combined) in OA, with the intention of optimizing and potentiating the effects of physical therapy.

METHODS

The PICO strategy is widely used because it considers important issues within the scientific community in order to guide evidence-based practice. Thus, the acronym corresponds to "P" for patient or population, "I" for intervention, "C" for comparison or control and, finally, "O" for outcome or result [18, 19]. The present integrative review was structured from the PICO anagram (P: elderly - 60 years or older), with OA and chronic pain, of both sexes; I: drug and non-drug treatments; C: surgical treatments; O: score and other results on chronic pain The guiding question was: What is the prevalence and treatment of chronic pain in elderly Brazilians with OA?

The development phases of the review included: identification of the theme and elaboration of the guiding question; establishment of criteria for inclusion and exclusion; search for primary studies in the databases; evaluation of selected studies; review writing; and presentation of the review.

About the inclusion criteria: articles made available in full and free of charge in English, Portuguese or Spanish were included; published between the years 2015 and 2022; with a sample of elderly Brazilians with OA and chronic pain treated with or without medication. Studies carried out in an international sample were excluded; non-primary studies such as opinion reports, comments, editorials, letters, other reviews and meta-analyses.

The search was performed in the databases Latin American and Caribbean Health Sciences Literature (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE), PEDro, Scielo, PubMed and Bireme. The Health Sciences Descriptors (Desc) used in Portuguese, English and Spanish were: elderly, chronic pain, osteoarthritis, drug treatments, polypharmacy, surgery, non-drug treatments, conservative treatments and physiotherapy performing permutations with Boolean operators AND, OR and NOT.

The articles were selected after searching the freely available literature, in the aforementioned databases, according to the established keywords. The filtering of the studies was performed by two evaluators to calculate the agreement index (Kappa), analyzing the titles and abstracts and applying the inclusion and exclusion criteria. After the inclusion of the studies, readings were carried out in full and discussion among the evaluators. Finally, the writing of the review was carried out based on the analysis and discussion between the evaluators for each selected article.

The methodological quality was verified through the journal's percentile in the Scopus base, where higher values portray higher qualis of the published journal. Percentage levels above 87.5% are considered journals with A1 qualis, and levels below 12.5% are considered with B4 or C qualis.

RESULTS

The search for articles on online platforms was carried out, according to the methodology of this study, from October to December 2021 and January to February 2022. Initially, the total number of articles found on the platforms was n=498, with n= being excluded. 492 for not meeting the inclusion criteria and/or presenting one of the exclusion criteria items, with the majority being excluded for presenting a non-Brazilian intervention sample. After a thorough reading of the studies that remained from the filters (n=11), it resulted in the final selection of n=6 articles included for analysis and discussion (Figure 1).

In the analysis of the articles included, data collection was carried out regarding the journal, the authors and the study, such as: title, year of publication, objectives, theoretical framework, type of study, methodology, sample characteristics, intervention, results and conclusions .

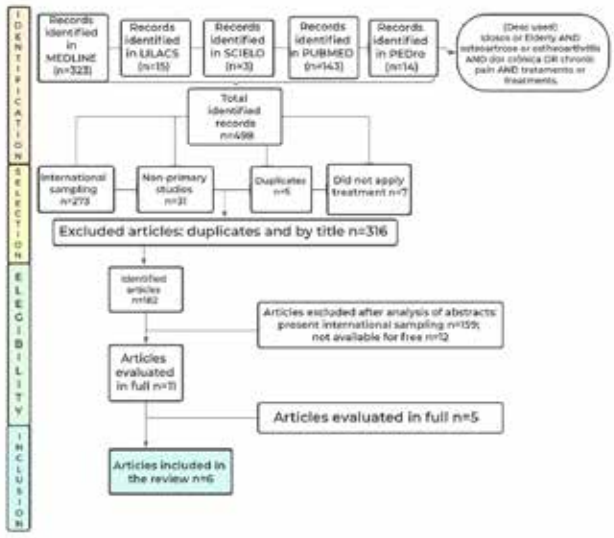

Figure 1. Flowchart of the steps in the process of selecting articles for the integrative review.
SOURCE: authors of the research (2022)

The analysis of the studies allowed the construction of two primary categories: surgical OA treatment (Chart 1) and conservative OA treatment (Chart 2). The division into these two categories is justified by the fact that OA, in more chronic cases, causes the appearance of peripheral osteophytes, together with the condition of cartilage wear, in an attempt to repair it. The signs and symptoms resulting from this process (pain, joint stiffness and crackles) cause great impacts on ADLs and on functional capacity (FC), also varying according to the intensity and degree of impairment. Finally, all this compilation of information, added to the detailed assessment of the patient, guides the treatment modalities adopted by the multidisciplinary team: conservatively or surgically.

Title (Year)	Authors	Objective	Methodology
Assessment of quality of life and balance in elderly patients undergoing knee arthroplasty surgery **(2018)**	Oliveira IC, Santos KT, Reis LA.	To evaluate QoL and balance in elderly patients undergoing knee arthroplasty (KTA) surgery.	Cross-sectional, descriptive research with a quantitative approach.

Chart 1. Presentation of the synthesis of articles included in the integrative review - Surgical OA treatment category.

In the study by Oliveira, Santos and Reis (2018), they analyzed 31 elderly people in the state of Bahia (BA), with a mean age of 68.29 years, 54.8% female, with a partner (87.1%), high school education (47.4%), monthly income of 2 to 3 minimum wages (71.0%) and living with someone (93.5%). Of this sample, 61.3% of the elderly underwent right KTA and 48.4% used some support equipment after the surgery. The highest means identified in the SF-36 questionnaire were in the mental health and FC domains. The average score of the elderly in the Timed Up and Go (TUG) test was 15.55 points, with the majority (87.1%) classified as having a medium risk of falling. In conclusion, the study identified that the evaluated elderly had the lowest averages in the SF-36 questionnaire in the physical aspect (7.00 ± 1.39 points) and QOL pain (7.16 ± 1.39 points) domains, indicating a worse prognosis. Thus, it was evidenced that the evaluated elderly submitted to KTA surgery had impaired QoL and presented a risk of balance after the procedure 20.

Title (Year)	Authors	Objective	Methodology
Effectiveness of triamcinolone hexacetonide intraarticular injection in interphalangeal joints: a 12-week randomized controlled trial in patients with hand osteoarthritis **(2015)**	Paschoal NDOS, Natour J, Machado FS, Oliveira HAV, Furtado RNV	To assess the efficacy and tolerability of mid-term IIA of the TH corticosteroid for the treatment of PIP or PIP joint OA on clinical and functional variables.	Randomized, prospective, controlled, double-blind, intention-to-treat study.
Application of kinesiotherapy and electrothermotherapy in the treatment of elderly with knee osteoarthrosis: a comparative study **(2016)**	Almeida FDJF, Araújo AERDA, Carvalho CAD, Fonsêca PCDA, Nina VJDS, Mochel EG.	To verify the effects of two therapeutic protocols in elderly women with Knee Osteoarthritis (KOA).	Uncontrolled, randomized clinical trial.

Os benefícios da laserterapia de baixa intensidade associados a exercícios domiciliares em idosos com osteoartrite de joelho **(2020)**	Abreu TS, Sanches EMG, Oshiro JM, Boldrini FCBC, Morimoto MM.	Observar a influência na dor, rigidez e função em idosos antes e depois da aplicação da laserterapia associados a exercícios domiciliares.	Estudo experimental e descritivo.
Exercise program combined with electrophysical modalities in subjects with knee osteoarthritis: a randomised, placebo-controlled clinical trial **(2020)**	Gomes CAFP, Politti F, Pereira CDSB, Silva ACB, Dibai Filho AV, Oliveira AR, Biasotto-Gonzalez DA.	Analisar os efeitos clínicos da inclusão da incorporação de terapia por corrente interferencial (TIC), terapia de diatermia por ondas de hort (SDT) e fotobiomodulação (FOTO) em um programa de exercícios em pacientes com OAJ.	Estudo prospectivo de cinco braços, randomizado e controlado por placebo, realizado com participantes e examinadores cegos (duplo-cego).
Motor cortex transcranial direct current stimulation effects on knee osteoarthritis pain in elderly subjects with dysfunctional descending pain inhibitory system: A randomized controlled trial **(2021)**	Tavares DRB, Okazaki JEF, Santana MVA, Pinto ACPN, Tutiya KK, Gazoni FM, Trevisani VFM.	To assess whether transcranial direct current stimulation (tDCS) reduces pain in elderly patients with KOA and dysfunctional descending pain inhibitory system (DPIS)	A double-blind, parallel, randomized controlled trial.

Chart 2. Presentation of the synthesis of articles included in the integrative review - Conservative OA treatment category.

In the state of São Paulo (SP), Paschoal et al (2015), randomized a sample of n=60 patients, being n=58 (96.67%) female with a mean age of 60.7 years (± 8 ,two). Intra-articular injection (IAI) lidocaine with corticosteroid TH/LD was used in the corticosteroid group (n=30) and lidocaine alone in the control group (n=30) for the treatment of OA of the Proximal Interphalangeal (PIP) or Distal Interphalangeal (DIP), considering the most symptomatic joint. Visual Analogue Scale (VAS) pain at rest, pain on movement and joint swelling were the variables considered with important results. Thus, 2 of the 3 most important variables had better results in the corticosteroid group. It was concluded that despite the improvement in intragroup results in almost all study variables, there were statistical differences between groups only for joint movement pain and joint swelling, with greater efficacy found in the corticosteroid group (from the first week to the last evaluation) . Overall, the procedure proved to be simple and inexpensive, well tolerated and effective in relieving pain and joint swelling in the treatment of patients with OA of the PIP and PIP joints. The study did not observe major adverse effects that would contraindicate IAI in these joints [21].

The study by Almeida et al. (2016), with the participation of 30 female patients, 40% of whom were widows, 53.3% had an income of 2 minimum wages, 72.6% were overweight or obese, aged between 61 and 80 years, diagnosed with Primary knee OA (predominantly on the right - 56.7%). Participants were randomized into G1 - kinesiotherapy group (3 sets of 30 seconds of passive stretching of the hamstrings, tensor fasciae latae and triceps surae, patellar and talocrural intra-articular mobilization, 3 sets of 12 to 15 repetitions of isotonic knee flexion exercises of the free active knee and hip flexion with free active knee extension and 10 minutes on a stationary bicycle) and G2 - electrothermotherapy group (TENS for 30 minutes in acupuncture mode, and electrodes placed on the anterior portion of the affected knee. Continuous ultrasound, intensity 1 MHz dose 0.8 W/cm2, also applied to the anterior portion of the knee, varying from 3 to 5 minutes). In both groups (G1 and G2) there was a reduction in the level of pain, a significant improvement in the ROM of extension of the right knee (compared before and after the intervention). In G1, there was also a significant improvement in bilateral knee flexion and extension ROM (right and left). In G2, there was a significant improvement in bilateral knee extension ROM and right knee flexion. Thus, the study in the state of Maranhão (MA) concluded that the therapeutic modalities of kinesiotherapy and electrothermotherapy were effective in improving patients with OA, mainly in reducing pain and improving ROM, also highlighting the group treated with kinesiotherapy (G1) in which the improvement was more pronounced [16].

Abreu et al. (2020) analyzed 11 participants (10 women and 1 man) with a mean age of 64.7 years, mean body mass index (BMI) of 27.74, diagnosed with knee OA. Of these, 1 participant was excluded for not having 75% of attendance, making the research unfeasible, and among the 10 remaining participants, only 3 were practitioners of some physical activity. Home exercises were prescribed (3 sets of 30 seconds of quadriceps, hamstrings, adductors and gastrocnemius stretching; 3 sets of 8 repetitions of strengthening exercises) and class 3B laser was applied, with a wavelength of 850 nm, with a pulse output of 5 mW/cm², of 6 points per cm² of 6 J per point. The VAS before and after the intervention showed a moderate correlation and the Western Ontario and McMaster Universities Arthritis Index (WOMAC) pain questionnaire with a strong correlation, and a significant difference in Pearson's correlation. An improvement after intervention was analyzed

by the general WOMAC, showing a significant difference and a very strong correlation, also obtaining a significant improvement in the t-test (p=0.01). WOMAC initial and final stiffness resulted in moderate correlation and FC initial and final very strong correlation and WOMAC functions showed significance. The initial and final general Lequesne algofunctional questionnaire had a strong correlation. In short, it could be concluded that, in the study of the state of SP, after application of laser therapy associated with home exercises, there was no significant improvement in the pain condition through VAS, but in the general WOMAC and WOMAC FC item, significant improvement was identified, in addition to the functional evolution through WOMAC and Lequesne questionnaires in patients with Osteoarthrosis of the Knee (KOA) [22].

Gomes et al. (2020), found, in a study carried out in the state of SP, that of the research volunteers (n=100) n=92 were women, aged between 40 and 80 years (average of 68.66 years) and n=77 participants had right KOA. These participants were randomly assigned to 5 groups (n=20): exercise, exercise and placebo group, exercise and Interferential Current Therapy (ICT), exercise and Hort's Wave Diathermy Therapy (SWD), and finally, exercise and photobiomodulation (PBMT). In all groups, there was a significant pre- and post-intervention increase in all variables (WOMAC: pain, stiffness and function, Numerical Pain Scale (END), item F2.2 of the WHOQOL-100: fatigue, sitting test and lift), except the pain threshold pressure. Therefore, the addition of ICT, SWD or PBMT to an exercise program for individuals with KOA does not increase the clinical benefit compared to exercise performed alone [23].

The study by Tavares et al. (2021), in SP, found that enrolled participants (n=104) were randomly allocated, with n=51 participants assigned to receive active Transcranial Direct Current Stimulation (tDCS) (74.78 years, n=42 women, n =44 retired, n=29 with right KOA, n=15 Kellgren-Lawrence I classification) and n=53 to receive simulated tDCS (73.13 years, n=46 retired, n=28 with right KOA, n=11 Kellgren classification -Lawrence I and n=6 classification IV). The tDCS had the current intensity gradually increased up to 2 mA, fixed and decreased (up to 0 mA) during 30 seconds at the beginning and at the end of the stimulation, respectively. The anode electrode was placed over the primary motor cortex contralateral to the most affected knee and the cathode over the supraorbital area contralateral to the anode. Of the total number of participants (n=104), 102 completed the survey. In the intention-to-treat analysis, the active tDCS group had a significantly greater reduction in BPI (Brief Pain Inventory) compared to the sham group (difference, 1.59); and also a significantly greater improvement in CPM (Conditioned Modulation of Pain) knee pressure and CPM hand pain. These effects were not sustained at follow-up. The intervention was well tolerated and without serious adverse effects. It was found that tDCS is associated with a moderate effect in reducing pain in elderly people with KOA after 15 daily stimulation sessions. Therefore, this intervention has also been shown to modulate the Descending Dysfunctional Pain Inhibitory System (DPIS) [24].

Regarding methodological evaluation, the lowest evaluation found among the articles in the sample was 3% 16, journal C, and the highest was 96% [24], therefore being classified as journal A1. Other relevant studies, selected in the sample, obtained classification A2 with 79% [21], and A4 with 60% [23].

DISCUSSION

OA is the 4th most important cause of disability among women and 8th among men. It is estimated that 20% of the world's elderly population suffers from the symptoms of OA, affecting 50% of the elderly over 60 years and 80% of the elderly over 75 years. In Brazil, it affects 16.2% of the Brazilian population and has an impact on the demand for orthopedic medical care, resulting in high costs to public health. In addition, it generates 7.5% of absences and is the 4th determining cause of retirement (6.2%) due to reduced capacity to perform work. The higher incidence among women is justified by hormonal and biomechanical changes, especially in the knee, compromising QoL and increasing the risk of morbidity and mortality [16, 25].

Scientific production of higher methodological quality is characterized by detail. From this review, it was possible to observe some instruments used to measure pain and fatigue, in a quantitative and practical way, they are the scales: SF-36, EVA, WOMAC, Lesquene, END and WHOQOL-100. The scales were important tools to develop statistical analyzes of the variables: pain, ROM, FC and QOL, in addition to the Kellgren-Lawrence classification, identifying the stage of OA. They also highlight, among the searches, the Knee injury and Osteoarthritis Outcome Score (KOOS) and TUG function scale.

Arthroplasty is the most common treatment for end-stage OA, and hip arthroplasty is the surgical replacement of the bony hip joint with inorganic joint components. Unconventional hip arthroplasty, total hip conversion arthroplasty, revision hip arthroplasty and cementless or hybrid primary total hip arthroplasty are offered by the Unified Health System (SUS) [26, 27].

This surgical procedure improves the functionality and QoL of the patient, with OA being one of the main causes for performing hip arthroplasty, along with fractures of the acetabulum and femoral neck resulting from falls. Decreased vascular flow around the hip joint due to femoroacetabular impingement (FAI), which causes deformation of the femoral head present in OA, are also important risk factors [27, 28, 29].

Knee arthroscopy is a surgical procedure that removes damaged cartilage and loosened tissue, in addition to smoothing the joint surfaces of the knee. This treatment remains common in symptomatic KOA, including degenerative meniscal injuries. O'connor et al (2022) demonstrated that arthroscopic surgery is unlikely to provide

clinically important benefits on knee-specific QoL, offers little or no clinically important benefit on pain or function, and may not improve treatment success compared to with a placebo procedure [30].

Aguilera-Bohórquez et al (2021), on the other hand, were able to observe in their study that compared a group of adults and elderly people with FAI treated through arthroscopy, that the group of patients aged 40 years or younger showed a considerable change in the WOMAC score, but without statistical significance compared to the group over 60 years. The results found suggest that hip arthroscopy is beneficial in the case of an appropriate selection of patients with FAI, regardless of the age of the individuals [21].

Comparing surgical intervention (arthroscopic partial meniscectomy) versus non-surgical intervention (physiotherapy), we identified low-quality evidence (risk of bias and imprecision) that suggests that there may be little difference in pain and function at 12-month follow-up in people undergoing the surgical intervention compared to the non-surgical intervention group. The study also describes that the pain variable obtained 0.2 points of absolute improvement by the KOOS pain scale in the surgical group. The function by the KOOS function scale obtained 0.8 points of improvement with surgery. During the study period, the surgery group had three serious adverse events: fatal pulmonary embolism, myocardial infarction, and hypoxemia, whereas the physical therapy group had two serious adverse events: sudden death and stroke [26].

Also in the study by Palmer et al (2019), also considering low quality of evidence, they indicate that there may be no benefit from arthroscopic surgery over other non-surgical treatments (saline irrigation and hyaluronic acid injection). Therefore, until then, there is uncertainty around the current evidence to support or not the surgical performance in mild to moderate KOA. In this way, they conclude that it is possible that future trials of higher methodological quality and statistical relevance will not contradict these results. That is, there may be little or no benefit of surgery over progressive exercise in terms of pain and function, over osteotomy, and over knee joint distraction [26].

TKA is a surgical procedure for the treatment of advanced KOA and is effective in reducing pain, realigning the affected limb, and restoring joint function and mobility. In addition, it is possible to observe an improvement in FC in about 90% of patients, with implant durability of around 15 years (95%) and 21 years (91%). There is an eligibility profile to perform TKA, but population aging and the increase in the prevalence of obesity, among other risk factors, corroborate a growing demand for and performance of this procedure, which is why there is an increase in financial expenses [31].

Intra-articular injection (IAI) with steroids is widely prescribed by rheumatologists, with rapid and satisfactory results for at least 4 weeks for the treatment of KOA [21]. However, Palmer et al (2019) report that joint lavage with saline solution or hyaluronic acid injection demonstrates little or no benefit over arthroscopy [26].

A Cochrane review of exercise in KOA reported improvement in pain after the proposed exercise program, with a less evident improvement among participants who did not exercise. In addition, exercise practitioners reported improvement in physical function after the therapeutic program. The results were similar in relation to QOL: improvement after intervention in the active group. In terms of dropout, 14 of 100 participants dropped out of the exercise group and 15 dropped out of the non-exercise group [32].

When it comes to scientific production, especially in the area of health science, Brazil's research is concentrated in the Southeast region. The city of São Paulo stands out for producing 20% of the total Brazilian scientific production, in addition to being part of the group of 20 municipalities that produced the most science in the world 33. The present review found studies from the Southeast region (SP), more than half of the total number of studies, and the northeast region (BA and MA).

CONCLUSION

Treatments for OA have a positive effect on chronic pain, as this symptom is a consequence of the disease. Therefore, surgical and conservative treatments, whether medicated, non-drug or combined, are effective in pain, in addition to improving other aspects such as ROM, QOL, FC and mental health. Only one study[32] brought the Kellgren-Lawrence classification, but none brought the time of referred pain, in order to classify it as chronic pain. Aspects such as simple, well tolerated treatments, of lower cost and without adverse effects should be taken into account.

The population in the process of senescence should be the target of future free scientific studies, especially when the objective is to enrich the Brazilian academic and scientific area, through the review of current literature. From this study, it can be observed that the prevalence of chronic pain in Brazilian elderly with OA is high, especially in overweight elderly women, but Brazilian scientific production is not so satisfactory in terms of quantity and quality. There is a need for investment in Brazilian science, especially in the North and Midwest regions, which were not represented in the sample in this publication.

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DOI - 10.37951/2675-5009.2022.V3.I8.P39-48

REVIEW ARTICLE

MALIGNANT PHYLLODES TUMOR: A SYSTEMATIC REVIEW OF THE LITERATURE

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ABSTRACT

Phyllodes Tumor of the Breast (PT) is an uncommon type of fibroepithelial neoplasm of the breast that affects mainly black women. It usually presents itself painlessly and with accelerated growth of the neoplastic mass. This growth will vary according to the biological behavior assumed by the tumor, and may be benign, borderline or malignant. The form of diagnosis is based on a tripod, consisting of clinical, laboratory and imaging exams. Surgery is still the main approach to treating the disease. The work developed is a systematic review of the literature on Malignant Phyllodes Tumor of the Breast (MPT). For this review, we searched the literature in PubMed and MEDLINE databases. In this way, we seek to provide an update on the approaches taken and advances made over the last five years.

KEYWORDS: BREAST TUMORS; MALIGNANT BREAST TUMORS; BREAST PHYLLODES TUMOR; MALIGNANT PHYLLODES TUMOR OF BREAST; RECURRENC

INTRODUCTION

Breast cancer is currently considered a public health problem not only in developed countries such as the United States and Western European countries, but also in developing countries such as Brazil. Non-epithelial malignant neoplasms represent less than 5% of all breast tumors. Among the main non-epithelial neoplasms of the breast are the Phyllodes Tumor[1].

The Phyllodes Tumor of Breast was first described in 1774 as "a giant type of Fibroadenoma". The first author to use the name "philistine cystosarcoma" was Johannes Muller in 1838. However, its cystic component nor its potential for malignancy had yet been reported. In 1981, the World Health Organization abandoned the term cystosarcoma and adopted the term "Phyllodes Tumor"[2-5].

The Phyllodes Tumor (PT) is part of the so-called fibroepithelial lesions. These lesions comprise a heterogeneous group of biphasic tumors that have different epithelial and stromal components in their morphology (demonstrating a widely variable clinical behavior), they include Fibroadenomas and Phyllodes Tumors. Therefore, Phyllodes Tumor represents 2.5% of all fibroepithelial tumors and 0.5% to 1.0% of all breast tumors[6]. Histologically, Phyllodes Tumors are similar to Fibroadenomas in that the epithelial-lined spaces are also surrounded by cell stroma. However, in Phyllodes Tumors, stromal cells are monoclonal and neoplastic[7].

Phyllodes Tumors are categorized as benign, borderline and malignant according to the World Health Organization (WHO). Most phyllodes tumors are benign, accounting for 60 to 75% of cases. Borderline and malignant phyllodes tumors are less frequent, accounting for 15% to 20% and 10% to 20%, respectively, of all cases. Benign disorders predominate in young premenopausal women and malignancy rates increase with advancing age [8-10].

Most cases of Phyllodes Tumor of the Breast occur in women between the third and fifth decade of life, and it affects mainly black women and for its diagnosis a triple evaluation is necessary. This evaluation consists of encompassing clinical, radiological and histopathological investigation of suspicious breast nodules. This disease usually manifests as voluminous tumors, typically larger than 5 cm, painless, with a firm consistency, a raised or lobulated surface, well defined, mobile and without involvement of the skin or deep tissues. Phyllodes Tumors also have the potential for local recurrence, being common in malignant Phyllodes Tumor (MPT) with reported frequencies ranging from 10 to 65% of cases. Furthermore, distant metastases occur due to systemic dissemination and, despite being rare, they are highly severe and mainly affect the lungs, bones, liver and brain [11-14].

With regard to treatment, surgical excision with neg-

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ative margins is the main form and is associated with high disease-free survival, long life expectancy, and low recurrence rate. Currently, breast-conserving surgery is an appropriate treatment option, which must have free margins and, thus, obtain an acceptable cosmetic result. In addition to this form of treatment, there is also radiotherapy, which is frequently used, since the Phyllodes Tumor tends to be locally aggressive [15-17].

In view of the above, we believe that the analysis and literary review of the Malignant Phyllodes Tumor of the Breast is pertinent, since this biological behavior is the least frequent and presents high health risks, especially when not addressed at its beginning and in an adequate way. In addition, in our studies it was possible to observe the scarcity of articles that are specifically directed to the Malignant Phyllodes Tumor and, with that, this study can help and expand the sources of knowledge on this subject.

OBJECTIVES

Conduct a systematic review presenting the most recent information on Malignant Phyllodes Tumor of the Breast.

Bring an updated view, from the last five years, on the diagnosis, treatment and metastatic and recurrence events of Malignant Phyllodes Tumor.

METHODOLOGY

A systematic review of the literature was carried out, using the PubMed and Virtual Health Library (VHL) platforms as a source of search strategy. Through these means, articles were searched with the keywords "phyllodes", "tumor" and "breast" (with the connective "AND") in the period from January 2016 to December 31, 2020, covering the last five years. In addition, on the PubMed platform, filters were selected that directed the articles to humans and English and Portuguese languages. In the VHL, the MEDLINE database and the English and Portuguese languages were selected. As a result, a total of 668 articles were analyzed, and in the end only 37 articles actually met our criteria (Diagram 1).

The articles analyzed were included when they met the pre-established criteria. Among them are matters related to Malignant Phyllodes Tumor of Breast such as clinical-pathological characteristics, diagnostic methods, treatment, metastases and local recurrence. And, among the exclusion criteria are articles outside the established period, duplicate references, gene analysis (molecular), male gender, articles that evaluated the three biological behaviors together (benign, borderline and malignant), pregnant or lactating women and children and adolescents under 18 years of age (following the Child and Adolescent Statute – Law 8069 of 1990).

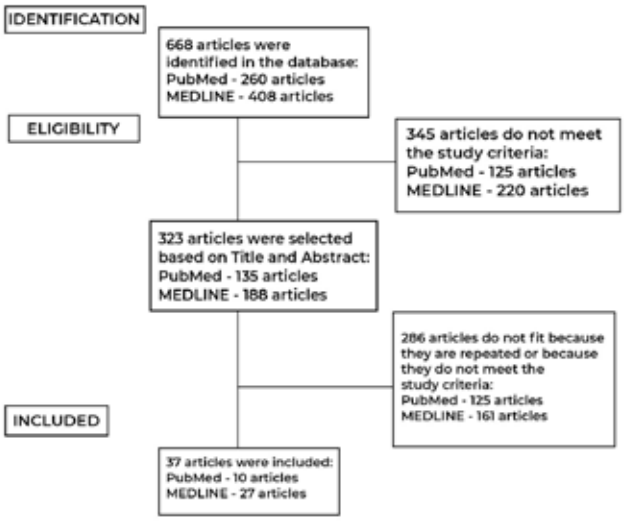

Diagram 1: Methodology followed in the analysis of articles.

RESULTS

Article	Study Methodology	Country	Surgery	Metastasis	Main Results
IMORI et al, 2017	Case report	Japan	Partial Mastectomy and Total Mastectomy	-	Patient 48 years old, PT in left breast. 6 episodes of relapses, all of which were MPT. Radiotherapy (RT) was performed. Currently without recurrence and metastasis.
WU et al, 2020	Case report	USA	Mastectomy	Bone	Patient 58 years old, PT in the right breast.She had 2 fibroadenoma relapses and 1 MPT. After bone metastasis, she refused treatment and later died.
LIEW et al, 2018	Retrospective Study	Malaysia	7 – Mastectomy and 4 – Breast Conserving Surgery	-	Study of 11 patients with MPT with a mean age of 45 years. Of these patients, 6 received RT and 8 developed local recurrence.

Article	Study Methodology	Country	Surgery	Metastasis	Main Results
WANG et al, 2017	Case report	China	Extensive tumor resection	-	A 27-year-old patient with PT in the right breast. She had 2 recurrences of fibroadenomas and the third MPT. She underwent radiotherapy. The patient was in good general condition, with no recurrence.
SHAN et al, 2016	Case report	USA	Partial Mastectomy	Pelvic cavity	A 30-year-old patient with PT on the left breast. She had 5 local relapses, 3 times pelvic metastasis. She underwent chemotherapy. The patient died 72 months after the diagnosis of PT.
SERA et al, 2017	Case report	Japan	Partial Mastectomy	Tonsillar and Pulmonary	A 57-year-old patient with a mass in the left breast. Without relapses and with refusal of treatment, the patient died 1 month after diagnosis.
CHANG et al, 2017	Case report	South Korea	Radical Mastectomy	Pulmonary	A 31-year-old patient with a mass in the right breast. She had several relapses at the surgical margins and metastasis after palliative radiotherapy (RT). Patient died.
RAJESH e FAROOQ, 2017	Case report	India	Mastectomy	-	27-year-old female, PT in the right breast, with 2 relapses, with no recurrence and current metastasis.
CHEN, 2017	Case report	Taiwan	Total Mastectomy	-	A 22-year-old female, PT in the right breast with symptoms of bloody nipple discharge, without recurrence.
WARNER et al, 2017	Case report	USA	Mastectomy	-	45-year-old female with a left breast mass. Patient with stable disease and stable sclerotic lesions were observed in their lumbar vertebral bodies.
WOLBERT et al, 2018	Case report	USA	Mastectomy	-	Female, 46 years old, left breast, diagnosed at an early stage without relapses and metastasis. Performs follow up correctly.
ALBALAWI, 2018	Case report	Saudi Arabia	Total Mastectomy	-	41-year-old female, left breast mass. With a 30 cm tumor, she was referred for RT and chemotherapy.
DURGA et al, 2018	Case report	India	Simple Mastectomy	Ovary	A 33-year-old patient with a mass in the right breast. RT for bone lesions and palliative chemotherapy.
NASRI et al, 2020	Case report	Tunisia	Mastectomy	Pancreas, gallbladder, lung and brain	A 51-year-old patient with an affected left breast. She died 5 weeks after the discovery of brain metastasis.
ABE et al, 2020	Case report	Japan	Mastectomy	Lymph node	A 44-year-old patient with an affected right breast. She had chemotherapy, but died 4 months after the mastectomy.
LEE SE et al, 2020	Case report	South Korea	Breast Conserving Surgery, Mastectomy and Wide Excision	`Pancreas	A 48-year-old patient with a mass on the right. She underwent adjuvant therapy with an immunomodulatory substance.
MORIOKA et al, 2020	Case report	Japan	Nipple Conserving Mastectomy	-	A 28-year-old patient with an affected left breast. She did not undergo radiotherapy and progressed well with no cases of recurrence.
ZHAO et al, 2020	Retrospective Study	China Popular Republic	564 – Mastectomy and 789 – Breast Conserving Surgery	1.3% - Lymph nodes	A total of 1353 patients with MPT participated in the study. Among these 226 received adjuvant RT and 1127 did not. No protective role of adjuvant RT was observed in patients.
LIU HP et al, 2020	Case report	Taiwan	Total Mastectomy	Stomach and brain	82-year-old patient with affected left breast. She had two recurrent local tumors and went on to undergo adjuvant RT. She died after two months.

Article	Study Methodology	Country	Surgery	Metastasis	Main Results
LEE HJ et al, 2020	Case report	South Korea	Breast Conserving Surgery	Scalp, lung and kidney	A 58-year-old patient with a mass in the left breast. She underwent palliative systemic chemotherapy and radiotherapy. Patient presented progressive disease and died 16 months after the initial diagnosis of distant metastases.
ATHAMNAH et al, 2020	Case report	Jordan	Nipple Conserving Mastectomy	-	A 23-year-old patient with a mass in the left breast. Patient underwent adjuvant RT.
NGUYEN et al, 2020	Case report	USA	Simple Mastectomy	-	A 26-year-old patient with an affected right breast. She received adjuvant radiotherapy to the breast and was monitored for recurrence.
SHAFI et al, 2020	Case report	Saudi Arabia	Radical Mastectomy	Bilateral lymph node, chest wall and lung	A 45-year-old patient with an affected right breast. There was no local recurrence, but her lung nodules were increasing in number and size despite chemotherapy.
YAMAMOTO et al, 2019	Case report	Japan	Total Mastectomy	Lung	A 48-year-old patient with a mass in the right breast. Chemotherapy was performed. However, her condition suddenly worsened and she died shortly thereafter.
GREGSTON et al, 2019	Case report	USA	Radical Mastectomy	Lung and brain	A 32-year-old patient with a mass in the left breast. Patient received chemotherapy, however, died 20 months after diagnosis.
KHANAL et al, 2018	Case report	Nepal	Radical Mastectomy	Brain, adrenal and lung	A 37-year-old patient with an affected left breast. There was no local relapse.
PARK et al, 2019	Retrospective Study	South Korea	43 – Cirurgia Conservadora de Mama e 27 – Mastectomia	Lymph node	Mean age 42 years, showed that adjuvant RT in treatment reduces local or distant relapse..
MOON et al, 2019	Case report	USA	Mastectomy	Lymph nodes and lung	48 year old woman, presented PT in the left breast, with complete remission after adjunctive treatment with chemotherapy.
SU et al, 2017	Case report	Taiwan	Radical Mastectomy	-	2 cases of PT in the left breast, with local recurrence, showed good results with RT and chemotherapy.
SHAH-PATEL, 2017	Case report	USA	Mastectomy	-	An 89-year-old female presented with PT in the left breast with rapid tumor progression.
SCHILLEBEECKX et al, 2016	Case report	Belgium	Total Mastectomy	-	A 57-year-old female presented with PT with heterologous lipo sarcomatous differentiation in the left breast.
LIU M et al, 2016	Case report	China	Simple Mastectomy	-	43-year-old female with a giant tumor in the right breast.
EL OCHI et al, 2016	Case report	Morocco	Mastectomy	Bone	Two patients, one 40 years old and the other 48 years old, had a mass in the left breast.
DITSATHAM et al, 2016	Case report	Thailand	Simple Mastectomy	-	A 58-year-old female presented with a rare ruptured PT of the left breast.
JOHNSON et al, 2016	Case report	USA	Mastectomy	Lymph nodes, brain and lung	Female 66 years old, left breast affected. She underwent surgery with tumor cytoreduction and lumbar spinal fusion.
YOGI e SINGH, 2019	Retrospective Study	India	3 – Breast Conserving Surgery, 8 – Wide local excision and 4 – Mastectomy	-	Mean age of the study was 33 years. It shows that adjuvant RT has a significant role in preventing recurrence.
GAO et al, 2018	Case report	China	-	Lung	A 45-year-old patient with a left breast tumor.

DISCUSSION

Phyllodes tumors (PT) are classified as benign, borderline and malignant. Benign represents respectively between 60 and 75% of cases and the remainder is divided between the borderline and malignant subtypes, estimated at 10 to 30%[18-20].

In the current literature, Phyllodes Tumors are known to occur in women aged between 35 and 55 years, who are typically 10 to 20 years older than the peak incidence of fibroadenoma. Previous studies have reported a more frequent occurrence of malignant phyllodes tumor (MPT) in older patients with a mean age of 45 to 54 years[21].

It is estimated that the incidence of malignant PT is 2.1 cases in a million women, with a higher frequency in Latin and Asian women [22-25]. The tumor was almost equally distributed in the right and left breasts in all subtypes. A similar pattern of equal distribution was observed in several other studies. Two studies, however, described a left breast dominance pattern of 71% and 58%[26-28].

The manifestation of Phyllodes Tumor is through voluminous masses, of firm consistency. The size of the tumor can vary from a few centimeters to large lesions that involve the entire breast, with an average of 5 cm[29-31].

Phyllodes Tumors (PT) are categorized as benign, borderline and malignant according to the World Health Organization (WHO). This evaluation consists of encompassing clinical, radiological and histopathological investigation of suspicious breast nodules. Unlike breast carcinomas, PT predominantly start outside the ducts and lobules, in connective tissue, called the stroma, including the fatty tissue and ligaments that surround the ducts, lobules, blood vessels, and lymphatics of the breast. Generally, the clinical picture of the PT is manifested as a single nodule, with a smooth surface and not adherent to adjacent planes, lobulated, painless, pseudo-encapsulated or firm consistency, well defined, and without involvement of the skin or deep tissues, they are voluminous, fast-growing tumors, typically larger than 5 cm[32-36]. These tumors are painless in most cases, but can become painful, smooth, mobile, and with circumscribed edges, from 1 to 10 cm in diameter or even larger. Due to their rapid growth and the ability to reach large volumes as we witness, they can compromise the entire mammary gland. As they increase in volume, they can distend the adjacent skin, making it smooth and shiny, as well as favoring the visibility of the ecstatic venous reticulum and causing mild hyperemia to ulceration [37-39]. They have central cystic areas, most commonly located in the upper quadrant of the breast, bilaterality and multicentricity are exceptional. Axillary adenopathy is common, but it is usually inflammatory in nature, since metastases to axillary lymph nodes are uncommon, even in the malignant variety of the tumor [40-45].

Phyllodes Tumors are sometimes seen with a fibroadenoma-like structure where fibrocystic changes, adenosis, epithelial hyperplasia or atypical hyperplasia can occur, and their actual components are hyperproliferative interstitial cells, ie fibroblasts. Fibroblasts can also differentiate into fat cells, cartilage, smooth muscle, and striated muscle. These cells have lost their normal arrangement and are braided, mesh or spiral-shaped. Tumor cells may be evenly dispersed, with unequal density in different regions and varying degrees of atypia and a variable number of mitotic figures. There may be mucoid degeneration and necrosis or hemorrhage. All of these components can develop into a Sarcoma, the presence of these components indicates a poor prognosis. Invasive Ductal Carcinoma, Lobular Carcinoma and Carcinoma In Situ can also occur in PT, but they are very rare. The Phyllodes Tumor of the Breast has rich and difficult to predict biological characteristics. According to the histopathological criteria defined by the WHO, margin involvement, stromal cellularity, mitotic index and cellular pleomorphism should be observed. Imaging diagnosis by means of ultrasonography or mammography is not considered a routine standard due to the difficulty in differentiating Phyllodes Tumors from fibroadenomas; therefore, the histopathological examination is the gold standard for diagnosis[46].

Thus, ultrasound (USG) is used at first, due to the low cost of the exam and because it is not invasive. The PT appears on ultrasound as a voluminous lobulated mass, with clear boundaries, internally mostly solid hypoechoic uneven echoes, potentially with scattered echo-free zones. Malignant breast phyllodes tumor does not follow the general rules of other types of breast cancer in terms of echo attenuation, and microcalcification is common. Breast X-ray findings are related to the size of the tumor. Smaller tumors are nodules with smoother edges, while larger tumors have more irregular but clear lobulated edges, with greater density than normal glands. Magnetic resonance imaging (MRI) can clearly show the scope of the tumor. Mammary Phyllodes Tumor has low signal based on T1W1 single scan and higher signal based on T2W1. Dynamic lesion with contrast in time signal intensity curve is increasing more and more and the type of platform making it easier to differentiate with fibroadenoma. Among the types of biopsies available, fine needle puncture is not very specific, its accuracy is 23%, with a low predictive value, probably due to the volume of the tumor and the frequent presentation of areas of hemorrhagic infarction, making diagnosis and the distinction between tissues. Core biopsy has a specificity of 65%, being able to differentiate a Phyllodes Tumor from an adenocarcinoma, however, it does not discriminate between benign and malignant characteristics, being more effective in smaller tumors. Most studies suggest that the diagnostic accuracy rate by biopsy for mammary Phyllodes Tumor is around 50%. Thus, the anatomopathological evaluation of the complete piece is the most effective. Even with specific pathological criteria available, a definitive preoperative diagnosis is still difficult in some cases. Some immunohistochemical markers are studied in order to predict the three types, in an attempt to predict their biological behavior and thus better plan the

therapeutic approach. It also serves, in some cases, for the differential diagnosis with fibroadenoma. Ki-67 and p53 stand out, which are fibroblast and vascular endothelial growth factors. Ki-67 is a biomolecular marker that may be useful in differentiating between malignant Phyllodes Tumor and borderline fibroadenoma cases. Ki-67 is expressed much more in the stroma than in the epithelium of the Phyllodes Tumor, due to the large stromal growth, high stromal cellularity, presence of atypia and high rate of mitosis. Ki-67 positivity is also related to the positivity of another marker, p53. Thus, it can be said that the low expression of this marker is more related to favorable prognosis. The proto-oncogene that encodes the tyrosine kinase receptor (CD117) is present in 50% of malignant Phyllodes Tumors and in 5% of benign ones, it also has a higher expression in areas of stromal proliferation[47].

The Malignant Phyllodes Tumor (MPT) macroscopically presents itself as voluminous, bumpy tumors, with an elastic, firm consistency and a grayish-white surface, frequently interspersed with areas of hemorrhage, necrosis and degeneration, responsible for the cystic areas. In histopathology, malignant tumors are derived from periductal or intralobular stroma, their basic structure is similar to intracanalicular fibroadenoma, but with stromal hypercellularity, therefore, it can be called hypercellular fibroadenoma. They have marked stromal cellularity and atypia, high mitotic rate, with more than 10 mitoses per 10 high-power fields, infiltrative tumor margins with the presence of papillary projections lined up in the connective tissue, as well as the presence of stromal overgrowth. Sometimes figures of malignant mitosis can be seen and there may be bleeding, necrosis and multiple recurrence after surgery with poor prognosis. Some studies have shown that malignant Phyllodes Tumor has a larger diameter compared to benign and borderline tumors. In addition, other studies suggest that those with a diameter of 10 cm or more are defined as a large lobulated tumor. There were also studies that showed that some authors subdivide malignant Phyllodes Tumor into high and low grade varieties. This subdivision is based on criteria for stromal growth, margins, mitosis numbers and stromal atypia. Low grade malignant Phyllodes Tumor would have infiltrative margins, 11 to 20 mitoses per 10 high power fields and moderate degree of cellular atypia. The high-grade tumor would have clearly infiltrative margins and a very evident stromal growth, with more than 20 mitoses per 10 high-power fields and marked cellular atypia. This type of subdivision is important in the elaboration of prognosis for different types of Phyllodes Tumor. Immunohistochemical markers are associated with varying degrees of tumor malignancy, such as growth factors, mainly stromal, such as Ki-67, p53 and CD117 (which are more expressed in areas of stromal proliferation)[48].

The treatment of Malignant Phyllodes Tumor is well established regarding the need for excision of the neoplastic mass present in the breast. This excision can be through surgery such as a mastectomy (simple or radical) or breast-conserving surgery (BCS). In addition, radiotherapy, chemotherapy and hormone therapy are used as a complementary therapy, as they seek to help prevent local recurrence and metastasis.

Surgical excision is the first treatment option for Phyllodes Tumor, according to current National Comprehensive Cancer Network guidelines for breast cancer, regardless of the nature of the tumor (benign, borderline, or malignant). This determination is mainly valid for phyllodes tumors larger than 3 cm with free margins greater than or equal to 1 cm. Although some studies mark the extent of margins as controversial, since the tumor penetrates healthy tissue, most state the need for wide local excision to guarantee negative margins of 1 to 2 cm. And if wide local excision (breast-conserving surgery) fails to reach the designated margins, the preferred surgery is simple mastectomy. On the other hand, one of the analyzed studies, by ZHAO et al (2020), showed an improvement in patients undergoing breast-conserving surgery than those undergoing mastectomy, regardless of receiving adjuvant radiotherapy or not ($p < 0.001$). However, patients who underwent mastectomy tended to have higher risk factors. Breast-conserving surgery is feasible in the context of a good cosmetic and oncological outcome for patients with Malignant Phyllodes Tumor[49-50].

Phyllodes Tumor does not have its own guideline regarding adjuvant therapy. Wide local excision is recommended, adopting a margin of 1 cm, with no recommendation of radiotherapy, chemotherapy or hormone therapy as there are no direct guidelines for this. However, the use of adjuvant radiotherapy is indicated due to the higher rate of local recurrence, having relevant value, especially after breast-conserving surgery. This therapeutic approach stands out in cases of Phyllodes Tumors with more than 20 mitoses per 10 high-power fields, larger than 5 cm in size, with stromal overgrowth or with positive margins [49-50]. The use of adjuvant radiotherapy is still controversial, some studies do not show an improvement in the prognosis, while others show a better local control. In patients with Malignant Phyllodes Tumor measuring more than 2 cm after lumpectomy or tumors larger than 10 cm after mastectomy, adjuvant radiotherapy is strongly recommended in order to control the high rate of local recurrence in more than 15% of cases. However, even with this local control, neither disease-free survival nor overall survival are altered 50. The retrospective study by ZHAO et al (2020) also did not show significant benefits regarding survival in the application of adjuvant radiotherapy among patients with Malignant Phyllodes Tumor. Thus, although the use of radiotherapy has recently increased due to the high risk of recurrence, there is no evidence to support this practice [49-50].

The role of chemotherapy still remains unclear in relation to Malignant Phyllodes Tumor, since its effectiveness is unknown. However, the National Comprehensive Cancer Network currently recommends that recurrent metastatic Phyllodes Tumor cases follow treatment guidelines for met-

astatic soft tissue sarcomas. As Phyllodes Tumors are considered soft tissue sarcomas, adjuvant chemotherapy with doxorubicin plus dacarbazine may provide some benefits for patients with large (> 5.0 cm) high-risk tumors [11-14]. Moreover, the usefulness of anthracycline- and ifosfamide-based regimens, as well as high-capacity ifosfamide or anthracyclines plus granulocyte-macrophage colony-stimulating factor, has been reported for the treatment of soft tissue sarcomas. Therefore, our study analyzed situations in which chemotherapy was used, obtaining some positive responses and others that it was not effective. GREGSTON et al (2019) presented a case report in which the patient received AIM chemotherapy (Adriamycin®, ifosfamide and mesna) for six cycles and, despite initially showing a partial response, then the metastatic disease began to progressively advance, evidencing the ineffectiveness of chemotherapy. In the case of YAMAMOTO et al (2019), a benefit was shown with doxorubicin-ifosfamide (AI) therapy before surgery and showed its usefulness for cases of recurrent Phyllodes Tumor. Another case report, by MOON et al (2019), noted the effectiveness of treatment with surgery and chemotherapy. In this case, palliative chemotherapy with doxorubicin plus ifosfamide was used and a complete remission of the patient with lung metastases from a Malignant Phyllodes Tumor was evaluated. Doxorubicin and dacarbazine have been reported to be effective when given with cisplatin or ifosfamide, with ifosfamide being considered the most active agent for metastatic Malignant Phyllodes Tumors. In addition, the combination of doxorubicin plus cisplatin, cyclophosphamide, or ifosfamide may improve median survival in patients with metastatic Phyllodes Tumors. Furthermore, in the neoadjuvant setting, one study found that the combination of bevacizumab with chemotherapy increased the percentage of patients with non-metastatic breast cancer who achieved a pathological complete response. Thus, he evaluated sufficient tumor reduction and an efficacy of neoadjuvant treatment for Malignant Phyllodes Tumor [40-45].

Hormone therapy still does not have in-depth studies that determine it. The practical role of the expression observed in hormone receptors remains unclear, without proof of its real help as an adjuvant treatment [35-40].

Routine lymphadenectomy is not indicated, as Phyllodes Tumors propagate mainly hematogenously and rarely to lymph nodes (<1% have pathological lymph nodes). Sentinel lymph node biopsy is recommended in patients with a palpable lymph node, large phyllodes tumor, or suspected involvement in preoperative imaging. Therefore, if there is no evident clinical involvement of the axillary lymph nodes, dissection is not necessary [11-14].

The treatment for Malignant Phyllodes Tumor is complex and despite the techniques of surgery and adjuvant therapy (radiotherapy and chemotherapy) it still weakens the patient, which can lead to the appearance of local recurrence and metastases. Its difficult management leads to 5- and 10-year survival rates of 82 and 42% for malignant Phyllodes Tumor, respectively [35-40].

The subclassification of Phyllodes Tumor is of paramount importance, since local recurrence can occur in all categories of Phyllodes Tumor [25-30].

High local recurrence is the most important prognostic feature of this condition, with an overall recurrence rate of up to 40% of all histological types of mammary Phyllodes Tumors [47-50].

The type of surgery for Phyllodes Tumor with multiple recurrences separately is rarely reported in the literature. Kapiris et al., did not find in patients with malignant phyllodes tumor (MPT) the statistical significance of expanded local resection and mastectomy, and suggested the importance of negative surgical margin to control MPT recurrence and distant metastases [49-50].

Thus, the current approach to prevent local recurrence and metastasis is surgical resection with wide margins. Wide local excision with negative margins of at least 1 cm is recommended. If negative margins cannot be obtained, simple mastectomy is preferred. The effectiveness between wide local excision and mastectomy is indistinct. Although the possibility of local recurrence has decreased in patients who underwent mastectomy, overall survival did not improve when performing this surgery [40-45].

However, even with extensive surgical resection, the local recurrence rate remains high, ranging from 8 to 36%. The recurrence rate of malignant phyllodes tumors occurred in up to 25% of patients according to a review involving 5,530 patients[7-10].

On the other hand, the exact effect of adjuvant radiotherapy for the local control of different histological types of Phyllodes Tumor recurrence has been focused on by many researchers, but progress is still very small. Studies have shown that adjuvant radiotherapy can reduce local recurrence rates in malignant Phyllodes Tumor, without significant influence on survival [11-14].

Local recurrence is a risk factor for distant tumor metastases. Most distant metastases of Phyllodes Tumor of the breast occurred after local recurrence. However, other investigators have not observed an association between local recurrence and systemic spread. In addition, local recurrence can be rescued by secondary surgery. It is not yet known whether local recurrence is a predictive factor for metastasis of Phyllodes Tumor of the breast, since metastasis can appear without the coexistence of local recurrence [37-40].

Phyllodes Tumor metastasis can occur in all categories: Benign, Borderline and Malignant. Being very rare, the general rates of distant metastases in Phyllodes Tumor vary from 1.7% to 27.1%, with an average of 5.6%, according to the grade of the tumor30. Aggressive malignant phyllodes tumors are prone to rapidly growing metastatic spread. Thus, about 25% of TFM give rise to metastasis [40-44].

Usually, the spread of malignant phyllodes tumors is through the hematogenous route, and not through the lymphatic route. Metastases most often involve: lung (66%), bones (28%) and liver (15%), but almost all other

organs can be affected[45].

Lymphatic metastases are rare, with less than 5% of cases. For this reason, the removal of regional ganglion chains is not recommended, unless preoperative tests reveal the presence of tumors. Thus, axillary surgery is rarely indicated in patients diagnosed with Phyllodes Tumors [30-35].

Distant metastases occur after an average period of 18 months (range 2–57 months). The longest interval between a primary Phyllodes Tumor and the onset of metastasis was seven years. Most patients present with metastases within three years of the initial breast treatment35.

Once Phyllodes Tumor metastasis develops, the prognosis is poor, no long-term survival has been reported. Survival after metastatic disease is low, with several case series reporting a median survival ranging from 4 to 17 months, with wide variability based on the site of metastatic disease. And 5-year disease-free survival rates of 96% for benign phyllodes tumors and 66% for malignant phyllodes tumors[1-5].

It can be seen through this study that there are several articles from the last five years, most being case reports of malignant Phyllodes Tumor with metastasis. In short, these were rare cases of metastasis. SHAN et al (2016) reported metastasis to the pelvic cavity, NASRI et al (2020) pancreas and gallbladder (being the seventh report of pancreatic metastasis and the first of gallbladder in the literature), LIU et al (2020) stomach metastasis with manifestation of anemia (being the second in the literature) and LEE HJ et al (2020) reported a case of metastasis to the scalp. As they are infrequent cases, they should be considered as possible differential diagnoses in cases of previously diagnosed MPT.

The most frequent lung and bone metastases were reported, in most cases, associated with Malignant Phyllodes Tumor along with other rare metastases. SERA et al (2017) reported MPT with pulmonary and tonsillar metastasis, the second reported in the literature, in this case the patient refused treatment and died a month later. DURGA et al (2018), refer to bilateral pulmonary and ovarian dissemination and in several other places, being the first reported case of Phyllodes Tumor metastasizing to the ovaries. OHNSON et al (2016) reported bone, brain, lung, and lymph node metastasis. Only one case similar to this has been previously reported in the literature. KHANAL et al (2018), reported a case of pulmonary, brain and adrenal metastasis. There are only two cases of MPT with simultaneous involvement of these organs.

Some studies have considered tumor size, stromal overgrowth, tumor necrosis, infiltrating margins, mixed mesenchymal components, high mitotic rate, and stromal atypia as important factors in predicting metastatic spread. Another study also considers surgical margins and malignant Phyllodes Tumor [11-14].

For the treatment of metastatic Phyllodes Tumors, few data discuss the relationship between radiotherapy and metastasis. CHAO et al (2019), in a meta-analysis with 696 patients enrolled in 17 studies, found that radiotherapy is effective in achieving local disease control and suggested that radiotherapy may be effective in preventing metastases. This fact is due to the fact that they evaluated that their calculated metastasis rate is 4% in patients treated by radiotherapy, compared to a metastasis rate of 8% in patients receiving only surgical treatment[6-9].

CONCLUSION

Malignant Phyllodes Tumor is a neoplasm of variable biphasic behavior, occurring in approximately 10 to 20% of cases of Phyllodes Tumors.

In order to determine its diagnosis, margin involvement, stromal cellularity, mitotic index and cellular pleomorphism should be observed. Histopathological examination is the gold standard for diagnosis. Imaging diagnosis by means of ultrasound or mammography is common and presents microcalcifications, not following the general rules. Fine needle puncture is not very specific, with an accuracy of 23%. Core biopsy, on the other hand, has a specificity of 65%. However, the anatomopathological evaluation of the complete piece is the most effective to date. The most observed characteristic immunohistochemical markers with malignancy in the study were Ki-67 and p53 related to stromal growth and the CD117 proto-oncogene related to stromal proliferation.

Surgical treatment with resection margins greater than 1 cm is the approach of choice. Adjuvant radiotherapy has been widely used and some articles have highlighted its importance to avoid the risk of metastasis and local recurrence. Chemotherapy has also shown its relevance in helping to control metastases and promoting total tumor remission after surgery. Recurrence of aggressive malignant phyllodes tumors and risk of metastasis can be influenced not only by a negative margin, but also by histological grade, such as stromal overgrowth, high mitotic index, sarcomatous stroma, and infiltrative margin. Thus, our study highlighted the need for an early, complementary approach and regular follow-up to control this aggressive tumor, avoiding recurrence and metastasis.

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