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INCIDENCE OF INGUINAL HERNIAS IN BRAZIL

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INTRODUCTION

Inguinal hernia is a common condition in the paediatric population and is characterized by the protrusion of abdominal tissue through the inguinal ring. This condition can cause pain, discomfort and serious complications, making clinical assessment and surgical treatment essential for children's well-being (NOVAES, 2023).

Although the first descriptions of hernia reduction date back to the time of Hammurabi, it was only in the 19th century that Edoardo Bassini, considered the father of modern hernia surgery, achieved great success in the surgical repair of inguinal hernias. His technique consisted of bringing the medial tissues of the inguinal canal (transverse muscle, greater oblique and greater oblique aponeurosis) closer to the inguinal ligament using separate sutures, significantly reducing postoperative recurrence rates (VITERI, 2016).

Since then, inguinal hernia repair has undergone an evolutionary process, driven by important contributions from anatomists who accurately described fundamental anatomical structures, such as Poupart, Cooper, Thompson and Gimbernat, among others (VITERI, 2016).

Currently, the surgical treatment of infant inguinal hernia is widely performed, with the classic open approach being recognized for its effectiveness and low incidence of complications (MOLINA, 2012).

To overcome these limitations, laparoscopic techniques with a single trocar, such as SEAL (Subcutaneous Endoscopically Assisted Ligation) and PIRS (Percutaneous Internal Ring Suture), have emerged as innovative alternatives. These techniques have lower rates of complications and recurrences, eliminating the need for laparoscopic suturing and providing better aesthetic results. The PIRS method, developed by Patkowski and improved by Chang, introduced advances such as hydrodissection of the spermatic cord and the use of specific instruments, increasing the efficiency and safety of the procedure (MOLINA, 2012).

OBJECTIVE

To compare the incidence of inguinal hernias among the public in Brazil's federal regions.

METHODOLOGY

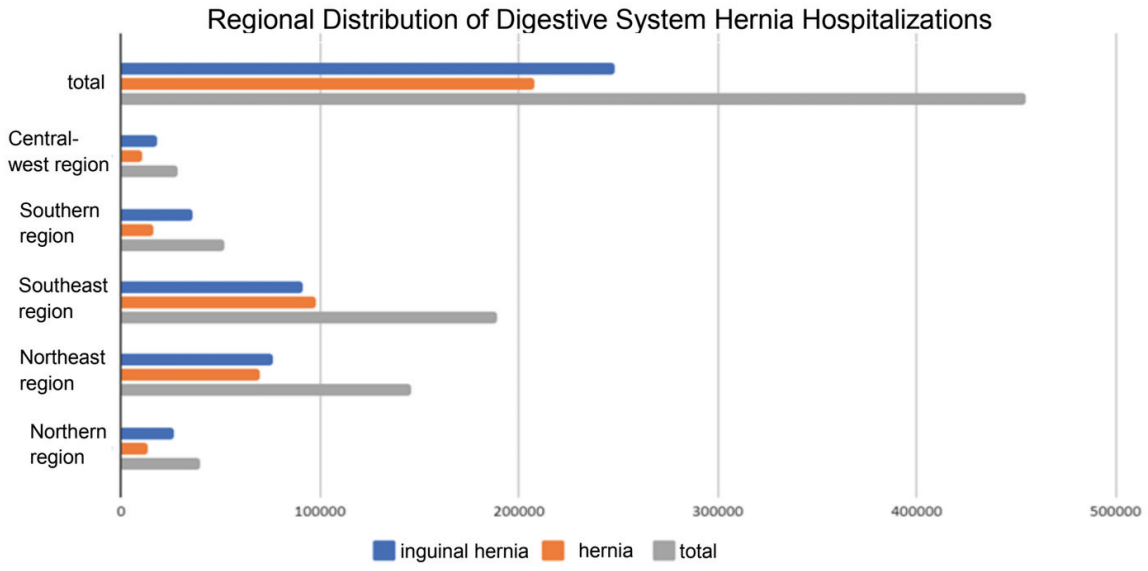
The Unified Health System (DATASUS--SIH/SUS) is a digital body integrated into the Ministry of Health, which collects, organizes and disseminates data from the Unified Health System. The data for this study was selected through an active search in the area of hospital morbidity by place of hospitalization, in the ICD-10 morbidity list option: with procedures inguinal hernia and other hernias and then compared with the mortality rate by region, which refers to the number of hospitalizations and deaths due to inguinal hernia and other hernias in Brazil. The age groups were (0 to 19 years) and state regions of Brazil in the last 10 years (July 2014 to July 2024).

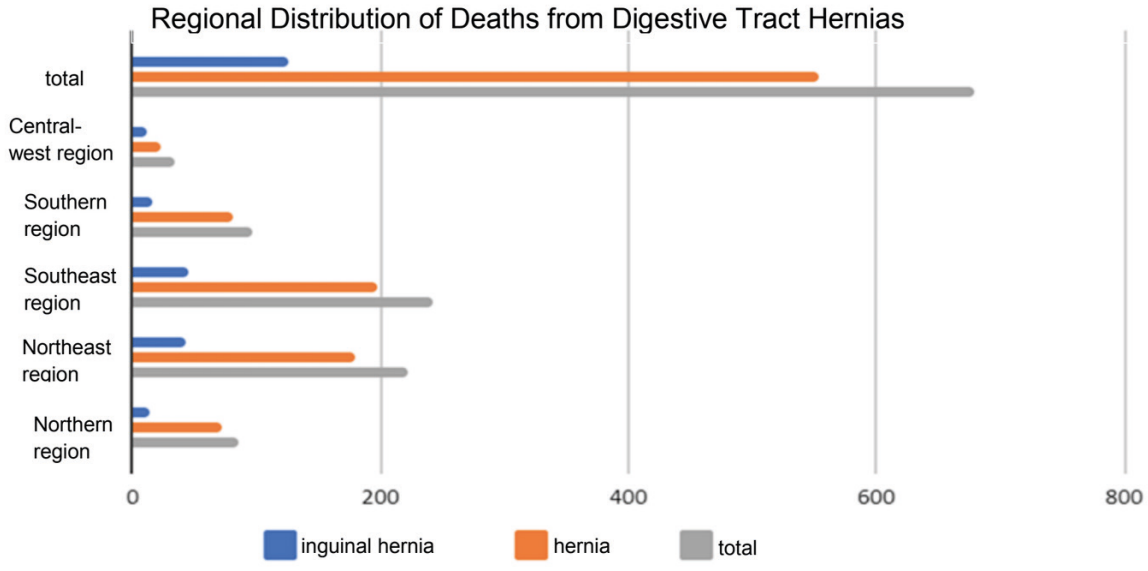
RESULTS

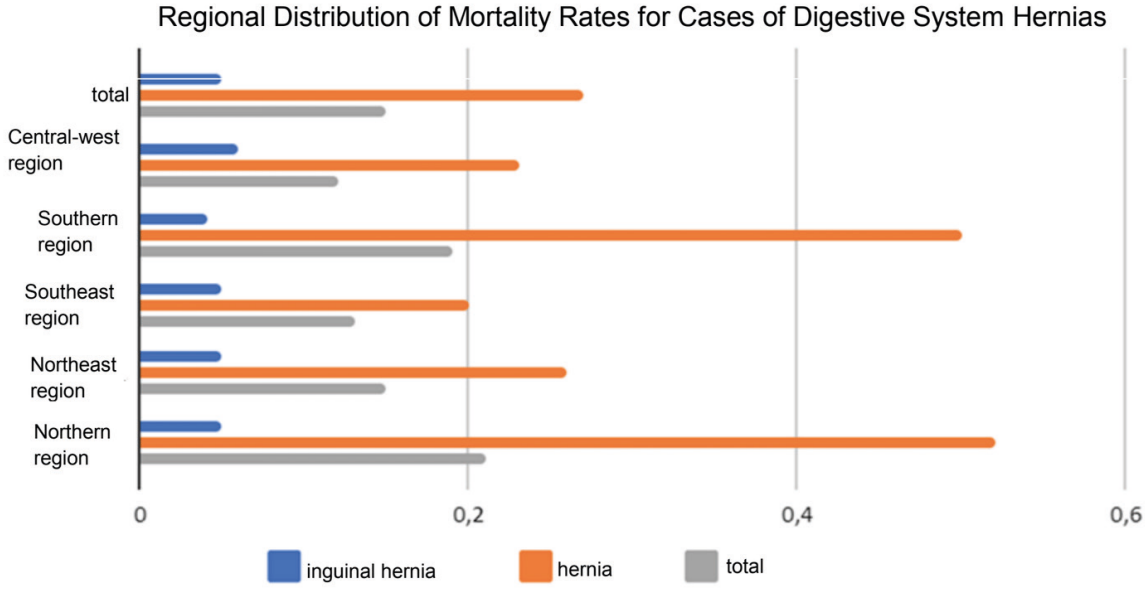
The total number of hospitalizations over ten years was 455,251 in Brazil's federal regions, with the Midwest region accounting for 6.21%, the North for 8.75%, the South for 11.41%, the Northeast for 32.05% and the Southeast for 41.55% of hospitalizations due to inguinal hernias. There were a total of 679 deaths in all the federal regions, with a total of 34 deaths per state in the Midwest, 85 in the North, 97 in the South, 221 in the Northeast and 242 in the Southeast. These figures are equivalent to the number of cases per state.

DISCUSSION

Inguinal hernias usually occur due to a failure in the fusion of the layers of the peritoneovaginal process. This structure closes during the last few weeks of pregnancy, but when there is a defect at this stage, it can result in anomalies such as indirect inguinal hernia


Regional Distribution of Digestive System Hernia Hospitalizations
total
Central-west region
Southern region
Southeast region
Northeast region
Northern region
0
100000
200000
300000
400000
500000
inguinal hernia
hernia
total


Regional Distribution of Deaths from Digestive Tract Hernias
total
Central-west region
Southern region
Southeast region
Northeast region
Northern region
0
200
400
600
800
inguinal hernia
hernia
total


Regional Distribution of Mortality Rates for Cases of Digestive System Hernias
total
Central-west region
Southern region
Southeast region
Northeast region
Northern region
0
0,2
0,4
0,6
inguinal hernia
hernia
total

and hydrocele[2]. It is estimated that 95% of inguinal hernias in children are of the indirect type and are strictly related to an error in the closure of the peritoneovaginal process[4].

Among the most frequent irregularities developed in the anatomical structures of pediatric patients' bodies are inguinal hernias. Treatment is primarily surgical and the incidence rate is around 8 to 10 times higher in males than in females4, in addition to the fact that low birth weight neonates are at greater risk of developing this anomaly[2].

In this sense, by analyzing the statistical data that indirect inguinal hernias are more frequent in boys, some studies began to investigate protective factors for neonatal testicular function, as well as sources that influence the closure of the inguinal canal. This led to research into the relationship between breastfeeding and neonates with inguinal hernias. It emerged that breastfeeding was less frequent in male babies whose testicles had not descended, and there were no reports of inguinal hernia. However, it is worth noting that breast milk contains substances such as gonadotrophin-releasing hormone (GNRH) which plays an essential role in the physiology of the neonate, as it helps the testicles to mature[2]. Thus, it can be inferred that human milk can also be considered a stimulus to accelerate the closure of the inguinal canal, given the close relationship between the descent of the testicles and the need for final maturation of the inguinal canal, which shows that inguinal hernia is closely related to cryptorchidism[2].

As far as the treatment of inguinal hernias is concerned, it is known that it is mostly surgical, often requiring a laparoscopic approach to differentiate it from femoral hernias. Femoral hernias are difficult to diagnose and are very rare in children, with a frequency of 1% to 2%4. By performing a laparoscopic approach, it is possible to discern the type of hernia before dissecting it, allowing for a more appropriate treatment[4]. With regard to the anatomy of femoral hernias, the defect lies below the inguinal region and the medial ligament referring to the iliac vessels. They are most often located on the right side and appear in the form of an irreducible lateral tumor [(4).]

This is why laparoscopic management makes it possible not only to differentiate the type of hernia and establish the most efficient treatment for each case, but also to carry out contralateral exploration. Peritoneoscopy is a very relevant technique, as it reduces the risk of recurrence of metachronous hernias in patients with a high risk of continuity of the peritoneovaginal process, as well as preventing damage to adjacent anatomical structures before open exploration is carried out[3].

Although the laparoscopic approach is useful in preventing complications and improving the accuracy of surgical treatment, unfavorable outcomes may occur, such as clamping of the vas deferens[3]. On the other hand, when the hemostatic mosquito is applied, it can represent 100% definitive damage [3].

Considering that the treatment of inguinal hernias is primarily surgical, some research has been carried out in an attempt to reduce the risk of complications from these procedures. Therefore, one of the factors analyzed was the type of anesthesia used during inguinal herniorrhaphy. Thus, based on a sample of patients who underwent this surgical procedure, with unsupplemented spinal anesthesia, it was observed that there was a low rate of intraoperative and postoperative apnea, hypoxemia and bradycardia in preterm newborns[1]. When performing these procedures, some possible disorders are pulmonary and airway complications, however, when compared to the use of general anesthesia, spinal anesthesia showed a low occurrence of these events 1. In addition, with regard to resumption of oral intake and hospital discharge, these occurred more quickly in patients who underwent spinal anesthesia, as well

as having less prolonged postoperative hospital stays 1. It is worth noting that only patients with bronchopulmonary dysplasia, periventricular leukomalacia, neurological diseases and anemia were found to be predictors of poor post-spinal anesthesia outcomes 1.

CONCLUSION

It is therefore understood that abdominal hernias are partial or total protrusions of one or more organs through an opening, due to malformation or weakening of the layers of tissue that protect the internal abdominal organs. Indirect inguinal hernias, in particular, occur due to a failure in the fusion of the layers of the perionevaginal process, which allows part of the intestine to protrude through the inguinal ring, an opening in the abdominal wall that persists after fetal development. Because of this, this condition is more common in childhood and the incidence is higher in male neonates. Due to the prevalence in boys, research into the relationship between the closure of the inguinal canal and breastfeeding has been analyzed, since breast milk contains GNRH, a hormone that stimulates male gonadal maturation (testis). Thus, it is inferred that human milk can also be considered a stimulus to accelerate the closure of the inguinal canal. In these cases, children are treated surgically using laparoscopy to differentiate femoral hernias before starting the procedure, which contributes to more efficient treatment. Peritoneoscopy is performed and reduces the risk of metachronous hernias occurring in patients with a high risk of the pertoneovaginal process continuing. However, even though there are benefits to using the laparoscopic approach, complications can arise during the procedure, such as the spacing of the vas deferens. Therefore, in order to avoid complications, certain precautions must be taken, such as the type of anesthesia used during inguinal herniorrhaphy. According to analyses, the use of spinal anesthesia showed a lower occurrence of pulmonary complications than the use of general anesthesia, i.e. the use of spinal anesthesia reduced complications in indirect inguinal hernia repair procedures. In addition, the post-operative period for patients who underwent spinal anesthesia was less prolonged.

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