

**UPPER
GASTROINTESTINAL
ENDOSCOPY IN
PEDIATRIC PATIENTS AT
A TERTIARY HOSPITAL:
A RETROSPECTIVE
ANALYSIS**

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Abstract: Objectives: Upper digestive endoscopy (EDA) is increasingly used in pediatric gastroenterology, thus improving diagnostic and therapeutic techniques for various disorders of the gastrointestinal tract. The objectives of the present study were to analyze the indications and diagnoses of UDE in pediatric patients at the tertiary hospital level. Methods: In this retrospective study, 1261 endoscopic exams from 2019 were evaluated, including outpatients and inpatients with a sample defined by convenience. Results: 39 exams were evaluated in the age group from 1 to 18 years, with an average of 13 years, mostly female. Most indications consisted of: epigastric pain (64%), gastroesophageal reflux disease (15%) and the main diagnostic findings were gastritis (61%). Conclusions: Although EDA is increasingly present in the pediatric field, there is still not much consensus on its real indications based on symptoms, in addition to the difficulties surrounding the techniques for its performance.

Keywords: Endoscopy, Kids, Indications, Epigastralgia.

INTRODUCTION

In the present study, upper digestive endoscopy is the most frequently performed endoscopic procedure in children. However, it is known that performing this procedure in pediatrics requires more time, patience and experience from the physician due to the emotional factors of the child and the family.

In the pediatric age group, endoscopy differs significantly from the adult in several aspects, especially when it comes to the understanding of the exam and the psychological consequences such as some trauma related to the exam, whenever understandable for the age, the procedure must be explained and, if possible, allow that the patient becomes familiar with the hospital, the facilities and the endoscopic itself, and

the same concern must be taken with the understanding of the parents (FERREIRA CT 1998). The difference between adults and children also include the type of sedation. In this group, the need for general anesthesia is much more frequent, especially in young children, as this is a non-cooperative population that requires greater care for the examination. In a study carried out by members of NASPGHAN (North American Society For Pediatric Gastroenterology, Hepatology & Nutrition) surveyed with 103 pediatric gastroenterologists about the main sedation techniques used by them, the result showed that the techniques used were mixed between general anesthesia and intravenous sedation, but regardless of the technique used, 77% of them supplemented the patient with oxygen. It is emphasized, however, that in 2006 the American Society of Pediatrics stipulated that sedation goals for children must control anxiety, minimize pain, maximize the effect of anesthesia, bring safety, until this way it can be done safely. (FOX, VL 2000).

In addition, there is a discrepancy between the endoscopic findings since, in children, functional complaints are more significant and the finding of cancer is rare. Especially in the pediatric group, the finding of an endoscopic appearance of normal mucosa does not exclude the possibility of pathological alteration, and a careful investigation is essential. In addition, it is important to highlight that these patients have their own indication characteristics (congenital, infectious, inflammatory, metabolic processes), with the main therapeutic indication being the removal of a foreign body, always considering its risks and benefits. In addition, the infection by *Helicobacter pylori* (Hp) is highlighted, which occurs in the early stage of life, which may lead to future impairment.

With the advancement of techniques, the panorama of indications has also changed

and, consequently, the findings over the years. Before the advent of pediatric UDE in 1970, most recurrent abdominal pain was classified as functional pain of psychogenic origin; gradually the organic etiologies became prominent and reached greater proportions.

Regarding therapeutic techniques, it is important to mention that esophageal dilation is indicated in the treatment of strictures of different etiologies, such as: secondary to esophageal atresia surgery (about 50% of those operated on develop more or less severe strictures), ingestion caustics, gastroesophageal reflux, especially in neurologically compromised patients and in cases resulting from varicose veins sclerosis or radiotherapy. In the case of suspected congenital stenosis, it is important to assess the constitution of the esophageal wall, which can be achieved by performing Echoendoscopy or Computed Axial Tomography, since in the absence of a muscular wall, the risk of rupture at the time of dilation is pronounced.

OBJECTIVES

The objectives of the present study were to analyze the indications and diagnoses of UDE in pediatric patients at the tertiary hospital level.

METHODS

Retrospective, descriptive study of 1261 endoscopic exams from 2019, including outpatients and inpatients with a sample defined by convenience in a tertiary-level hospital. Patient exams were selected based on their age group. Data from endoscopic examination results and histopathological analysis were obtained from the patients' medical records and stored in a secure database, respecting the rules of the Data and Persons Protection Act (LGPD) and as approved by the Research Ethics Committee (CAALS).

RESULTS

Thirty-nine endoscopic examinations of patients aged 1 to 18 years were evaluated, most of them female (26 people - 66.6%). Indications consist of: epigastric pain (64%), gastroesophageal reflux disease (15%), dyspepsia (2%), upper gastrointestinal bleeding (2%), eating disorders (2%), foreign body (2%), halitosis (2%), Hp infection control (2%), eosinophilic esophagitis (2%) and post-gastroplasty (2%). With diagnostic findings: gastritis (61%), with a predominance of moderate and mild cases (91%), erosive gastritis (4%) and pangastritis (4%). Buloduodenitis had relevant findings (7.7%), whereas esophagitis was seen in 2.5% of cases. Correlating the symptomatology, 25 patients with epigastric pain were identified and of these 96% with a diagnosis of gastritis, HDA was also correlated with this diagnosis of gastritis and the presence of Hp was positive in 9.1% of 22 patients (56.4 %) in which all had gastritis.

DISCUSSION

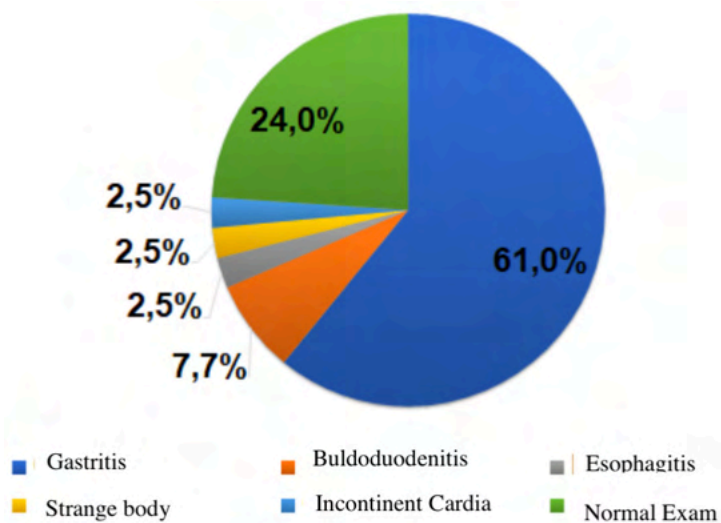
Data from the medical literature indicate that the main indications for UDE are gastroesophageal reflux disease, digestive hemorrhage, clearing up vomiting, dysphagia, anemia and food refusal, ingestion of foreign bodies or caustic products, or even performing of intestinal biopsies for suspected celiac disease.

When upper digestive endoscopy began to be performed in children and adolescents, there were still no clear indications for its use, and the first articles published were case reports that described the use of the technique. However, upper gastrointestinal bleeding has always been one of the first indications for performing upper gastrointestinal endoscopy in pediatrics in order to identify possible sites of digestive bleeding (FREEMAN, 1973; GLEASON JÚNIOR et al., 1974; GANS et al.,

Endoscopic Indications	Relative Value
Epigastric Pain	64%
GERD	15%
Strange body	2%
Malnutrition	2%
Halitosis	2%
Eosinophilic Esophagitis	2%
Cystic fibrosis	3%
Post Gastroplasty	2%
Dyspepsia	4%
HDA	2%
H. Pylori Control	2%

Table 1. Indications for the endoscopy exam.

Source: Ferreira CT, Berti MR, Pires ALG, Wieczorek C, Alves J. Pediatric upper digestive endoscopy: indications and results. J Pediatr (Rio J) 1998; 74:39-44.



Graphyc 1: endoscopic findings

Fonte: Ferreira CT, Berti MR, Pires ALG, Wieczorek C, Alves J. Endoscopia digestiva alta em pediatria: indicações e resultados. J Pediatr (Rio J) 1998; 74:39-44.

1975). In the past, abdominal pain was the main indication for endoscopy in children (FERREIRA et al., 1998), but due to the high rate of functional causes in this age group, it was losing ground. In the present analysis, other clinical situations required this exam to clarify the diagnosis. Thus, epigastralgia, suspected gastroesophageal reflux disease and dyspepsia remain as important indications for the examination, followed by anemia and failure to thrive (ESPGHAN, 2017). Pediatric endoscopic exams, even being performed in specific situations, contribute to the adequate treatment of conditions in these patients.

Upper gastrointestinal endoscopy has become an essential tool for the practice of pediatric gastroenterology. Epigastralgia and gastroesophageal reflux disease were the main indications for the examination in this study. In children older than 2 years and adolescents, especially those with epigastric pain, reflux esophagitis was the most common endoscopic alteration, strongly suggesting that a previous therapeutic test with proton pump inhibitors can be safely performed in this population, preceding or even waiving the need for endoscopy in this clinical setting. In pediatric patients, even in the presence of normal mucosa, endoscopic biopsies must be routinely performed, as there are important conditions that can be detected despite the normal endoscopic appearance of the mucosa (eg, eosinophilic esophagitis and celiac disease), or that require of histological confirmation.

As highlighted in the present study carried out in which the two main indications were epigastralgia and gastroesophageal reflux disease. Although a foreign body was identified in only 2% of the patients, it is necessary to emphasize that it is a frequent indication, since, in the younger age groups, they have the habit of putting everything they can pick up with their hands in their mouths, swallowing small objects. frequently. It is also necessary to know which objects, as batteries, and chemicals must be removed within 24 hours.

Despite epidemiological data recognizing H. Pylori infection present in childhood and youth (TESTERMAN, TL, 2014), endoscopic Hp screening is not routine in pediatric patients, however specific situations (persistent abdominal pain) suggest the need, being the main indication in this analysis, but with a high negative index. What can be emphasized with the data from this study since although all 2 H pylori positive patients were diagnosed with Gastritis, most cases of Gastritis did not have contamination by the bacteria.

CONCLUSION

Although the use of digestive endoscopy in children has increased dramatically in recent decades, there is, strictly speaking, no consensus based on symptoms that supports physicians in their indication of this procedure. Even with the high percentage of normal tests observed in this study, an

H. pylori research	Occurrence
H. pylori research	22 (56,4%)
Positive	2 (9,1%)
Negative	20 (90,9%)

Table 2: Endoscopic investigation of H. Pylori in the study

indicative standardization of the test must be carried out to better control the conditions that affect the pediatric population.

THANKS

Dr. Norberto Katsumi Osaki - Gastroenterologist - Endoscopist at the Brazilian Society of Digestive Endoscopy - Doctor at the Endoscopy Service of Santa Casa de Ribeirão Preto.

REFERENCES

Armonyotyon S, Aanpreung P. **Clinical Effectiveness of an Anesthesiologist-Administered Intravenous Sedation Outside of the Main Operating Room for Pediatric Upper Gastrointestinal Endoscopy in Thailand.** International Journal of Pediatrics 2010, Article ID 748564, 6 pages.

ARTHERTON JC. **The clinical relevance of strain types of Helicobacter pylori.** Gut, v.40, p.701-3, 1997.

Barbieri D. **Doenças inflamatórias intestinais.** J Pediatr (Rio J) 2000;76:S173-80.

Cleveland K, Ahmad N, Bishop P, Nowicki M. **Upper gastrointestinal bleeding in children: an 11-year retrospective endoscopic investigation.** World J Pediatr 2012; 8(2): 123-128.

Ferreira CT, Berti MR, Pires ALG, Wieczorek C, Alves J. **Endoscopia digestiva alta em pediatria: indicações e resultados.** J Pediatr (Rio J) 1998; 74:39-44.

Fox VL, Werlin SL and Heyman MB, for the Subcommittee on Endoscopy and Procedures of the Patient Care Committee of the North American Society for Pediatric Gastroenterology and Nutrition. **Endoscopic Retrograde Cholangiopancreatography in Children.** JPGN, 2000;30:335-342.

SANTOS, I.S.; BOCCIO, J.; SANTOS, A.S.; VALLE, N.C.J.; HALA, C.S.; BACHILLI, M.C. et al. **Prevalence of Helicobacter pylori infection and associated factors among adults in Southern Brazil: a population-based cross-sectional study.** BMC Public Health, v.5, p.118, 2005.

TESTERMAN, T.L.; MORRIS, J. **Beyond the stomach: An updated view of Helicobacter pylori pathogenesis, diagnosis, and treatment.** World Journal of Gastroenterology, v. 20, n. 36, p.12781-808, 2014.