APGHN
Archives of Pediatric Gastroenterology, Hepatology, and Nutrition

Original Article

Pediatrics Upper Gastrointestinal Endoscopy Profile in Riau in 2020 and 2021

Deddy Satriya Putra[1]

[1]Gastrohepatology Division, Department of Child Health, Faculty of Medicine, Universitas Riau, Arifin Achmad Pekanbaru General Hospital, Pekanbaru, Indonesia

e-ISSN: 2830-5442

Corresponding author:
Deddy Satriya Putra
dsatriyap@yahoo.com

Published:
28th February 2025

DOI:
https://doi.org/10.58427/apghn.4.1.2025.1-7

Citation:
Putra DS. Pediatrics upper gastrointestinal endoscopy profile in riau in 2020 and 2021. *Arch Pediatr Gastr Hepatol Nutr.* 2025;4(1).1-7

Abstract:

Background: Children's limited communication skills when expressing complaints often limit healthcare practitioners in making diagnoses and treatment decisions, particularly regarding gastrointestinal issues. Endoscopy is a valuable tool for determining the appropriate course of action in these cases. This study aims to describe the characteristics of pediatric patients who underwent upper gastrointestinal endoscopic procedures in Riau between 2020 and 2021.

***Methods*:** This retrospective study used secondary data from endoscopy registries and patient medical records at two tertiary hospitals in Riau between Januari 2020 to December 2021.

***Results*:** A total of 114 patients underwent upper gastrointestinal endoscopy from 2020 to 2021. It was found that the adolescent age group (42%) was the most frequently encountered group. The female sex (65%) was more prevalent than male. Meanwhile, the most common problem encountered was abdominal pain (57%). Gastroscopy alone was the most frequently performed procedure in this study (65%), with the most common endoscopic finding being hyperemic gastritis (54%).

Conclusion: Upper gastrointestinal endoscopy in pediatric patients is a safe and very helpful procedure in diagnostics and therapeutics.

Keywords: abdominal pain, endoscopy, gastritis, gastroscopy, upper gastrointestinal tract

Introduction

Gastrointestinal endoscopy has become an essential component of the diagnosis and treatment of pediatrics gastroenterology. Upper gastrointestinal endoscopy is one of the procedures that can be performed in establishing the diagnosis of gastrointestinal diseases in pediatric cases. Gastrointestinal endoscopy is a recommended procedure for diagnosing gastrointestinal (GI) disorders in children.[1] Advances in pediatric endoscopy have enabled more accurate diagnoses of GI diseases. The diagnostic indications for pediatric endoscopy differ from those in adults, with chronic abdominal pain is the most common indication for gastrointestinal endoscopy in pediatric patients.[1, 2]

While certain situations, such as substantial upper GI bleeding, are considered clear indications for GI endoscopy, the appropriate application of GI endoscopy for various clinical situations has not been formally established, particularly in Indonesia. The absence of clear guidelines for determining when to perform endoscopy has led to procedures being performed at inappropriate times, potentially causing discomfort for patients, especially children.[2]

There are several considerations when performing an upper GI endoscopy during the COVID pandemic. First, pediatric endoscopic procedures are considered to carry a high risk of COVID-19 transmission. Furthermore, parents are often hesitant and anxious about bringing their children to hospitals, let alone to do GI endoscopy that frequently requires sedation. Therefore, careful consideration of whether to proceed with a pediatric GI endoscopy is essential.[3]

The purpose of this study is to describe the characteristics of pediatric patients undergoing upper gastrointestinal endoscopic procedures during the COVID-19 pandemic in Riau (2020 to 2021). We also aim to evaluate the indications for and findings from the upper GI endoscopic procedures we performed. Determining the diagnostic indications of endoscopy will help clinicians make more informed decisions about which patients will benefit most from this procedure.

Methods

Study Population and Study Design

Between January 2020 and December 2021, a total of 114 patients underwent upper gastrointestinal endoscopy. These procedures were performed at Syarifa Hospital and Arifin Achmad General Hospital in Pekanbaru, with various indications and types of endoscopic interventions. These two hospitals are the only tertiary care facilities in Riau province that have endoscopy facilities for pediatric patients. Endoscopy registries and patient medical records were reviewed, and the following variables were recorded: age, gender, type of procedure, indication for the procedure, and diagnosis based on endoscopic findings. Patients younger than 1 year and older than 18 years

were excluded. Ethical clearance was obtained from the health research ethics committees at both hospitals.

Data Collection

All upper gastrointestinal procedures were performed by a pediatric gastroenterologist with the assistance of anesthesiologist, given the use of deep sedation during the procedure. All endoscopic findings were recorded, including incidental findings even if unrelated to the presenting symptoms. These findings were then evaluated by the pediatric gastroenterologist who performed the procedure. Endoscopic findings were considered significant or positive if they had diagnostic or prognostic value. This was defined as a reasonable explanation for the reported symptoms and/or findings that change in management. If no endoscopic findings were found and/or no intervention was required, the findings were classified as negative or normal.

Furthermore, non-specific minor endoscopic findings, such as minor erythema, minor increased or decreased vascularity, or mild pallor were considered normal if not accompanied by significant histological changes. Similarly, minor non-specific histological abnormalities not related to the symptoms were also accepted as normal.

Results

Table 1 shows the characteristics of the patients undergoing GI endoscopy. We divided the age groups into three categories. The adolescent age group (12 – 18 years) was the most common age group in this study, representing 42% of the cases. Of the one hundred and fourteen patients, 65% of them were female (n=74).

Table 1. Characteristics of pediatric patients undergoing upper GI endoscopy.

Characteristics of Patients	Frequency (n) n = 114	Percentage (%) n = 100
Age groups		
1 – 5 years old	19	17
6 – 11 years old	47	41
12 – 18 years old	48	42
Gender		
Male	40	35
Female	74	65

Table 2 presents the characteristics of endoscopy, including indications for upper GI endoscopy in pediatric patients, the corresponding types of procedures performed, and resulting diagnoses. Abdominal pain was the most common indication for upper GI endoscopy (57%), with gastroscopy alone being the most frequent procedure performed (65%). A variety of diagnoses were observed during upper gastrointestinal

endoscopy. Hyperemic gastritis (54%) was the most common diagnosis, followed by esophageal varices (16%), foreign body (25%), peptic ulcer (6%), and gastric tumor (1%).

Table 2. Characteristics of upper GI endoscopy performed.

Characteristics of Endoscopy	Frequency (n) n = 114	Percentage (%) n = 100
Endoscopy Indication		
Abdominal pain	65	57
Hematemesis (bloody vomit)	24	21
Foreign object ingestion	25	22
Types of Endoscopy		
Gastroscopy	74	65
Gastroscopy with extraction	25	22
Gastroscopy with ligation	15	13
Endoscopy Findings		
Normal	4	4
Hyperemic gastritis	62	54
Foreign body	25	22
Esophageal varices	16	14
Peptic ulcer	6	5
Gastric tumor	1	1

Discussion

The adolescent age group (42%) and the female group (65%) were the most common groups in this study. This may be because in this age group, children have already begun to express their physical complaints, including complaints of the digestive tract. Whereas younger children, such as toddlers, may have difficulty expressing the discomfort they feel related to their stomach or digestive system in general.

Gastroscopy (65%) was the most common type of procedure performed in this study. This is in line with the most frequent indication, which is abdominal pain (57%). Recurrent abdominal pain is one of the most common complaints in children, and persistent abdominal pain despite various medical treatments is a strong indication for GI endoscopy.[4, 5] These findings are similar to a study by Fachler et al., which found that abdominal pain was the main indication for GI endoscopy at Shaare Zedek Medical Center, Jerusalem.[4]

Diagnosing the cause of abdominal pain in children is difficult for clinicians because children, especially young children, are usually difficult to communicate the pain they feel and the characteristics that accompany it. Therefore, diagnostic tools such as endoscopy are needed to determine the etiology or cause of recurrent abdominal pain

in children. However, endoscopists should be aware that chronic abdominal pain does not have an organic cause in more than half of cases. A pediatric endoscopist should refrain from performing unnecessary endoscopies in children.

In our study, hyperemic gastritis (54%) was the most frequently diagnosed condition. This is consistent with the most common indication for endoscopy in our study, which is abdominal pain. These results are also in line with a study conducted by Isa HM et al., which found that gastritis was the most common organic lesion found in children undergoing GI endoscopy in tertiary care in Bahrain.[6]

The role of endoscopy as a diagnostic tool goes beyond the detection of organic lesions. Negative results or normal findings are also important to reassure parents, confirm a functional etiology, or indicate further investigation. Normal or negative endoscopy results in this study were 4%, quite low compared to the findings reported by Isa HM et al. which revealed 21.3% negative results.[6] This low number suggests that most GI endoscopy procedures performed in our two institutions were selective and performed according to indications.

Twenty-two percent of cases (n=25) in our institution were cases of foreign body ingestion, for which we performed foreign body extraction gastroscopy. In children, foreign bodies in the esophagus are an absolute emergency, and endoscopy should be performed immediately, regardless of whether X-rays are available as confirmation. Common symptoms often found include difficulty swallowing, hypersalivation, and even coughing.[7]

Endoscopy is a high-risk procedure for COVID-19 transmission.[8] This study was conducted during the COVID-19 pandemic, leading to stricter indications for performing endoscopic procedures. A multicentre study in the Asia Pacific region found that for COVID-19 confirmed patient, 63% of institutions performed endoscopic procedures only in emergency cases, while 34.9% were either postponed or not performed at all.[9] Our study demonstrated that 43% of cases involved urgent indications, including hematemesis and foreign body ingestion. Other studies have reported a decline in endoscopic procedures during the pandemic; however, as this study did not include a comparison with pre-pandemic data and no prior data before COVID-19 was reported, we cannot evaluate the impact of the pandemic in this study.[1]

The limitation of this study is the lack of more complete data to support the diagnosis, such as biopsy results. The diagnosis is determined only from the findings on endoscopy, without further intervention such as tissue biopsy for examination by a pathologist. Further studies with biopsies are recommended to determine the exact

pathology of certain endoscopic findings, such as masses or tumors. Determining the exact etiology of a disease entity will result in more appropriate treatment.

Upper gastrointestinal endoscopy in pediatric patients is a very helpful and safe procedure for diagnostic and therapeutic purposes. Patient selection is very important in the indications for performing upper gastrointestinal endoscopy procedures in children. Further research may be needed to determine the algorithm for upper gastrointestinal endoscopy in children.

Conclusion

Upper gastrointestinal endoscopy in pediatric patients is a helpful and safe procedure for diagnostic and therapeutic purposes. Appropriate patient selection is essential for determining the indications for upper gastrointestinal endoscopy in children. Further research is needed to establish an algorithm for patient selection for this procedure.

Conflict of Interest

None declared

Funding Statement

This research received no external funding.

References

1. Renzo S, Scarallo L, Antoniello LM, Bramuzzo M, Chiaro A, Cisarò F, et al. Impact of COVID-19 pandemic on pediatric endoscopy: a multicenter study on behalf of the SIGENP endoscopy working group. Dig Liver Dis. 2022;54(5):572-9. https://doi.org/10.1016/j.dld.2022.02.010
2. Lang T. Interfaces in pediatric gastrointestinal endoscopy: who should do it? Visc Med. 2016(32):7–11. https://doi.org/10.1159/000444116
3. Shaoul R, Day AS. Pediatric endoscopy during COVID-19 times. Front Pediatr. 2021;9:750717. https://doi.org/10.3389/fped.2021.750717
4. Fachler T, Shteyer E, Orlanski Meyer E, Shemasna I, Lev Tzion R, Rachman Y, et al. Pediatric gastrointestinal endoscopy: diagnostic yield and appropriateness of referral based on clinical presentation: a pilot study. Front Pediatr. 2021;9:607418. https://doi.org/10.3389/fped.2021.607418
5. Kim YJ. General considerations and updates in pediatric gastrointestinal diagnostic endoscopy. Korean J Pediatr. 2010;53(9):817-23. https://doi.org/10.3345/kjp.2010.53.9.817
6. Isa HMA, Alfayez FN. Indications and yield of pediatric endoscopy in bahrain: a tertiary center experience. Int J Pediatr. 2022;2022:6836842. https://doi.org/10.1155/2022/6836842
7. Wang S, Qiu X, Chen J, Mei H, Yan H, You J, Huang Y. Pediatric esophagogastroduodenoscopy in china: indications, diagnostic yield, and factors associated with findings. BMC Pediatr. 2022;22(1):522. https://doi.org/10.1186/s12887-022-03558-x
8. Walsh CM, Fishman DS, Lerner DG. Pediatric endoscopy in the era of coronavirus disease 2019: a north american society for pediatric gastroenterology, hepatology, and nutrition position paper. J Pediatr Gastroenterol Nutr. 2020;70(6):741-50. https://doi.org/10.1097/mpg.0000000000002750

9. Darma A, Arai K, Wu J-f, Ukarapol N, Hagiwara S-i, Oh SH, Treepongkaruna S. Impact of the coronavirus disease 2019 pandemic on pediatric gastrointestinal endoscopy: a questionnaire-based internet survey of 162 institutional experiences in asia pacific. Pediatr Gastroenterol Hepatol Nutr.2023;26(6):291-300. https://doi.org/10.5223/pghn.2023.26.6.291