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Research Article

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Contribution of Endoscopy in the Diagnosis of Digestive Pathologies in Children in the Pediatrics Department of Gabriel TOURE Hospital

Traoré K[1*], Maiga B[1], Sacko K[1], Dembélé A[1], Coulibaly A[1], Traore B[1], Cissé ME[1], Traore F[1], Touré A[1], Konare H[1], Diarra M[2], Ouattara A[3], Diall H[1], Togo P[1], Doumbia A[1], Coulibaly O[1], Konaté D[1], Diakité AA[1], Dicko F[1], Togo B[1] and Sylla M[1]

[1]*Pediatric Department, CHU Gabriel Toure, West Africa*

[2]*Secondary hospital, pediatric unit, CSREF kalabancoro, Bamako Mali, West Africa*

[3]*Secondary hospital, pediatric unit, Mopti Mali, West Africa*

[*]Corresponding Author

Kalirou Traore, Department of Paediatrics, CHU Gabriel Touré, West Africa.

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Abstract

Introduction: *Upper GI endoscopy is a method of visual exploration of the upper part of the digestive tract using an optical tube fitted with a lighting system called an endoscope or fiberscope. In Mali, very few data are available on digestive endoscopy in children. The aim of our study was to demonstrate the role of endoscopy in the diagnosis of digestive pathologies in the pediatric department of Gabriel Toure hospital.*

Material and Methods: *we conducted a retrospective study from January 2017 to December 2019 of children aged 0 to 15 years who had undergone upper GI endoscopy.*

Results: *during our study period, 52 cases of digestive endoscopy were recorded out of 24326 children hospitalized in the Department of Pediatrics at Gabriel Touré hospital, representing a frequency of occurrence of 0.21%. The sex ratio was 0.92. 40.4% of our patients underwent endoscopy before 24 hours. Lesions were located in the esophagus in 28.8% of cases. Only 11.5% of children underwent biopsy, and the death rate was 3.8%.*

Conclusion: *Digestive endoscopy is now a routine technique in paediatric gastrology, and represents a reliable diagnostic tool, provided that it is performed by an endoscopist trained in children and that the equipment is suitable.*

1. Introduction

Upper gastrointestinal endoscopy is a method of visual exploration of the upper part of the digestive tract using an optical tube equipped with a lighting system, known as an endoscope or fiberscope [1]. Since its introduction in children in the 1970s, upper GI endoscopy has developed into one of the most commonly used explorations in paediatric gastroenterology [2]. The development of endoscopes with ever-smaller diameters, and therefore better adapted to the anatomical requirements of children, and in particular low-weight children, has enabled a better approach to digestive lesions in children. African endoscopists are gastroenterologists, internists and surgeons, who are better trained to treat adults [3]. In Mali, very few data are available on digestive endoscopy in children, hence the interest of this study, the aim of which was to show the place endoscopy occupies in the diagnosis of digestive pathologies in children in the pediatric department of Gabriel Toure hospital in Bamako.

2. Materials and Methods

2.1. Type of Study

This was a retrospective study, run from January, 2017 to December, 2019.

2.2. Choice of Location

This work was carried out in the pediatrics department of Gabriel Toure hospital, a third referral hospital located right in the center of the district of Bamako, easily accessible that received the largest number of hospitalized children.

2.3. Participants
Children aged 0-15 years who underwent upper GI endoscopy during our study period.

2.4. Data Collection
We collected data on a survey form from medical records.

2.5. Data Analysis and Interpretation
Data were collected on survey forms. Analysis was performed with SPSS version 21 software and word processing with Microsoft Word and Excel 2016 software.

3. Results
3.1. Sociodemographic Characteristics
During our study period from January 1, 2017- to December 31, 2019, 24326 children were hospitalized in the Department of Pediatrics at CHU-Gabriel Touré, 52 of whom underwent upper GI endoscopy, representing a frequency of performence of 0.21%. The 0-2 age group accounted for 61.5%, followed by 3-7 age group with 23.07%. The sex ratio was 0.92. Children came from out ofthe city of Bamako in 50% of cases, the mothers were not in school in 67.3% of cases, and the fathers in 69.2% of cases.

3.2. Clinical Characteristics
The children's general condition was considered poor in 36.5% of cases. We recorded 34.6% of children in 2017, 27% in 2018 and 38.4% in 2019. Digestive endoscopy was performed before 24 hours in 40.4%, in 26.9% between 24-48 hours, in 9.6% between 48-72 hours and 23.1% after 72 hours of admission (Table 1). The indication for endoscopy was caustic ingestion (48.1%), chronic vomiting (25), digestive haemorrhage (11.5%), abdominal pain (3.8%), unexplained anaemia (1.9%).

Time from admission to endoscopy	Frequency	Percentage (%)
Before 24h	21	40,4
24-48h	14	26,9
48-72h	05	9,6
After 72h	12	23,1
Total	**52**	**100,0**

Table 1: Distribution of Patients by Time from Admission to Endoscopy

Lesions were located in the oesophagus in 28.8%, the stomach in 26.9%, and normal in 28.8% of cases. These lesions were caustic esophagitis in 15.4% of cases, hypertrophic pyloric stenosis in 15.4% of cases, caustic stenosis of the esophagus and Killian mouth in 13.46% of cases, erythematous or hemorrhagic antral gastritis in 7.69% of cases (tabII). Only 11.5% of children underwent biopsy, and we recorded a death rate of 3.8% (Table 2).

Endoscopy Report	Frequency	Percentage (%)
Normal endoscopy	15	28,8
Hypertrophic pyloric stenosis	08	15,4
Caustic stenosis of Killian's esophagus and mouth	07	13,4
Caustic esophagitis grade 1 or 2	08	15,4
Achalasia cardia	01	1,9
Cardiac gap	02	3,8
Erosive bulbitis Gastric	01	1,9
Erythematous duodenitis	01	1,9
Erythematous, ulcerative or hemorrhagic antral gastropathy	04	7,6
Caustic lesion grade II	01	1,9
Caustic esophagitis and corporal gastropathy	03	5,7
Peptic stenosis	01	1,9
Total	**52**	**100,0**

Table 2: Patient Distribution by Endoscopy Report

4. Discussion

4.1. Study Limits

Our study on the contribution of digestive endoscopy to digestive pathologies in children has some limits:

• The non-performance of digestive endoscopy at Gabriel Toure hospital.

• The unavailability of permanent endoscopy for children, even in private practice

• Poor archiving of files, resulting in the loss of some information.

Despite these limitations, our results can be compared and discussed with those of other authors.

Our frequency of digestive endoscopy was 0.21% for all hospitalizations in the paediatric department of CHU Gabriel Touré. Our result was lower than that of Bassene M L in 2015 in Senegal, who found a frequency of 4% [4]. This difference could be explained by the duration of their study, which was 4 years, whereas ours was 3 years, and the type of study. For Bassene M L, it was a retrospective study of upper and lower digestive endoscopy, whereas ours was a retrospective study of upper digestive endoscopy only. What's more, paediatric endoscopy seems to be more developed in Senegal than in Mali. In our study, upper GI endoscopy was performed more frequently in children aged 0-2 years. Our data were similar to those of M. Mourad ANDICH in Morocco, who found 50% of patients in this age group [5]. Females predominated, with a rate of 52%, giving a sex ratio of 0.92. In a study carried out in Senegal in 2015 by Bassene M L on pediatric digestive endoscopy there was a male predominance of 57.5%, the sex ratio was 1.34 [4]. Half of our patients came from outside Bamako. This phenomenon is explained by the absence of competent health services able to perform digestive endoscopy in community structures, hence referrals to Bamako.

In our study, 40.4% of patients underwent endoscopy within 24 hours of admission, 26.9% between 24 and 48 hours, 9.6% between 48 and 72 hours, and 23.1% after 72 hours. Our results differ from those of the AMAL series, in which endoscopy was performed in 73% of patients before 24 hours [6]. This can be explained by the inaccessibility of digestive endoscopy in our health facility, the unavailability of staff who can perform the examination on times, and even the financial problem linked to the lack of health insurance for most of the population. The indication for endoscopy was marked by caustic ingestion (48.1%), chronic vomiting (25), digestive hemorrhage (11.5%), abdominal pain (3.8%), unexplained anemia (1.9%). In the study done by Aloulou H on digestive endoscopy in children in Tunisia in 2011, the main indications were: digestive haemorrhage (43.4%), caustic ingestion (23.1%), abdominal pain (9.3%), unexplained anaemia (7.7%) [7]. In Bassene M L in Senegal, the main indication for upper digestive endoscopy was epigastralgia with 24.2%, followed by caustic ingestion with 15.5% and digestive haemorrhage with 10.9% [4]. The difference in indications can be explained by the age of the patients included: in Tunisia the average age is 3 years 9 months, in Senegal the average age is 8 years 9 months. The average age of caustic ingestion in Senegal was 33 months. Caustic ingestion mainly affects children aged between one and five years, and particularly those aged between one and three years [8,9]. The higher rate in our study is explained by the percentage of children in the walking age group, where 0-2 year-olds account for 61.5% of patients. The age of walking marks the turning point in these accidents, as was found in a study carried out at the Rabat Children's Hospital [10]. Mali is also a country where bazin is one of the most coveted garments, and caustic soda is widely used for dyeing. Incorrect storage can lead to accidents of this kind.

Digestive haemorrhages represent 11.5%, as in Bassème 10.9%, but lower than the 43.4% of H Aloulou and higher than the 8.44% of El Hafidi [4,7,10]. Digestive haemorrhages in children and infants are frequent and always a warning sign when their cause is not clearly identified. They generally worry parents and always warrant a clear diagnosis [11]. Digestive endoscopy is the most effective means of diagnosing the etiology of upper GI haemorrhage [12,13]. In over 80% of cases, the bleeding lesion can be identified [12,14]. The contribution of FOGD to the etiological diagnosis of upper GI hemorrhage depends on the time taken to perform it. Indeed, the interval between the last hemorrhagic externalization and the endoscopic examination is of paramount importance. Endoscopy becomes less effective as we move away from the bleeding episode. Ideally, it should be performed within the first 12 hours, as soon as hemodynamic stability permits it [15,16]. Peptic esophagitis is a chronic condition that refers to all erosive, ulcerative, inflammatory and stenosing esophageal lesions secondary to the deleterious action of gastric reflux fluid, and is defined endoscopically. In our study, peptic esophagitis accounted for 1.9%, while Toufiki's figure was 19.84% [17].

There are several possible explanations for this difference.

• Access to digestive endoscopy and/or anti-reflux treatment varies from one country to another.

• Financial reasons: FOGD is expensive for the average citizen, and equipment is lacking, as is the case in our country.

Caustic esophagitis, along with caustic stenosis of the esophagus and Killian mouth, account for 28.8% of lesions. In the literature, localization in the thoracic segment seems to predominate, with less severe lesions. These variations may be related to the nature of the caustic [18]. In Bamako, the severity of these stenosing lesions is mainly linked to "Sèguè kata" caustic soda. It is considered the most aggressive agent, and its responsibility for the development of severe caustic lesions (stages IIB and III) in the Killian mouth an upper third of the esophagus is well established [4]. Numerous studies have shown a high rate of stenosis during the evolution of these severe lesions, varying between 70 and 100%. Treatment remains difficult, ranging from endoscopic instrumental dilatation to esophagoplasty [19-21]. These caustic digestive accidents can be life-threatening and functionally disabling for children. It constitutes a real public health problem in Mali. Gastritis accounted for 7.69% of cases in our study. This result is similar to that of Bassème in Senegal, who found 6.3%, but lower than that of El Hafidi, with 20%. Nodular gastritis is suggestive of Helicobacter Pylori infection [4,10].

5. Conclusion

Digestive endoscopy is now a routine technique in pediatric gastrology. Caustic soda ingestion was its main indication. Only 40% of patients underwent fibroscopy within 24 hours.

Ethical Considerations

All information obtained was kept confidential and study documents were stored in a locked cabinet.

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