

Upper Gastrointestinal Endoscopy in Children's Abdominal Pains in Ivory Coast

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How to cite this paper: Bangoura, A.D., Kissi-Kacou, H.Y.A., Fanou, D.C., Kouamé, D.G., Doffou, S., Assi, C., Mahassadi, A.K., Attia, A.K. and N'dri-Yoman, A.T. (2016) Upper Gastrointestinal Endoscopy in Children's Abdominal Pains in Ivory Coast. *Open Journal of Gastroenterology*, 6, 397-405.

<http://dx.doi.org/10.4236/ojgas.2016.612042>

Received: November 14, 2016

Accepted: December 9, 2016

Published: December 12, 2016

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Abstract

Since a longtime considered as functional and psychological, children's abdominal pains (CAP) is a public health problem. Advances in digestive endoscopy and *Helicobacter pylori* (*H. pylori*) discovery have reignited the debate of the organicity of CAP. The aim of this study is to determine the diagnosis rentability of upper gastrointestinal endoscopy (UGIE) in CAP in Ivory Coast. **Patients and Methods:** This a retrospective analytical study based on reports of UGIE performed in 2 university hospital and 3 private clinics of Abidjan from march 2007 to march 2016. The children (from 1 day to 15 years) in which UGIE were performed for abdominal pains were included in the study. **Results:** 116 UGIE were performed in children for abdominal pains during the study period. Epigastric pain was the main indication of UGIE (88%). The diagnosis rentability of UGIE was more than 70% in this study. The main anomalies observed in UGIE were gastropathies. Ulcers were rarely found. **Conclusion:** UGIE play an important diagnosis role in CAP in Ivory Coast. However gastric biopsies for *Helicobacter pylori* research are not common practice in our country.

Keywords

Upper Gastrointestinal Endoscopy, Children's Abdominal Pains, Gastropathies, *Helicobacter pylori*, Ivory Coast

1. Introduction

The abdominal pains represent a common reason for pediatric consultation. They are particularly frequent among the school-age children and adolescents

[1] [2]. Since a longtime, the majority (90%) of children's abdominal pains (CAP) are considered as functional [3]. However, with the development of upper gastrointestinal endoscopy (UGIE) in pediatric gastroenterology, the organic origin of CAP increased under 10% to over 50% [4]. UGIE or gastroscopy is a test that allows visual exploration of the inner walls (mucosa) of the esophagus, the stomach and the duodenum to detect anomalies, and sample tissues (biopsies) for histological study [5].

Several studies [5]-[10] have showed that abdominal pains are the most frequent indications of UGIE in children in African countries with frequencies ranging from 22% to 90%. Moreover, the identification of *Helicobacter pylori* (*H. pylori*) as a major cause of chronic gastritis and peptic ulcer in children highlights the important diagnosis of UGIE in CAP [11] [12] [13]. Despite its invasive nature, the interest of gastroscopy is twofold. It allows the diagnostic of gastroduodenal lesions and to research *H. pylori* infection. Some authors [14] [15] [16] have found endoscopic anomalies in CAP with frequencies ranging from 18% to 70%. In Asia Quarq [14] has found 18% of endoscopic anomalies, in Europe Ashorn [15] 58.5% and in West Africa Lawson [16] 70%.

In Ivory Coast, studies have been done in UGIE in children [5] [17] but no study was interested in UGIE in CAP.

The aim of this study is to determine the diagnosis rentability of gastroscopy in children's abdominal pains (CAP) in Ivory Coast.

2. Patients and Methods

This is a retrospective analytical study based on reports of upper gastrointestinal endoscopy (UGIE) performed in 2 university hospital and 3 private clinics in Abidjan over a period of 7 years (from march 2009 to march 2016). The children (aged from 1 day to 15 years) in which UGIE were performed for abdominal pains during the study period were included in the study. The patients aged over 15 years and children in which UGIE were performed for some over indications during the study period were excluded from the study.

The children included in the study were distributed in 4 groups according to age: New born (from 0 to 28 days), Infant (from 29 days to 23 months), Small children (from 2 to 6 years), Child (from 6 to 12 years) and Adolescents (13 to 15 years).

We have grouped under the terms of abdominal pains, any kind of recurrent abdominal pains that motived the performance of UGIE or gastroscopy (epigastric pain, ulcer syndrome, dyspeptic syndrome, retrosternal pains, abdominal pains poorly systematized).

For each child's record included in the study, we provided the informations as follows:

- Demographic data: age, gender.
- Clinical data: the kind of abdominal pain that motived the performance of

gastroscopy.

- Results of upper gastrointestinal endoscopy.
- Performance or not of biopsies (site of biopsies and their indication)
- The results of histological examination (presence or not of *H. pylori*).

All of these data were collected using a survey sheet developed for the study.

For each patient included in the study UGIE was considered beneficial when lesions were found or when UGIE was normal and *H. pylori* infection was found in histological examination of gastric biopsies.

Limitation of the study:

The first limit is the fact that it is a retrospective study carried out in 5 centers of endoscopy with practices sometimes different. The low rate of systematic gastric biopsies for *H. pylori* infection research does not allow to know the real prevalence of this infection in our study.

3. Results

The authors showed that 116 upper gastrointestinal endoscopies (UGIE) were performed in children for abdominal pains during the study period.

These 116 UGIE accounted over 42% of all upper gastrointestinal endoscopies performed in children during the study period. The age of our children ranged from 15 month to 15years with a mean age of 11.88 year and a median of 12.5 years. Teenagers and school-age children were the most represented age group with frequencies of 49.13% and 46.55%. The small children and infant accounted less than 5% of the study population. Moreover it was noted a female predominance with a sex ratio male/female of 0.50 (**Table 1**).

From a clinical view, epigastric pains were the common indication for gastroscopy realization in 88% of the cases (**Table 1**).

The diagnosis rentability of UGIE in children's abdominal pain was more than 70%. The examination was normal in 30% of cases and lesions were found in 70% of cases (**Table 2**). The most common site of lesions was gastric (89.18%).

The main anomalies observed in UGIE were gastropathies (53.15%). They were frequently localized in the antrum (70.78%) and rarely in the fundus (5%). The erythematous type was most common endoscopic aspect of these gastropathies (66%). The nodular type represented only 18% of the gastropathies (**Table 3**).

Beside to these superficial lesions (gastropathies), the bile reflux was the second endoscopic anomalie observed in our children with abdominal pains (**Table 2**). Ulcers were rarely found with a frequency of 2.70% for bulbar ulcer and 0.90% for gastric ulcer (**Table 2**).

Biopsies were performed in only 37 children out of 116 (31.89%). Almost all of these biopsies were sampled from the stomach (3 antral, 2 fundic, 1angular) to search chronic *Helicobacter pylori* (*H. pylori*) gastritis.

Histological examination of biopsies revealed chronic *H. pylori* gastritis in

63% of examined sample.

This infection was found as well in cases of normal mucosa as mucosal anomalies observed in gastroscopy (**Table 4**).

Table 1. Sociodemographic and clinical characteristics of our study population.

Characteristics	Number (n)	Percentage (%)
Sociodemographic characteristics:		
Age group		
Adolescent	57	49.13
Child	54	46.55
Small children	3	2.58
Infant	2	1.72
Sex		
Male	39	33.63
Female	77	66.37
Sex ratio (male/female)	0,50	
Clinical characteristics		
Epigastric pains	102	88
Other abdominal pains	14	12

Others abdominal pains (retrosternal pains, abdominal pains poorly systematized)

Table 2. Upper gastrointestinal endoscopy finding in children's abdominal pains.

	Number (n)	Percentage (%)
Normal findings	35	30
¹Stomach	99	89.18
Gastropathy	59	53.15
Bile reflux	39	38.78
Gastric ulcers	1	0.90
²Duodenum	8	7.20
Duodenitis	5	4.50
Duodenal ulcers	3	2.70
³Others lesions	6	3.60

³Others lesions (3 cases of reflux oesophagitis, 1 case of oesophageal mycoses, 2 cases of incompetent cardiac)

Table 3. Distribution of gastropathies depending on their seat and aspects.

	Antrum (n)	Fundus (n)	Antrum and fundus (n)	Total
Erythematous gastropathy	30	2	5	37
Nodular gastropathy	10	0	1	11
Congestive gastropathy	1	1	4	06
Erosive gastropathy	2	0	0	02
Total	43	3	10	56

Table 4. Histological examinations results of gastric biopsies examined.

	<i>H. pylori</i> positive <i>n</i> (%)	<i>H. pylori</i> negative <i>n</i> (%)	Total <i>n</i> (%)
Normal mucosa	11 (63%)	7 (37%)	18 (100)
Mucosa anomalies	12 (64%)	7 (36%)	19 (100)
Total	23 (63%)	14 (37%)	37 (100)

4. Discussion

The recurrent abdominal pains are a public health problem among children because affecting 15% - 45% of school-age children [13] [18]. The etiologies of these pains are considered as functional and psychological in nearly 90% of cases. Only 10% of these pains have an organic origin. Advances in digestive endoscopy and *H. pylori* discovery have reignited the debate of organicity of children's recurrent abdominal pains. Some authors found 18% and 58% of organic causes with the digestive endoscopy. The aim of this multicenter study is to determine the rentability diagnosis of upper gastrointestinal endoscopy in children's abdominal pains in our country.

The 116 UGIE performed in children for abdominal pains accounted over 42% of UGIE performed in children during the study period. These results show that abdominal pains are the main indications of UGIE in several developing countries as Lawson [6], and Okello [9] reported. The age of our children ranged from 15 month to 15 year with a mean age of 11.88 years and median of 12.5 years. In this study, teenagers and school-age children were the most represented age group as in several similar studies [1] [13] [18] [19]. Indeed, for Lifschit these pains are a frequent cause of UGIE performance in children after 7 years [20]. Moreover it was noted a female predominance with a sex ratio male/female of 0.50 probably related to the demographic distribution of the ivoirian population by sex [21].

From a clinical view, epigastric pains were the common indications for gastroscopy realization in 88% of cases.

The chronic gastritis and peptic ulcer manifested mainly by epigastric pains as Attia [22], Bougouma [23], Maiga [24], Perret [25] and Sanguino [26] showed.

The diagnosis rentability of UGIE in this study was more than 70%. A similar rentability was found by Lawson in his study [16]. However, in other series of literature, this rentability was low from 3.6% to 28% [27] [28]. The observed differences are probably due to the studied populations and the high frequency of epigastric pains in our study (88%).

The most commonly observed lesions were gastropathies (53.15%) as in many developing countries studies where epigastric pains were the main indication of UGIE [6] [9] [10] [29] [30]. The high frequency of gastropathies in these studies is correlated to the high prevalence of *H. pylori* infection in developing countries (60% - 80%). In Ivory Coast, it varies from 53% to 91% [31] [32] [33]. In the industrialized countries, particularly in France where the prevalence of this infec-

tion is low 5% - 10% [34], two studies [35] [36] found 8.64% and 13% of gastropathies.

These results show that *H. pylori* is the first etiological factor of chronic gastritis as Attia [22], Bougouma [23], Diomandé [33] reported. This difference of prevalence between the developed and developing countries is the result of socioeconomic differences between these two worlds; the poor are more vulnerable to infection [37] [38].

The predominant antral topography (76.78%) of gastropathies is due to the natural history of *H. pylori* infection. Despite the high prevalence of *H. pylori* infection in our country, the nodular gastropathy described as specific of *H. pylori* infection [39] accounted only 18% of gastropathies.

Bile reflux, second endoscopic anomaly observed in our children with abdominal pains could be linked to vomiting efforts during gastroscopy as Assi [17] signified.

Ulcers were rarely found with a frequency of 2.70% for bulbar ulcer and 0.90% for gastric ulcer according to the literature data [27] [40].

Despite the high prevalence of *H. pylori* in our context, gastric biopsies for his research are not common practice. Only 31% children have benefited from these biopsies. This low rate of systematic gastric biopsies for *H. pylori* infection research is in contradiction with the current recommendations [39]. The breath test (13C-UBT) may be an alternative to gastric biopsies for *H. pylori* infection research but it is not common in our developing country.

Histological examination found an *H. pylori* infection in 63% of gastric biopsies examined. This infection was found as well in case of normal mucosa as mucosa anomalies. These finding clearly show that there is not parallelism between endoscopy and histology, and they must arouse among endoscopist doctors systematic gastric biopsies to research *H. pylori* in children seen in upper gastrointestinal endoscopy for abdominal pains.

Helicobacter pylori (*H. pylori*) infection is strongly associated to children's abdominal pains [1]. The eradication of *H. pylori* allows the improvement of symptoms [41] [42] and to prevent evolutionary complications of this infection (peptic ulcer and gastric cancers).

5. Conclusion

Upper gastrointestinal endoscopy plays an important role in the diagnosis of children's abdominal pains in Ivory Coast. However the gastric biopsies to research *H. pylori* infection are not common practice. They must be aroused among the endoscopist doctors for a better management of children's abdominal pains in our country with a high prevalence of *H. pylori* infection.

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