SINGLE CENTER EXPERIENCE OF ENDOSCOPIC MANAGEMENT OF ESOPHAGEAL AND GASTRIC FOREIGN BODIES

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ABSTRACT

Objective: To report our experience and outcomes of endoscopic management of esophageal and gastric foreign bodies (FBs).

Methodology: In this retrospective case series, we presented the data of 51 cases of children having age 1-10 years, who presented to Children Hospital Complex, Multan with ingested foreign bodies within a period of 10 years from 2007 to 2017. Flexible endoscope was used to remove foreign bodies. Demographic and endoscopic data, including age, gender, types and location of foreign bodies were noted. Success of endoscopic procedures was the main study end point.

Results: There were 51 children in this study with a mean age of 4.33 ±2.49 years. There were 29 (56.9%) male and 22 (43.1%) female children. Most commonly presetting complaint was history of foreign body ingestion 41 (80.4%), 10 (19.6%) had dysphagia and 5 (9.8%) presented with sense of lump in the chest. Most common type of FB was coins that were ingested by 28 (54.9%) children while button batteries were ingested by 14 (27.2%). FBs were present in esophagus in 22 (43.1%) patients and 29 (56.9%) were present in the stomach. Endoscopic removal was successful in 49 (96.1%) patients.

Conclusion: Coins and button batteries were the most common source of foreign bodies in children. Flexible endoscopy was found to be an excellent tool for the removal of foreign bodies.

Key Words: Foreign bodies, Ingestion of foreign body, Flexible endoscopy

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INTRODUCTION

Ingestion of foreign body is very common among children; about 80% of total foreign body ingestions occurs in pediatric population[1]. Among total cases of foreign body ingestion, 80-90% of these foreign bodies pass spontaneously and in remaining 10% to 20% cases endoscopy is used to remove these FBs while in less than 1% of these patients surgical removal is requied[2,3]. These ingested foreign bodies should be removed as early as possible because if not removed these can damage the gastro-intestinal tract (GIT), may lodge in GIT and can produce toxicity in future. In USA, 1500 cases of foreign body ingestion are reported every year[4]. Coins, batteries, fish bone, food boluses, metal pieces and plastic materials are commonly found FBs in children[5,6]. The incidence of these foreign bodies is different in studies from different regions. There is a higher risk of ingestion of foreign body in male children as compared to females[7,8]. Incidence is higher in children having age <5 years as compared to the older ones[9].

The diagnosis of foreign body ingestion in children is very difficult if there is no witness that have seen the child engulfing the material. European Society of Gastrointestinal Endoscopy (ESGE) guidelines recommend the use of plain X-rays to localize the presence, number and location of foreign bodies[10]. According to ESGE, esophago-gastro-duodenoscopy (EGD) should be used to remove hard object foreign bodies in symptomatic patients. Flexible endoscopy has a success rate of 95% with minimum complications rate[10]. In the present study, we reported our experience and outcomes of endoscopic management of esophageal and gastric foreign bodies. The results of this study will be shared with colleagues and professionals in the relevant field for better outcomes in cases of ingested FBs.

METHODOLOGY

This retrospective study was conducted in Children Hospital Complex, Multan. We included the data of 51 patients who underwent endoscopic removal of foreign bodies in Gastro-intestinal and Hepatology Department of the hospital. These procedures were done within a

period of 10 years from 2007 to 2017. All patients' data were retrieved from the files of the patients that were kept in the record room of the hospital. Data regarding demographics, time of presentation, type and location of foreign body and success rate was collected. Consent forms for endoscopy was verified for every patient. Approval from the hospital IRB was also taken before the study.

Endoscopy was done under local pharyngeal anesthesia or under general anesthesia in all patients after confirming that the patients has not taken any thing orally within the last 4 hours (at least). Flexible endoscope was used to remove foreign bodies. Complex foreign bodies were removed using double channel endoscope. Monitoring of oxygen saturation and blood pressure using non-invasive method was done during the endoscopy.

RESULTS

There were 51 children with a mean age of 4.33 ±2.49 years. The age range was 1.5-10 years. There were 29 (56.9%) male children. Most commonly presenting complaint was history of foreign body ingestion in 41 (80.4%) children. Most of the children presented after 24 hours of ingestion of foreign body. Endoscopy was done after 2 to 3 days after ingestion of FBs in 44 (86.3%) of the patients, (Table 1).

Most common type of FB was coins that were diagnosed in 28 (54.9%) children followed by ingestion of button batteries in 14 (27.2%). FB was present in the esophagus in 22 (43.1%) patients, most affected part was upper 1/3rd part of the esophagus, (Table 2).

Endoscopic removal was successful in 49 (96.1%) patients, while unsuccessful in only 2 (3.9%) patients.

Table 1: Baseline data of patients

Variables		Frequency	Percentage
Age	≥ 5 years	35	68.6%
	> 5 years	16	31.4%
Gender	Male	29	56.9%
	Female	22	43.1%
Presenting Symptoms	History of Foreign Body Ingestion	41	80.4%
	Dysphagia	10	19.6%
	Sense of Lump	05	9.8%
Timing of Endoscopy	<24 hours	04	7.8%
	2-3 Days	44	86.3%
	>3 days	03	5.9%

Table 2: Types and location of foreign bodies

Variable		Frequency	Percentage
Types	Coins	28	54.9%
	Button Battery	14	27.4%
	Blades	02	3.9%
	Hair Pin	02	3.9%
	Metal Piece	03	5.9%
	Ear Rings	01	1.9%
	Food Bolus	01	1.9%
Location of Foreign Bodies	Esophagus	22	43.1%
	Upper 1/3rd of Esophagus	13	25.5 %
	Mid 1/3rd of Esophagus	06	11.7 %
	Lower 1/3rd of Esophagus	03	5.9 %
	Stomach	29	56.9%
	Mid part of Stomach	25	49.0 %
	Fundus of Stomach	04	7.9 %

Both these patients were having FBs in stomach on plain X-rays but before endoscopy these moved to the jejunum from where they passed out in stool within 2-3 days.

DISCUSSION

Ingestion of FB by pediatric population is a worldwide problem. Most of the children with esophageal FB are asymptomatic or have transient symptoms after ingestion[11,12]. Feeling of lump in the chest is sometimes observed by the children. Evidence of ingestion of foreign body is the best method of evaluation of FB ingestion[13]. In children having history of FB, chest radiograph is the 1st line diagnostic test. Direct endoscopy can be used in children having radiolucent foreign bodies[10]. Mean age of our patients was 4.33 ±2.49 years and 68.6% were less than 5 years of age. Similar results have been reported by other studies[9,14]. In our study, there were 56.9% male children. There were 63.0% male children in the study by Li et al[14]. Other studies have also found higher proportion of male population in FB patients[15-17]. On the other hand, Chen et al[18] found 52.6% female children having FB ingestion in their study patients.

Type of FBs vary among different regions, like in some parts of the world, fish bone is the commonest FB ingested by Children[1]. However in larger part of the world, coins are the most common FB ingested by Children[5,11,19]. In our study, coins were the commonest foreign bodies with the frequency of 54.9%. Coins are also considered the commonest FBs in India[9,20]. Sinha et al[9] found coins in 42.8% of children who presented with FB. Studies from China have shown dental prosthesis and poultry bone as commonest source of foreign bodies[14,18].

In our study, history obtained from the parents of children with FB ingestion was the commonest presenting complaint. While dysphagia was reported in 19.6% children and sense of lump in 9.8% children. The reported incidence of witness of caregiver regarding history of foreign bodies has been reported from 51% to 92%[17,21]. Saliva drolling, dysphagia, vomiting, odynophagia and weight loss has been reported as presenting complaints by some investigators[5,9].

In the present study, only 7.8% FBs were removed within 24 hours of ingestion, while 86.3% were removed within 2-3 days after ingestion and 5.9% even after 3 days of ingestion. In many studies FBs were removed within 24 hours after ingestion[14,22]. The reason for this delay in our study may be late referral of patients from the remote health care unit facilities.

Esophagus is the narrow part of GIT and is more prone to have FBs especially the upper 1/3rd part of the esophagus. Many studies have found higher proportion of FBs in this part of the esophagus[5,11,15]. In our study, higher proportion of FBs, 56.9% was found in the stomach. The reason for this may be the late presentation of children in our setup after ingestion of FBs as compared to other studies. In this time period, the FBs may possibly be slipped out from esophagus to the stomach.

CONCLUSION

Ingestion of foreign bodies was found frequently in children presenting to Children Hospital, Multan. Coins and button batteries were the most common source of FBs in children. Flexible endoscopy was found to be an excellent tool for the removal of foreign bodies. Based on our study findings, these items should be placed out of the reach of children especially those having age less than 5 years.

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CONTRIBUTORS

MTA conceived the idea, planned the study and drafted the manuscript. GK and IA helped acquisition of data, did statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.