Foreign Body Ingestion in Adults: Clinical Characteristics and Management

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ABSTRACT

Foreign bodies in the gastrointestinal tract are a frequent cause of consultation in gastroenterology, and are associated with a non-negligent morbidity and mortality. A prospective, descriptive, and transversal study was performed in which clinical, radiological and endoscopic relevant data were collected of all the patients who consulted the emergency room of the Dr. Domingo Luciani General Hospital between June 2011 and June 2012 with the suspicion of foreign body ingestion. A total of 71 patients were evaluated, 41 males (57.74 %) and 30 females (42.25 %). Mean age 46.63 $\pm$ 13.15. Accidental ingestion occurred in 95.77 %. Chicken and fish bones (59.15 %) predominated. Dysphagia (30.98 %) and odynophagia were the most frequent symptoms. Average time between admission and endoscopy: 9.11 $\pm$ 6,012 hours. Endoscopic treatment was effective in 89.18 % of the cases. No foreign body was found in 43.93 % of cases. The snare and foreign body forceps were used in 47.05 % and 35.29 % of the cases. One patient died (1.40 %). About half of our patients did not have objective evidence of foreign body presence. Endoscopy is a useful method for the diagnosis and if it were necessary the retrieval of the foreign body.

Keywords: Adults, foreign body ingestion, gastrointestinal endoscopy

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INTRODUCTION

Foreign body (FB) ingestion is the second most common cause of emergency gastrointestinal endoscopy, just behind gastrointestinal bleeding and one of the most challenging clinical scenarios faced by gastroenterologist all over the world. Although most cases occur in children, they can also be observed in adults, who have different clinical characteristics and management strategies and are generally associated with risk factors such as mental retardation, alcoholism, psychiatric or neurological diseases, and above all elderly patients wearing dentures (1,2), because the significant morbidity and mortality associated

The purposes of this study were to evaluate the clinical and epidemiological features of adult patients admitted to an emergency department of a tertiary general hospital after foreign body ingestion.

METHODS

Patients older than 13 years of age, who presented with history of foreign body ingestion to the emergency department of the Dr. Domingo Luciani General Hospital (Venezuelan Institute of Social Security (IVSS). Caracas, Venezuela) between June 2011 and June 2012 were evaluated prospectively and asked to participate in this study. Patients were accepted if they gave informed written consent and agreed the medical procedures or required treatments to the foreign body removal.

This was a prospective, descriptive, observational and cross-sectional study. Pertinent clinical information were obtained from the medical charts or when needed from direct interview of the patient or relatives. A special form was designed to collect the data: presence or absence of dysphagia, sialorrhea, odynophagia etc. Demographic characteristics, past medical history,

medication use, physical examination, diagnostic procedures performed, endoscopy findings, type and location of the foreign body, endoscopic management, surgical rates, complications, mortality and length of stay were all recorded.

Routinely neck (AP and lateral) and chest X-ray (PA and lateral) views were obtained in all cases. Upper-digestive endoscopy was done as soon as possible (within 24 hours) as an emergency procedure in the endoscopy suite of the gastroenterology department under conscious sedation (Midazolam-Fentanyl) administered by a nurse and supervised by a trained gastroenterologist, at doses considered appropriate by the endoscopist. An Olympus ® CLV-160 Evis Exera II ™ video endoscope (Olympus ®.Japan) was used to perform all endoscopic examinations (Olympus GIF-160 video gastroscope/Olympus CF-Q160 AL video colonoscope). Vital signs and peripheral oxygen saturation were monitored by pulse oximetry before, during and after the procedure.

Endoscopic accessories included:

a.-RTF-2,5.160 Maxum reusable forceps (Wilson-Cook ®) rat-tooth type used for foreign body retrieval of the gastrointestinal tract.

b.- SD-210U-25 Disposable oval snare (Olympus ®).

Immediately after removal of the foreign body, gastroscopy was repeated in order to reexamine the site of impaction, rule out any cause of the foreign body impaction or missed lesions.

When foreign body extraction was unsuccessful in the endoscopic suite, and additional attempt was made in the operating room under general anesthesia. When both endoscopic attempts failed a surgical consultation was required.

This study was approved by the hospital ethics committee.

Descriptive statistics were expressed as the mean plus or minus one standard deviation. Qualitative data was expressed as frequency percentages. Sensitivity and specificity were calculated if

considered necessary. Data analyses were performed using StatsDirect statistical software (StatsDirect ®). Ltd. http://www.statsdirect.com. England: StatsDirect Ltd. 2008.

RESULTS

A total of 71 patients with suspected foreign body ingestion were evaluated during the study period, 41 were males (57.74 %) and 30 females (42.25 %). The range of age was 13-79 years with a mean age of 46,633 ± 13.15. (Mean age for males 48.70 years and 43.70 for females (Table 1).

Table 1: Demographic characteristics of patients with suspected foreign body ingestion

Age (years)	Female (n)		Male (n)		Total	
	N°	%	N°	%	N°	%
< 15	1	1,40%	1	1,40%	2	2,81
16-30	3	4,22%	3	4,22%	6	8,45
31-45	15	21,12%	13	18,30%	28	39,43
46-60	8	11,26%	17	23,99%	25	35,21
	2	2,82%	7	9,85%	9	12,67
>75	1	1,40%	0	0	1	1,40
Total	30	42,22%	41	57,76%	71	100

Most frequently encountered foreign bodies were chicken, fish and meat bones (59.15%). Table 2, summarizes the types of foreign bodies ingested in the study. In most cases, foreign body ingestion was accidental (68 cases; 95.77 %), and no relevant past medical history was disclosed (53 cases; 74.64 %). Hypertension was present in 4.22 % of the patients. Alcoholism, caustic esophagitis and gastric surgery and schizophrenia were present in 2.81 % for each one.

Table 2: Types of Foreign bodies ingested

Type of foreign body	**Patients**	
	N°	**%**
Fish bones	18	25,35
Chicken or meat bones	24	33,80
Dentures	11	15,49
Food bolus	8	11,26
Glass objects	2	2,81
Pins	2	2,81
Drawing pins	2	2,81
Garlic	1	1,40
Earrings	1	1,40
Screws	1	1,40
Unspecified	1	1,40

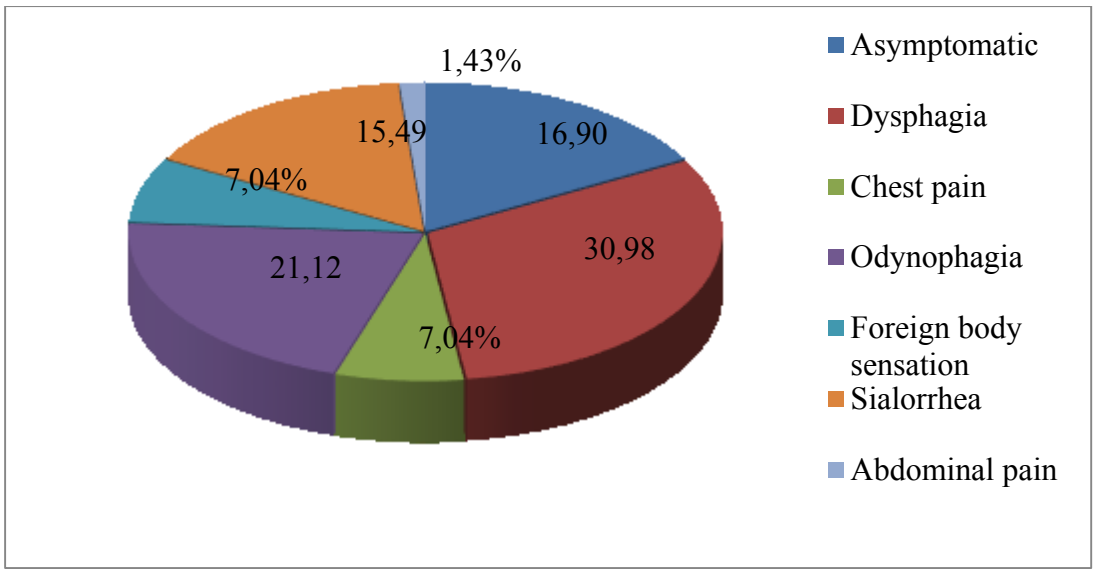
Total	71	100

Almost all patients were able to identify the nature of the ingested foreign body and made a rough estimate of its size (97.19 %) at the moment of their evaluation. A great majority of them consulted to the hospital before the first 12 hours of the ingestion (64.78 %), median: 5.5 hours and a mode of 4 hours. Only 15.49 % consulted after 24 hours. Time elapsed between ingestion and hospital arrival ranges between one hour and seven days. Time could not be determined in 3 patients (4.22 %). Just five cases had a past history of foreign body ingestion (7.04%).

Dysphagia (30.98 %), odynophagia (21.12 %), sialorrhea (15.49 %), foreign body sensation and chest pain (7.04 %) were the most frequent symptoms associated with foreign body ingestion in our patients. Twelve patients (16.90 %) did not complain any symptoms. (Figure 1).

Radiology was not useful for identifying gastrointestinal foreign bodies in our study (65 cases= 91.54 %). Just in six cases the plain radiographies showed positive results: 3 in the esophagus (1 upper third and 2 middle third) and 3 in colon.

Figure 1: Symptomatic complaint after foreign body ingestion



The plain radiology detection rate (sensitivity) was 16.2 % and specificity: 100 % using endoscopy as the gold standard. Otorhinolaryngology consultation was required in 33 patients (46.47 %). Endoscopy was performed between 30 minutes to 23.5 hours from the arrival of the patient to the emergency department. The mean time referred sometimes as "time-to-scope" was 9.11± 6.01, with a mode and median of 12 hours. In 3 patients a colonoscopy was performed.

Out of 71 patients evaluated, 40.84 % did not have radiological or endoscopic evidence of the suspected foreign body ingestion. In 59.16 % of patients, the foreign body was identified endoscopically (esophagus upper third 25.34 %, esophagus medium third 14.08 %). Endoscopic removal was achieved in 89.18 % of the patients in the conventional endoscopy suite. In 10.81 % of patients the endoscopic procedure was repeated in the operating room under general anesthesia. Only in 25 % of those cases, this new attempt were successful. The remaining 75 % needed a cervicotomy. Average length of stay was less than 24 hours (85.91%). (Table 3).

Table 3: Hours of hospitalization

Hospitalization (hr)	Patients	%
< 24	61	85.91
24-72	6	8.45
>72	4	5.63
Total	71	100%

There was a relatively low rate of complications (2.81 %): contained perforation (1.40 %- 1 patient). Surgical site infection, leaking, lower respiratory infection, and finally death (1 patient). Most cases were resolved effectively by identifying and removing the foreign body. Sometimes confirming their absence and reassuring the patient. 7.04 % patients left the emergency department against medical advice.

DISCUSSION

Around 80 % of all ingested foreign bodies will pass through the gastrointestinal tract without difficulty. However up to 20 % of those patients will need some kind of endoscopic intervention to remove the object. Surgery fortunately is rarely required (less than 1 %). As a rule of thumb any foreign body endoscopically accessible should be removed early (3,4).

Each patient represents a potential clinical challenge to the endoscopist who need to perform the removal of the foreign body safely and effectively. In all cases it is necessary to consider not only the demographic characteristics and medical history but also the type and features

of the ingested foreign body (size, form, type, composition, time from ingestion etc.) to decide the best approach.

Clinical manifestations are usually related to the factors described above and are the same in all series reported: dysphagia is the most common and disturbing symptom to the patient, odynophagia, sialorrhea and chest pain are less habitual. Respiratory distress associated with the ingestion of a foreign body is highly suspicious of aspiration to the upper airway or compression thereof by a foreign body located in the upper third of the esophagus (3).

Routine use of radiological studies was not useful in most patient in our series, although results vary widely in the literature and radiological studies are still considered useful to confirm the presence and localization of the foreign body and rule out possible complications (5), we considered a more selective and rational approach is necessary. When alimentary bolus impaction is suspected and there is no evidence of bones it may be obviated. A false negative rate of 47 % and a false positive rate of 20 % has been reported in this setting (6,7). Most swallowed foreign bodies in children are coins, fish bones, screws, batteries and seeds, located in the esophagus (8,9). Most swallowed foreign bodies in adults unlike children are fish, chicken and meat bones, and dentures (10).

Flexible endoscopy is considered the method of choice to evaluate and retrieval of ingested foreign bodies. The conventional endoscopic suite is suitable in most cases. In difficult cases or in those where the first attempt were unsuccessful, it should be considered to perform the procedure in the operating room.

Foreign body retrieval forceps and polypectomy snares with varying shapes, sizes and grips alone or combined are the most common endoscopic devices used to remove the ingested objects.

Sometimes rigid esophagoscopy may be useful especially in those foreign bodies located in the upper third of the esophagus (2). Unfortunately, is not usually available in most endoscopic facilities.

Factors associated with foreign body ingestion are widely variable, but most times are accidental especially in children where it can reach 100 % (11).

It is worth noting that in 40.84 % of the cases despite a thorough clinical, radiological and endoscopic investigation, there was no evidence of any foreign body.

Hung, et al, identified as risk factors associated with complications: delayed consultation to the emergency room, positive radiological findings and patients older than 50 years (12).

The average patient is male, aged between 31-60 years-old, who comes to the hospital in the first twelve hours after an accidental ingestion of fish, meat or chicken bones, complaining of some combination of dysphagia, odynophagia, sialorrhea and chest pain. After endoscopy almost all of them evolve satisfactorily, and are discharged from the hospital.

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