



Acute Esophageal Food Impaction (Aefi) in Elderly Population From Al-Dakahlia Governorate, Egypt : A Single Center Experience

KEYWORDS

Esophagus; Esophagoscopy, Elderly; Food Impaction; Stricture.

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ABSTRACT Impacted FBs in the aerodigestive tract continue to be a common problem that contributes significantly to high morbidity and mortality worldwide, particularly, in both extremes of age. In this work, we aimed to present our center experience in management of acute esophageal food impaction AEFI in elderly patients. We enrolled a total of 18 consecutive elderly patients (≥65ys) presented with 24 hour history compatible with AEFI. The patients' clinical data were collected by reviewing the in-hospital patients' records. Diagnosis of AEFI relies on history, clinical examination, laryngeal movement test, water drinking test, radiographic testing, and endoscopy. Eligible patients were subjected to flexible esophagoscopy under conscious sedation within 24 hours after rapid initial evaluation and ensuring patients' hemodynamic stability. Meat products were the commonest food impacted mainly in the lower part of the esophagus in 15 patients (83.33%), followed by the middle part in 3 patients (16.67%). Post-sclerotherapy stricture in 8 patients (44.44%), Schatzki's ring in 3 patients (16.67%) and peptic stricture in 4 patients (22.22%), were the commonest associated structural esophageal findings. Esophagoscopy effectively relieved esophageal food impaction by the pushing technique in 7 patients (38.89%), and extraction method in 11 patients (61.11%) either by snaring or banding vacuum cap with no reported perforation but just few minor complications. In conclusion, our data revealed that AEFI is common in our elderly edentulous males. Sclerosant esophageal stricture is the commonest risk factor. Early endoscopic intervention is associated with high success rate with low morbidity and no mortality.

Introduction

Ingested gastrointestinal (GI) foreign bodies (FBs) and food bolus impaction can commonly occur and are considered as the second most common endoscopic emergency after GI bleeding.¹ The esophagus is vulnerable to FB impaction. The esophagus is a passive and inadaptible organ and its peristalsis is not strong enough to prevent retaining certain types of swallowed objects.² Esophageal FBs usually lie get impacted close to one of the ³ anatomical narrowings; the cricopharyngeal ring, site of aortic arch crossing, and the gastro-esophageal junction.³ Esophageal food bolus impaction is the most common type of FB ingestion in adults.⁴

In Western countries, the most common impacted food are meat products as beef, chicken, pork, and hotdogs.^{1,5} In Asia and coastal counties, fish and fish bones dominate.¹

Extremes of age are great risk of upper GI foreign body impaction.^{6,7} Edentulous elderly patients do not chew food well and prefer swallowing them as a whole. Also, cartilage and bony fragments in food are not felt due to artificial dentures.^{8,9} Other contributing factors for food impaction include; age-related disturbed physiological and neurological mechanisms responsible for chewing, deglutition and swallowing, Also, increased incidence of cerebrovascular strokes, neurological disorders, structural esophageal lesions, and drugs decreasing saliva production as antidepressants or those inducing esophagitis as potassium-, iron preparations, NSAIDs, and tetracycline, are considerable factors affecting the elderly.¹¹⁻¹³

In this work, we aimed to clarify the role of early endoscopy in management of AEFI in elderly patients

Patients and methods

A total of 18 consecutive elderly patients ≥ 65ys presented with a recent (≤24 hours) history compatible with acute esophageal food impaction (AEFI), admitted at the Endoscopy Unit, Mansoura Emergency Hospital during the period between January 2001 - December 2010, were enrolled after writing a well-informed consent and ethical approval.

Esophageal impaction with FBs other than food, or patients below 65ys, or those with documented esophageal perforation, were excluded from this work.

The patients' clinical data were collected by reviewing the in-hospital patients' records regarding age, sex, presentation, history of heart burn, regurgitation, similar condition (recurrence of food impaction), site of impaction, duration, type of food impacted, type of endoscopic management, and presence of distal obstruction, post-procedure complications encountered, and other local esophageal endoscopic findings. Special stress on the presence of dentures (partial/ complete), teeth loss (partial/ total), and associated co-morbid diseases.

In general, diagnosis of food impaction in the esophagus relies on history taking from the patient, clinical examination, laryngeal movement test, water drinking test, radiographic testing, and endoscopy. Chest computed tomography (CT) scanning was ordered in suspected esophageal perforation. No patient with AEFI underwent barium contrast esophagography at initial presentation to avoid aspiration and so as not to compromise subsequent endoscopy the impacted FB and/ or the esophageal mucosa.¹⁴

All enrolled patients were subjected to flexible esophagoscopy at the endoscopy unit under conscious sedation within 24 hours after rapid initial evaluation and ensuring

patients' hemodynamic stability.

Dislodgement of fleshy food bolus was achieved by gentle pressure using the tip of the endoscope on the centre of food bolus after air insufflations of the esophagus. The push technique is adopted in patients with no history of dysphagia and without significant distal esophageal obstruction or those with soft, fragmented impacted food making the process of their extraction difficult.¹⁴⁻¹⁶ When advancement is unsuccessful, reduction of the bolus size by piecemeal method is performed, followed again by gentle pressure. The procedure should be stopped if significant resistance is encountered.¹⁷ Blindly pushing the endoscope is prohibited due to the high incidence of underlying esophageal pathology.¹⁶ Esophageal perforation may still be a potential risk if excessive pressure is applied or when eosinophilic esophagitis is suspected, here, mid and/or distal esophageal biopsies were obtained. However, histopathological examination denies this suspicion in our study. Successful disimpaction was defined as passage of the pushed food bolus into the stomach. All structural, mucosal esophageal abnormalities were diagnosed by upper endoscopy. The decision to perform esophageal dilatation during the initial endoscopy was based on the preference of the individual endoscopist.

Mucosal breaks would result from pressure necrosis from esophageal obstruction with food impaction alone in non-GERD patients while, in symptomatic GERD patients, mucosal changes are believed to result from combined effects of acid injury and food-related pressure necrosis in AEFI.¹⁷

The placement of an overtube with subsequent extraction of impacted food was carried out in patients with significant esophageal stricture or the impacted food bolus is firm, large, or contains cartilage and/ or bone fragments or failed push technique. Overtube placement protects the airways and facilitates the passage of the endoscope several times during piecemeal clearance of an impacted food bolus. Moreover, an overtube protects the esophageal mucosa from lacerations during retrieval of sharp objects.^{18,19}

Polypectomy snare, and banding caps, have been used as esophageal retrieval devices to remove the impacted food bolus en bloc or in a piecemeal fashion. The polypectomy snare should be pulled snug against the tip of the endoscope once the food bolus has been successfully ensnared. A banding cap is fit on the tip of the endoscope and a continuous suctioning creates a vacuum force thereby, pulling the impacted food bolus against the cap.²⁰⁻²²

Statistical analyses: Gathered data were analyzed using SPSS computer software version 17.0 (SPSS Inc., Chicago, IL, USA) and are expressed as a number and a percentage for qualitative variables and as mean+ standard deviation for quantitative variables.

Results

A total of 18 consecutive eligible elderly patients (12 males and 6 females) with a 2 :1 sex ratio, and an age range 67-73 y (mean 69±0.9) presented with AEFI, were included in this study. Patients' clinical characteristics and presentations are displayed in Table 1. Eligible patients were from Mansoura City, Agha, Talkha, and Belqas regions [2 (11.1%)/6(33.33%)/6/(61.11%)3(33.33%/1(5.55%); respectively], with an estimated 7(38.89%)/11(61.11%) urban: rural ratio.

Dysphagia is the commonest presentation in 9 patients (50%), followed by odynophagia in 7 patients (38.89%), FB sensation in 6 patients (33.33%), vomiting in 4 patients (22.22%), and lastly, salivation in 4 patients (22.22%).

Previous history of AEFI was reported in 5 patients (27.78%) and previous sessions of esophageal dilatation were carried out in 5 patients (27.78%) also.

Teeth loss is universal finding in our participants (100%); partial in 14 patients (88.88%) and complete in 4 patients (22.22%) and none of them have artificial dental prosthesis.

Meat and its related foods were the cause of AEFI in our elderly participants as shown in Table 2: buffalos' meat in 7 patients (38.89%), chicken meat in 5 patients (27.78 %), canned beef in 1 patient (5.55%), partially meshed goose liver in 3 patients (16.67%), meshed meat + missed cartilage in soup in 1 patient (5.55%), duck meat+ vegetable salad particles in 1 patient (5.55%).

The lower part of the esophagus is the commonest site of food trapping in 15 patients (83.33%), followed by the middle part in 3 patients (16.67%), and the upper part of the esophagus escaped food trapping (0%) in these case series. (Table 2).

DM was the commonest associated medical problem diagnosed in 9 patients (50 %), followed by 8 patients(44.44%) with cirrhotic liver disease on repeated endoscopic variceal injection sclerosis sessions, and 1 patient (5.55%) with chronic renal impairment.

Structural esophageal endoscopic findings responsible for AEFI as follows: Schatzki's ring in 3 patients(16.67%), peptic lower end esophageal stricture in 4 patients (22.22%), Barrett's adenocarcinoma in 1 patient (5.55%), post-sclerotherapy stricture in 8 patients (44.44%), esophageal intramural pseudodiverticulosis in 1 patient (5.55%), infiltrative esophageal carcinoma in 1 patient (5.55%).

Pushing technique was effective in dislodgement of impacted food into the stomach in 7 patients (38.89%), and extraction method relieved esophageal obstruction in 11 patients (61.11%) [(Snaring in 6 patients (33.33%) banding vacuum cap extraction in 5 patients (27.78%)]. Dilatation of esophageal obstruction was done in 3 patients (16.67%) after food dislodgement. Early intervention, healthy esophageal mucosa, availability of the necessary equipment and little co morbidities can help the operating endoscopist in deciding to dilate a stricture or to postpone.

Reported complications include; erosions in 1 patient (5.55%), superficial ulcerations in 2 patients (11.11%), minor bleeding in 2 patients 44.44 (11.11%), and with no reported post-procedure esophageal perforations.

Discussion

Diagnosis of food bolus impaction is rarely a problem because most patients are able to relate the type of food ingested and the approximate time when symptoms begin. In general, patients' localization of food impaction is unreliable and esophageal dysphagia is more likely to be referred proximally, rather than distally, from the site of obstruction (23, 24). AEFI-related symptoms usually alarming patients to seek medical help. Clinical history, patients' symptomatology and the radiographic studies would aid the physician in making decisions despite the low diagnostic accuracy of plain x-ray.²⁵⁻²⁷ CT may be helpful, al-

though, it may not detect many radiolucent impacted foods. However, its sensitivity may be improved with 3-dimensional reconstruction.²⁸⁻³⁰ Thus, endoscopy should be performed in non complicated non bony AEFI without obtaining radiographs and in patients with persistent esophageal symptoms and negative radiography.¹⁴

In our work, the presenting patients' symptoms were the most accurate indicators of AEFI; a data supported by many authors in their case series.²⁷⁻³¹

FB ingestion and AEFIs are common endoscopic emergency faced by the gastroenterologists. Fortunately, the majority of ingested FBs and food stuffs pass spontaneously. Only 10-20% of them may be impacted elsewhere in the GI tract and may require non-operative intervention. Surgery would be an option in about 1% of cases.^{15,16,25,32,33} Management of FBs impacted in the GI tract depends on a number of factors including; the anatomical location, size and shape of the FB, and the duration of impaction.³⁴⁻³⁶ FB impaction especially if neglected, may cause secondary mucosal changes including ulcerations, inflammation, mucosal edema, and superimposed infection with subsequent development of esophageal wall weakness, and possibly perforation particularly, if sharp FBs are engaged in the esophagus. Additionally, the esophageal wall lacks a serosal layer; resulting in lethal complication of perforation.³⁷ In the present work, urgent endoscopic management of esophageal food impactions within 24 hours after the initial presentation, is the preferred trend adopted as any further delay would decrease the likelihood of successful removal and may increase the risk of complications.³⁸⁻⁴¹

Successful management of AEFI is influenced by many factors including the experience and the technical skills of the endoscopist, as well as the availability of the necessary equipments and accessories.⁴² Flexible endoscopy is highly sensitive in diagnosis of AEFI, and the underlying esophageal pathology and has an advantage of delivering immediate therapy in the same setting in most of cases. Thus, it is a reliable and a preferred treatment modality for most cases of with low reported procedure-related complications rate, particularly when impacted FBs are managed early.⁴³⁻⁴⁶

In our study, minor complications occurred, mostly related to endoscopic maneuvering in patients with co-agulopathy due to associated co-morbid conditions. Urgent endoscopic intervention greatly nullified local hazards that would be ascribed to delayed removal and neglected FBs. Esophagoscopy effectively relieved esophageal food impaction by the pushing technique in 7 patients (38.89%), and extraction method in 11 patients (61.11%) either by snaring or banding vacuum cap with high success rate, and no reported perforation.

Pharmacological agents have been tried on patients' admission or on preparation for endoscopy. Glucagon is the mainstay of medical treatment that has been used with variable success rates. Glucagon can facilitate the clearance of food material probably secondary to its smooth ms relaxing effect.⁴⁷⁻⁵⁰ However, in our work, intravenous glucagon did not appear as an acceptable therapeutic option in the presence of pre-existing fixed esophageal lesions causing food impaction in our elderly patients.

The use of proteolytic enzymes as papain or chemotrysin to dissolve impacted food has been disfavored because of their potential hazards as esophageal erosions and per-

foration.^{15,51,52} Gas-forming agents as carbonated beverages have been used with success to force impacted food downwards by releasing carbon dioxide and raising the intraluminal pressure against the closed upper esophageal sphincter.^{45,53} However, esophophageal perforation is still a real risk.⁵⁵

AEFI usually occurs as a result of two factors; the nature of the swallowed food and the presence of pre-existing underlying esophageal pathology. In old age, impaction of a food bolus is a common occurrence especially in edentulous patients who tend to swallow poorly masticated foods like meat as a whole and consequently, may stuck in the abnormal esophagus.⁷⁻⁹ The use of well-fitted dentures or well-meshed meat products are of great help in prevention of AEFI.

Benign esophageal stenoses, Schatzki's ring and peptic strictures are the commonest causes, followed by webs, extrinsic compression and surgical anastomoses.⁵⁶

In the present work, our aged participants had two factors associated with AEFI namely; teeth loss (100%) (partial, complete) and pre-existing significant esophageal pathologies where post-sclerotherapy (44.44%), peptic structuring (22.22%), Schatzki's ring (16.67%) come on the top of the list.

Endoscopic sclerotherapy controls variceal haemorrhage and improves patients' survival.^{42,57,58} However, chemical inflammation produced by the injected sclerosant material followed by acid exposure may result in esophageal necrosis, then later, fibrosis, and esophageal structuring.⁵⁹⁻⁶¹ Ethanolamine oleate (EO); a locally manufactured sclerosant which effective, cheap, easily obtained, commercially available and is widely used for treating our cases. When EO is injected during active bleeding in a circumferential instead of the standard spiral fashion, esophageal stricture would be expected.⁶² Also, the larger the sclerosant dose given per session, the greater the chance of acquiring complications. The length of injector needle passing deep into the submucosa or the muscularis propria may create severe inflammatory reaction with subsequent esophageal necrosis.⁶³ Hence, judicious use of sclerosants is strongly advised to minimize the incidence of complications.

In conclusion, our data revealed that early endoscopic intervention is associated with high success rate with low morbidity and no mortality. AEFI is common in our elderly edentulous males. Sclerosant esophageal stricture is the commonest risk factor

Tables

Table 1: Patients' characteristics, and presentation

| Parameter | No. Percentage (%) |
|-----------------------------------|--|
| Sex (M:F) | 12 (66.67%) 6 (33.33%) |
| Urban/Rural | 7 (38.89%) 11 (61.11%) |
| Manassara City/Aga Talkha/ Bolcas | 2 (11.11%) 6 (33.33%) 6 (33.33%) 1 (5.55%) |
| Educated/Non-educated | 5 (27.78%) 13 (72.22%) |
| Past history AEFI | 5 (27.78%) |
| Previous esophageal dilatation | 5 (27.78%) |
| Toothless (partial/complete) | 14 (88.88%) 4 (22.22%) |
| Patients' presentation: | |
| Dysphagia | 9 (50%) |
| Odynophagia | 7 (38.89%) |
| F.B. sensation | 6 (33.33%) |
| Vomiting | 4 (22.22%) |
| Salivation | 4 (22.22%) |
| Co-morbid conditions | |
| Diabetes Mellitus (DM) | 9 (50%) |
| Cirrhotic liver disease | 8 (44.44%) |
| Chronic renal impairment | 1 (5.55%) |

Table 2: Types, Sites of Food Impaction and Endoscopic Treatment Outcomes

| Parameter | No./ Percentage (%) |
|---|--------------------------------|
| Types of trapped food | |
| Buffalos' meat | |
| Chicken meat | |
| Canned beef | |
| Partially meshed goose liver | |
| Meshed meat +missed cartilage in soup | 7(38.89%) |
| Duck meat+ vegetable salad particles | 5(27.78%) |
| Site of impaction | 3(16.67%) |
| (upper/middle/ lower part) | 1(5.55%) |
| Structural esophageal endoscopic findings | 1(5.55%) |
| Schatzki's ring | 0(0%)/3(16.67%)/15(83.33%) |
| Peptic lower end esophageal stricture | 3(16.67%) |
| Barrett's adenocarcinoma | 4(22.22%) |
| Post-sclerotherapy stricture | 1(5.55%) |
| Esophageal pseudodiverticulosis | 8 (44.44%) |
| Infiltrative esophageal carcinoma | 1(5.55%) |
| Treatment | 7(38.89%)/11(61.11%)/3(16.67%) |
| Dislodgement/ FB retrieval extraction/ dilatation | 1(5.55%)/2(11.11%)/2(11.11%) |
| Complications | |
| Erosions/superficial ulcerations/ minor bleeding | |

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