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Thoracic complications of upper gastrointestinal endoscopy in Zagazig University Hospitals. A cross-sectional single center study

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ABSTRACT

Upper Gastro Intestinal Endoscopy (UGIE) is a commonly performed diagnostic and/or therapeutic procedure for evaluation of patients with various abdominal complaints. UGIE complications vary including; pneumonia, mediastinitis, oesophago-pleural fistula. The reported complications of UGIE are diverse and vary from one center to another.

Aim: The study aimed to report the thoracic complications in patients underwent UGIE during the period between July and December 2016.

Patients and methods: One hundred and twenty patients, candidates for UGIE were included in the study. All patients were subjected to: thorough medical history, complete general and local chest and abdominal examination, routine laboratory investigations, chest X-ray and chest computed tomography (CT) if needed, spirometric pulmonary function tests (PFT), arterial blood gases (ABGs), pre and post UGIE.

Results: Patients were 84 males and 36 female, age ranged from 25 to 70 years old, hematemesis and/or melena was the most common presentation (65%). Oesophageal varices was the most common endoscopic finding (50% of cases). Chest pain, cough and bronchitis were more common among Oesophageal Varices Sclerotherapy (OVS) patients. Pneumonia, atelectasis, pleural effusion and mediastinitis were reported after OVS. There was significant difference regarding spirometric parameters before, 2 days and 3 weeks after the procedure in patients underwent OVS and Gastric Varices Sclerotherapy (GVS), while no significant difference was reported in patients underwent Oesophageal Varices (OV) band ligation and peptic ulcer diagnosis before, 2 days and 3 weeks after the procedure.

Conclusions: Thoracic complications were more common in OVS and GVS than in OV band ligation.

Introduction

Upper gastro-intestinal endoscopy (UGIE) is a commonly performed diagnostic and/or therapeutic procedure for evaluation of patients with abdominal complaints [1]. UGIE had a lot of complications, which vary from nil, up to major pulmonary diseases including; pneumonia, atelectasis, mediastinitis, chylothorax, oesophago-pleural fistula, Esophago-bronchial fistula, and expectoration of sclerosant material [2]. The reported complications of both diagnostic and therapeutic UGIE are relatively diverse and vary from one center to another [3]. So the current study aimed to report the thoracic complications in patients underwent upper GI endoscopy in tropical medicine endoscopy unit Zagazig university hospitals.

Patients and methods

Study design

This is a cross-sectional single center study, carried out at tropical medicine and chest departments, Zagazig University Hospitals between July and December 2016.

The study population

One hundred and twenty patients, aged from 25 to 70 years old, 84 males and 36 females indicated for diagnostic and /or therapeutic upper GIT endoscopy were included in the study.

Abbreviations: CT, computed tomography; GVS, gastric varices sclerotherapy; PFT, pulmonary function tests; ABGs, arterial blood gases; OV, oesophageal varices; OVS, oesophageal varices sclerotherapy; UGIE, upper gastro intestinal endoscopy.

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Inclusion criteria

All patients referred to tropical medicine department (inpatient and outpatient) indicated for diagnostic and /or therapeutic upper GIT endoscopy.

Exclusion criteria

1- Patients experiencing any chest complaint before the procedure.
2- Fever or chest X- ray abnormality before the procedure.
3- Patients with history of chronic lung disease.
4- Patient unfit for upper G.I.T endoscopy (encephalopathy, active bleeding until resuscitation and hemoglobin concentration <8 gm/dl).
5- Patients with history of either heart or renal failure.
6- Patients with disseminated malignancy.

After signing an informed consent, all participants in the study were subjected to the following:

1. *Thorough medical history:* before and after the procedure to report any newly developed symptoms after completing the procedure.
2. *Clinical examination:* complete general, local chest and abdominal examination before and after the procedure, including cardiac examination and ECG to exclude cardiac disease. Cardiac reconsultation was done for patients with chest pain post endoscopy to exclude cardiac causes of chest pain.
3. *Routine laboratory investigations:* routine laboratory investigations including, complete blood count (CBC), liver and kidney function tests, random blood glucose, and coagulation profile including PT, PTT and INR before the procedure and for follow up.
4. *Radiological assessment:*
   1. CXR was done before the procedure to confirm the absence of any chest disease and after the procedure for comparison and detection of newly developed abnormality.
   2. CT chest was asked for more accurate diagnosis of any suspected parenchyma or mediastinal lesions e.g. pneumonia, mediastinitis.
   3. Pelvi-abdominal ultrasound was done to assess the portal vein diameter, liver and spleen size and their pathological state.
5. *Spirometric PFTs and ABGs measurements:* Spirometric PFT and ABGs were done before the procedure to confirm the absence of any chest disease and within 2 days after the procedure for detection of newly developed abnormality related to UGIE. Spirometric PFT and ABGs were repeated 3 weeks following the procedures for follow up and for detection of any delayed onset sequlae.
6. *Upper GIT endoscopy:* Patients were considered for upper endoscopy after an attack of hematemesis and/or melena, also patients complaining of chronic epigastric pain, anorexia and/or weight loss and in preoperative assessment in cases of hypersplenism and portal hypertension. It was performed after an overnight fasting. Midazolam (5 mg) was administered intravenously as premedication just prior to upper GIT endoscopy. Endoscopes (**Pentax FG29 W, video endoscope or Olympus EVIS lusira**) and needle injectors (NM- 200L-0421 Olympus) were used. Ethanolamine oleate (5%) was the sclerosing agent utilized in case of sclerotherapy and cyanoacrylate glue in cases of gastric fundal varices. The characteristics of the bleeding lesion are noted, and appropriate therapy is applied when necessary for high-risk lesions or active bleeding. [4].

The following endoscopic techniques have been utilized for achieving hemostasis:

- Injection of epinephrine in ulcer or sclerosant material e.g. ethanolamine oleate in oesophageal varices
- Rubber band ligation of oesophageal varices (OV).
- Injection of gastric varices by cyanoacrylate glue.

Statistical analysis

All data were collected, tabulated and statistically analyzed using **SPSS 22.0 for windows**. According to the type of data, the following tests were used to test differences for significance; Differences between frequencies (qualitative variables) in groups were compared by Chi-square test (X^2). Differences between means (quantitative variables) in two groups were compared by student's *t* test. P value was set at <0.05 for significant results, <0.01 for highly significant values and <0.001 was very highly significant.

Results

The study included one hundred and twenty patients, aged from 25 to 70 years old, 84 males (mean age 49 ± 9.5) and 36 females (mean age 41 ± 9.54). Male patients represented 70% of the studied population while female patients were 30%. Hematemesis and/or melena was the most common clinical presentation among patients undergone UGIE (65%), while ultrasonographic evidence of portal hypertension was the least common clinical indication (12.5%). Oesophageal varices were the most common endoscopic finding (50% of cases) and band ligation of OV was the most commonly performed endoscopic maneuver (33.3% of cases) (Table 1).

Chest pain was the most common reported complaint, (21 patients) 17.5% of the studied patients and it was more common among OV sclerotherapy patients (9/20, 45%) and was the least in gastric variceal sclerotherapy (3/21, 14%) with significant difference (P = 0.048) when comparison was done among OVS, OV band ligation and GVS groups (Table 2).

Dysphagia and/or odynophagia was reported in 16 patients and it was more among OV sclerotherapy (5/20, 25%) and was

Table 1
Demographic data, clinical presentation, endoscopic findings and maneuvers of the studied patients.

Data	No (120)	%
Gender		
Male	84	70
Female	36	30
Age (years)		
Mean ± SD for females	49 ± 9.54	
Mean ± SD for males	41 ± 9.54	
Clinical presentation		
Hematemesis and or melena	78	65
U.S evidence of Portal hypertension	15	12.5
Chronic epigastric pain	27	22.5
Endoscopic findings		
Oesophageal varices	60	50
Gastric fundal varices	21	17.5
Peptic ulcer and others	39	32.5
Maneuvers		
Sclerotherapy of OV	20	16.6
Band ligation of OV	40	33.3
Cyanoacrylate glue injection of G.V	21	17.5
Diagnosis of peptic ulcer or others	39	32.5

Gastric Varices (GV), Oesophageal Varices (OV), Oesophageal Varices Sclerotherapy (OVS), US ultrasonography. S, significant, N.S, non significant.

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