

## Role of Endoscopy in Diagnosis of Adult Patients with Dysphagia

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### ABSTRACT

**Background:** Dysphagia is an alarm gastrointestinal symptom that may be a manifestation of serious underlying condition, which necessitate proper and timely medical intervention.

**Objectives:** To disclose the underlying conditions in patients presenting with dysphagia through endoscopic examination and assess associated alarm features.

**Patients and Methods:** This is a retrospective cross sectional study that was carried out in Al-Salam General Teaching Hospital in Mosul (Iraq) from January 2018 to January 2020. A total of 145 patients (females 85, males 60) presenting with dysphagia were subjected to upper gastrointestinal endoscopic examination. Demographic characteristics, clinical features and detailed endoscopic findings were collected and analyzed.

**Results:** Mean age of patients was 48.4 (SD  $\pm$  17.5) years, age range 18-89 years, females constituted (85/145, 58.6%) and males (60/145, 41.4%). Endoscopic findings were esophagitis/ulcer associated with gastroesophageal reflux disease (GERD) (24.1%), neoplasms (15.2%), achalasia (6.9%), candida esophagitis (3.4%), drug-induced esophageal lesions (3.4%), hiatus hernia (2.8%), esophageal strictures (2.1%), and Schatzki ring (1.4%). Normal endoscopic findings were detected in 40.7% of patients. Main symptoms associated with dysphagia were chest pain and heartburn (20.7%). Age groups > 50 years were affected in 85% of patients having malignancy, while weight loss and anemia affected 80% and 40% of such patients respectively.

**Conclusion:** Endoscopy detected significant esophageal lesions in about two thirds of patients presenting with dysphagia. Age above 50 years, weight loss and anemia, are predictive of malignancy, and endoscopy has a diagnostic role in this setting.

**Keywords:** Cancer, Dysphagia, Endoscopy, Reflux esophagitis.

### دور التنظير في تشخيص عسر البلع عند البالغين

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#### الخلاصة

**خلفية البحث:** عسر البلع هو إنذار من أعراض الجهاز الهضمي الذي قد يعكس حالة كامنة خطيرة، والذي يتطلب التدخل الطبي الصحيح في الوقت المناسب.

**الأهداف:** الكشف عن الأسباب الكامنة في المرضى الذين يعانون من عسر البلع من خلال الفحص بالمنظار وتقييم ميزات الإنذار المصاحبة.

**المرضى والطرق:** هذه دراسة مقطعية بأثر رجعي تم إجراؤها في مستشفى السلام التعليمي العام في الموصل (العراق) من كانون الثاني ٢٠١٨ إلى كانون الثاني ٢٠٢٠. تعرض إجمالي ١٤٥ مريضاً (إناث ٨٥، ذكور ٦٠) يعانون من عسر البلع لفحص الجهاز الهضمي العلوي بالمنظار. تم جمع وتحليل الخصائص الديموغرافية والسريرية ونتائج التنظير الداخلي التفصيلية.

**النتائج:** كان متوسط عمر المرضى المشاركين ٤٨.٤ سنة. تراوحت الأعمار بين (١٨-٨٩) سنة. شكلت الإناث نسبة (٨٥/١٤٥، ٥٨.٦٪) بينما الذكور (٦٠/١٤٥، ٤١.٤٪). كانت النتائج بالمنظار هي التهاب وتقرح المريء المرتبطة بمرض التهاب المريء الارتجاجي (٢٤.١٪)، الأورام (١٥.٢٪)، تعذر ارتخاء أسفل المريء (٦.٩٪)، التهاب المريء بالمبيضات (٣.٤٪)، آفات المريء الناتجة عن الأدوية (٣.٤٪)، الفقق الفرجاوي (٢.٨٪)، تضيق المريء (٢.١٪)، حلقة شاتزكي (١.٤٪). تم الكشف عن

نتائج التنظير الداخلي الطبيعية في ٤٠.٧٪ من المرضى. كانت الأعراض الرئيسية المصاحبة لعسر البلع هي ألم الصدر وحرقة المعدة (٢٠.٧٪). تأثرت الفئات العمرية < ٥٠ سنة في ٨٥٪ من المرضى المصابين بالأورام الخبيثة، بينما أثر فقدان الوزن وفقر الدم على ٨٠٪ و ٤٠٪ من هؤلاء المرضى على التوالي.

**الاستنتاج:** كشف التنظير الداخلي عن آفات مريئية كبيرة في حوالي ثلثي المرضى الذين يعانون من عسر البلع. العمر فوق ٥٠ سنة، فقدان الوزن وفقر الدم، تنبؤ بالأورام الخبيثة، والتنظير له دور تشخيصي في هذه الحالة.

**الكلمات المفتاحية:** عسر البلع، التنظير، التهاب المريء الارتجاعي، السرطان.

## INTRODUCTION

Dysphagia implies impairment of swallowing mechanisms involving the upper gastrointestinal tract structures from the lips to the lower esophageal sphincter<sup>1</sup>. It is regarded as an alarm feature with underlying serious morbid conditions but frequently findings are benign and even functional in origin<sup>2</sup>. Globally, population-based studies revealed a prevalence range of dysphagia between 2% and 20%<sup>3</sup>. Duration of dysphagia ranges from short (days, weeks) to long over years. Causes of dysphagia can be categorized into oropharyngeal or esophageal. Oropharyngeal causes include neurological disorders (e.g., stroke, Parkinson's disease, motor neuron disease) or Zenker's diverticula<sup>4</sup>. Esophageal disorders include esophagitis (e.g., reflux esophagitis, eosinophilic esophagitis (EOE), and drug-induced), strictures, webs, rings, neoplasms, or motility disorders (e.g., achalasia, ineffective esophageal motility, esophageal spasm, and esophagogastric junction outflow obstruction)<sup>4</sup>. Proper clinical history and physical examination are mandatory to help assess seriousness of dysphagia and differentiate its types. Important information includes duration of dysphagia, consistency of food that poses difficulty in swallowing (solid, liquid or both), aspiration, course whether progressive or intermittent, and associated alarm features (age > 50 years, bleeding, anemia, vomiting, weight loss, and abdominal mass)<sup>5</sup>. Symptoms that may accompany dysphagia include chest pain, heartburn, regurgitation, aspiration, cough, and dyspepsia. Endoscopy remains one of the best initial investigations of assessing dysphagia and establishing the diagnosis of premalignant and malignant conditions<sup>6</sup>. In addition, endoscopy is an effective tool for management of varied disorders of the esophagus. Other methods of investigation of dysphagia are required in certain conditions like imaging studies (barium swallow, videofluoroscopy, computed tomography), esophageal motility studies and pH recording. The purpose of the current study is to elucidate the value of endoscopy in diagnosis of underlying causes of dysphagia and to evaluate

worrisome features that might accompany dysphagia.

## PATIENTS AND METHODS

This retrospective, cross-sectional study of 145 patients (females 85, males 60) presenting with dysphagia was conducted from January 2018 to January 2020 at the endoscopy unit of Al-Salam General Hospital (Mosul, north of Iraq).

Adult patients aged above 18 years were included in this study. All the patients were evaluated through history and physical examination, and were subjected to upper gastrointestinal endoscopic examination performed by the author of this study after taking patients consent. Demographic data, clinical findings, and detailed endoscopic examinations were documented in a designed form. Biopsies were done for lesions when necessary and send for histopathological examination. Appropriate blood tests were performed for all patients, and imaging studies were requested for selected patients.

Statistical package for social sciences (SPSS, Version 27.0. Armonk, NY: IBM Corp.) was used to perform basic statistics of this study. Descriptive data of the mean, median, range, percentage, standard deviation (SD), tables and P-value were applied for calculation. The level of significance for P-value was set at 0.05.

This study was approved by the Medical Ethical Committee of Ninevah University (license number 104, on 17 Jan 2018).

## RESULTS

The current study included 145 patients. Demographic features regarding age and gender are shown in (Table 1). The mean age of examined patients was 48.4 years. Females outnumbered males with significant difference ( $p < 0.001$ ). There was no significant difference between age groups affected above and below 50 years ( $P = 0.62$ ).

Table 1. Patients demography

Variables	Number 145	%	P value
Mean age	48.4± 17.5 years		
Age range	18-89 years		
Gender			
Female	85	58.6	<0.001
Male	60	41.4	
Age groups (years)			
18-49	71	49	0.62
50-89	74	51	
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50-59	31	21.4	
60-69	16	11	
70-79	22	15.2	
80-89	5	3.4	

Endoscopic findings are displayed in (Table 2). Abnormal findings were detected in (86/145, 59.3%) of total patients. Esophagitis/ulcer associated with GERD was the main esophageal lesion detected (35/145, 24.1%, P<0.001). Next in frequency was neoplasms forming (22/145, 15.2%). Among 22 patients with neoplastic growth 20 displayed malignancy. Patients with malignancy who exceeded 50 years age formed (17/20, 85%, P <0.001). Five patients manifested candida esophagitis (one diabetic patient, one female patient with breast cancer, and three patients used antibiotics for long duration).

Two patients with goiter presented with dysphagia, showed normal endoscopy.

Table 2. Endoscopic findings in patients presenting with dysphagia

Endoscopic findings	Number 145	Frequency %
Reflux esophagitis/ulcer	35	24.1
Neoplasms	N	
Esophageal squamous cell cancer	16	
Cardioesophageal adenocarcinoma	2	
Hyperplastic polyp	1	15.2
Inflammatory granuloma	1	
Pharyngeal tumor (malignant)	1	
Laryngeal tumor (malignant)	1	
Achalasia	10	
Candida esophagitis	5	3.4
Drug induced esophagitis/ulcer	5	3.4
Hiatus hernia	4	2.8
Esophageal strictures	3	2.1
Schatzki rings	2	1.4
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Total abnormal findings	86	59.3
Normal findings	59	40.7

Dysphagia as a sole symptom or associated with one or more of the other symptoms are shown in (Table 3). Chest pain and heartburn were the main symptoms associated with dysphagia comprising (30/145, 20.7%, P<0.001).

Table 3. Frequency of dysphagia alone or associated with other features

Clinical features	Number of patients	Frequency % out of total 145
Dysphagia alone	42	29
Chest pain and heartburn	30	20.7
Regurgitation	22	15.2
Odynophagia	19	13.1
Dyspepsia	15	10.3
Vomiting	5	3.4
Cough	5	3.4
Weight loss	27	18.6
Anemia	16	11

Weight loss and anemia are associated with the whole range of endoscopic findings but with varied frequency as shown in (Table 4). Dysphagia due to malignancy was associated with weight loss and anemia in (16/20, 80%, P<0.001) and (8/20, 40%, P<0.001) of patients respectively.

Table 4. Distribution of weight loss and anemia among patients with dysphagia

Endoscopic findings N=145	Total	Weight loss		Anemia	
		N	%	N	%
Reflux esophagitis	35	3	8.6	4	11.4
Malignant tumors	20	16	80	8	40
Benign tumors	2	--	--	--	--
Achalasia	10	3	30	--	--
Candida esophagitis	5	1	20	1	20
Drug/ esophagitis	5	--	--	1	20
Hiatus hernia	4	--	--	--	--
Stricture	3	1	33.3	--	--
Schatzki ring	2	--	--	--	--
Normal	59	3	5.1	2	3.4

## DISCUSSION

Clinical history and physical examination are prerequisite in the initial evaluation of dysphagia. Investigations like barium esophagogram, pH impedance study, motility studies, and endoscopy are necessary to elucidate varied underlying causes of such alarm feature <sup>7</sup>. Endoscopy, compared to other modalities of investigations, can diagnose wider range of conditions associated with dysphagia and it is the best modality for diagnosing malignancy <sup>5</sup>. A study by Varadarajulu et al, involving 1649 adult patients with dysphagia found that endoscopy detected abnormal findings in 70% <sup>8</sup>. Significant proportion of patients with dysphagia have not discussed their problem with a clinician and even use of endoscopy for diagnostic purposes is suboptimal <sup>3</sup>. In the present study mean age of the patients was younger compared to western reports. This is likely due to higher proportions of elderly populations in the developed nations with higher prevalence of dysphagia in such group <sup>9</sup>. Dysphagia is more prevalent in female gender in different age groups <sup>3, 10</sup>. The relative frequency of the common endoscopic findings in dysphagia is variable across different

studies, which might be ascribed to demographic and regional variations, or difference in study design. Dysphagia is a common symptom in patients with GERD and may be manifested in about 50% of patients even in the absence of fibrotic strictures that may complicate longstanding reflux esophagitis <sup>11</sup>. Frequency of reflux esophagitis is variable among different studies. A large USA study by Krishnamurthy et al, involving 30,377 patients reported a rate of 22.1% of reflux esophagitis <sup>12</sup>. While, another study of 232 patients from Pakistan by Yahya et al, documented a rate of 12.9% <sup>13</sup>. It has been observed that the prevalence of malignancy of the esophagus exhibits regional variations. In Asia, the prevalence of squamous cell cancer of the esophagus is much higher than USA and other western countries; the reverse is true for esophageal adenocarcinoma, which is associated with risk factors of obesity, GERD, and Barrett's esophagus <sup>14</sup>. In this series malignancy was mainly due to esophageal squamous cell cancer forming (16/18, 88.9%, P<0.001). Two patients (2/18, 11.1%) displayed adenocarcinoma involving the cardia of the stomach and the most lower part of the esophagus. Cardiac cancer of the stomach, mostly

adenocarcinoma, might extend into the lower part of the esophagus and is staged as gastric cancer<sup>15</sup>. Patients with goiter may present with dysphagia that is ascribed to compression and narrowing of the esophageal lumen<sup>16</sup>. Ten patients with advanced achalasia (10/145, 6.9%) suffering for years from dysphagia for both liquids and solids, barium esophagogram and endoscopy showed prominent dilation of the esophagus, food retention, and tight lower esophageal sphincter. Diagnosis of achalasia is best established by high resolution manometry, and endoscopy is a necessary investigation to rule out pseudoachalasia due to malignancy<sup>17</sup>. Immunocompromised patients, diabetes mellitus, use of steroids and antibiotics are well known risk factors for development of candida esophagitis<sup>18</sup>. In this study five patients developed dysphagia and odynophagia due to the use of aspirin, non-steroidal anti-inflammatory drugs and bisphosphonate. Dysphagia caused by drugs is due to several mechanisms including dry mouth, effect on esophageal peristalsis, inflammation and mucosal ulcerations, induction of GERD, and infection due to immunocompromisation<sup>4</sup>. Hiatus hernia is usually associated with GERD, manifested mostly as regurgitation and heartburn, and less commonly, dysphagia<sup>19</sup>. Esophageal luminal narrowing is an important cause of dysphagia. It might be due to tumors, recurrent esophageal mucosal inflammation and ulceration associated with GERD, and fibrotic strictures due caustic substances injury<sup>4</sup>. EoE is increasingly diagnosed as cause of dysphagia in the western Caucasians through production of fibrous strictures and webs<sup>20</sup>. This entity is not well recognized in Iraq. Schatzki ring is a congenital mucosal ring of the distal esophagus, it might be symptomless or presents with longstanding dysphagia and food bolus obstruction<sup>21</sup>. In the aforementioned study by Krishnamurthy concluded that 32.1% of the patients had normal endoscopy<sup>12</sup>. In the current study (59/145, 40.7%) of patients displayed normal endoscopic findings. Normal endoscopic findings in dysphagia might be encountered in GERD, esophageal motility disorders, and functional dysphagia<sup>22</sup>. Patients in this series, mostly females, in whom endoscopy showed normal findings, frequently reported psychological stresses during interrogation. It has been reported that depression, anxiety, and neurosis are psychological risk factors for dysphagia<sup>23</sup>. In the present study chest pain and heartburn are the main symptoms associated with dysphagia (30/145, 20.7%), which is a reflection of the high frequency of reflux esophagitis (35/145, 24.1%). Two alarm features, namely weight loss and anemia, are mainly associated with malignancy at

a rate of 80% and 40% respectively. The high rate of these two alarm features can be explained based on late presentation of patients having underlying malignancy. In GERD, weight loss is mainly due to avoidance of meals, fibrotic stricture, or development of adenocarcinoma, while anemia is mainly due to ulcerative esophagitis with chronic blood loss<sup>24</sup>. Varying degrees of weight loss is a prominent feature of achalasia which was manifested in (3/10, 30%) of patients with achalasia<sup>17</sup>. Even in the setting of oropharyngeal dysphagia due to stroke, we encountered patients with normal endoscopy and weight loss, which is partly due to poor nutrition. Elderly suffer higher frequency of dysphagia. A study by Barczy from USA reported a rate of 10-30% of patients elder than 65 years having dysphagia<sup>25</sup>. In the present study 43 patients (43/145, 29.7%) aged 60-89 years suffered from dysphagia due to GERD, malignancy, stroke and possibly presbyphagia. Presbyphagia is an age related oropharyngeal muscle weakness and sensory dysfunction, which impair normal swallowing mechanism and taste function<sup>26</sup>.

The present study is limited by being a single hospital-based study with relatively small number of patients. Patients with normal endoscopy were not subjected to esophageal manometry or esophageal biopsy, which widen the scope of diagnosis in patients with dysphagia exhibiting normal endoscopy.

## CONCLUSION

Endoscopy plays a major role in detection of different causes of dysphagia. Around two thirds of patients manifested defined endoscopic findings. Endoscopy is pivotal in establishing a diagnosis of malignancy. Dysphagia in patients above 50 years age, or associated with weight loss and anemia are alarm features of underlying malignancy.

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## Conflict of Interest

The author declares that there are no conflicts of interest regarding the publication of this manuscript.

## Highlights

1. Endoscopy plays a major role in evaluation of dysphagia.
2. Significant number of patients having dysphagia reveal normal endoscopic findings.
3. Age above 50 year, weight loss, and anemia are predictive of esophageal malignancy.

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