

# Frequency of GERD with Risk Regurgitation & Aspiration during Anesthesia in Different Age & Weight Groups with Their Histological Findings on Biopsy

Frequency of GERD  
with Risk  
Regurgitation &  
Aspiration during  
Anesthesia

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## ABSTRACT

**Objective:** To determine the frequency of GERD with risk of regurgitation and aspiration during anesthesia in different age and weight groups with their histological findings on biopsy.

**Study Design:** Comparative / observational study

**Place and Duration of Study:** This study was conducted at the Department of Pathology, Civil Hospital, Khairpur Pakistan from 1<sup>st</sup> May 2021 to 30<sup>th</sup> November 2021.

**Materials and Methods:** One hundred and sixty patients of both genders were enrolled. Age of the patients was between 15-75 years. All the patients had gastro-esophageal reflux disease (GERD) were included. Patients were equally categorized into two groups. Group I had 80 patients with ages 15-40 years and above than 40 years of age were presented in group II. All the patients were underwent endoscopic biopsy under sedation/anesthesia. Findings among both groups were assessed in terms of risk of regurgitation and aspiration under anesthesia and histological findings were compared.

**Results:** The mean age in group I was 34.23±6.13 years and in group II mean age were 60.54±3.36 years. We found majority of the patients were males 55 (68.6%) and 51 (63.6%) among both groups. We found that severity of symptoms were higher in group I as compared to group II with p value <0.005. Esophagitis severity, barret esophagus and esophagus cancer were more prevalent in group II as per biopsy findings with p value <0.003. Frequency of hiatus hernia in group II was 32 (40%) higher as compared to group I 15 (18.6%) with p value < 0.004.

**Conclusion:** Rare and severity of symptoms were high in the group of patients presented with young age had GERD as compared to elder group but as per endoscopic biopsy under anesthesia findings severity of esophagitis, cancer, hiatus hernia, regurgitation and aspiration was more prevalent in the patients with ages >40 years had GERD as compared to young age patients with GERD.

**Key Words:** Gastro-esophageal reflux disease (GERD), Biopsy, Anesthesia, Clinical outcome, Symptoms

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## INTRODUCTION

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Since Barrett oesophagus (BE) is the known precursor lesion to esophageal adenocarcinoma in white males over the age of 50 with long-term and severe symptoms of gastro-esophageal reflux disease (GERD), many epidemiologic studies in the late 1990s recommended screening for BE among these men.<sup>1-5</sup> In spite of the fact that 95 percent of esophageal cancer patients do not have endoscopic screening or are not diagnosed with BE, most present with advanced illness and little hope of recovery.<sup>6</sup> Despite these suggestions, though.<sup>7</sup> Even yet, doctors have been unable to identify persons at risk of developing GERD and stratify them for early detection or prevention because of the screening criteria.<sup>8-10</sup>

Recent studies show that screening is no longer beneficial, even for the most at-risk individuals, and that it should instead be "individualised to the patient." Due to the lack of a link between the intensity of GERD symptoms and the likelihood of developing cancer,

patients who don't show any symptoms or show symptoms that are trivial or unusual are often overlooked for endoscopic screening, resulting in a silent disease progression. If symptoms are reduced or eliminated, patients may be overlooked for screening because they believe their disease has been well treated by PPIs. Drugs that block the proton pump.<sup>8-10</sup>

Gastro-esophageal reflux disease symptoms are more common in those over the age of 65 than in anyone else. Barrett's esophagus, cancer of the oesophagus, and recurrent aspiration pneumonias can all be diagnosed with a thorough examination of the oesophagus.<sup>11</sup> Endoscopic or histological damage to the oesophagus causes reflux esophagitis. Esophagitis is a complicated condition caused by an imbalance between the systems that defend against reflux and those that promote it. It is crucial that the esophageal mucosa's heightened acid sensitivity and the LES pressure diminish. Back pain, burning or discomfort in the epigastrium that spreads into the oesophagus are the most common symptoms of reflux disease. After a meal, relaxing or slouching forward might increase heartburn. GERD can also cause symptoms such as difficulty swallowing, chest pain, a globus sensation, belching, and coughing. Angina pectoris is frequently accompanied by chest pain that spreads to the left arm, chin, or neck.

Alternately, Barrett's esophagus is a stage of stomach cancer in which aberrant cells proliferate in the metaplastic columnar epithelium.<sup>12</sup> Barrett's oesophagus can only be diagnosed with an endoscopy and a tissue sample. intestinal metaplasia can be diagnosed by analysing biopsy samples collected from the distal esophageal mucosa, which has an aberrant appearance. Barrett's oesophagus is found in 10–15% of patients who undergo endoscopy. It's important to the progression of adenocarcinoma. Annual adenocarcinoma incidence in patients with BE was around 1 percent. Dysphagia and weight loss are typical in patients in their seventh or eighth decade.<sup>13</sup>

Due to the extraesophageal implications of GERD in the elderly, gingivitis, sinusitis, otitis media, tooth erosions, and respiratory disorders such aspiration pneumonia and chronic cough are common. Modern GERD diagnostic testing is utilized on those who are younger and exhibit symptoms of the condition. BE and esophageal cancer are more likely to occur in patients over the age of 50, hence an aggressive treatment plan is recommended rather than a conservative one.<sup>14,15</sup> An endoscopy should be conducted in order to get a diagnosis.

There is still a danger of stomach regurgitation and aspiration under general anaesthesia. On a postal survey of New Zealand anaesthetists, it was found that 71% of respondents had at least one career objective, with some saying they had up to ten.<sup>16</sup> Reduced incidence of this consequence has been made possible by recent advances in our knowledge of stomach motility

pathophysiology and variables that regulate normal function. The fasting requirements are also being adjusted so that patients can get fluids closer to the time when anaesthesia is being administered without restriction.<sup>17</sup>

## MATERIALS AND METHODS

This comparative/observational study was conducted at the Department of Pathology, Civil Hospital, Khairpur for the duration of six months from May 2021 to November 2021 and 160 patients were enrolled. Patients were included after taking informed written consent for detailed demographics such as age, gender, BMI and cause of GERD. Pregnant patients, history of esophagus surgery and those patients did not provide any written consent were excluded. Age of the patients was between 15-75 years. Every single one of the patients was diagnosed with GERD. In equal numbers, the patients were divided into two distinct groups. The 80 patients in groups I and II, ranging in age from 15 to 40, were compared to the 40 patients in groups II. It was thought that symptoms such as dysphagia, odynophagia, and burping were not typical of acid reflux. All patients had been receiving proton pump inhibitors for at least a month (PPIs). However, none of them had progressed. Upper endoscopy was performed on these individuals under sedation and anesthesia because of persistent symptoms despite PPI medication, the need to identify the underlying cause of their GERD, and their advanced age. Equipment from Fujinon was used for endoscopic operations. The current endoscopic staging for esophagitis is based on the Los Angeles system. It is characterised by the replacement of the stratified squamous epithelium that normally lines the distal oesophagus with metaplastic columnar epithelium. Biopsy samples of the salmon-colored mucosa are used to make a BE diagnosis when gastric and intestinal metaplasia are found there. It was decided to compare the groups based on their demographics and clinical information.

The data was entered and analyzed through SPSS-25. Statistical significance was defined as a p-value of 0.05 or less. Pearson's Chi-square test and Fisher's exact test were used to assess the effects of sex and endoscopic or clinical reflux esophagitis severity on statistical comparisons.

## RESULTS

The mean age in group I was 34.23±6.13 years and in group II mean age were 60.54±3.36 years. Mean BMI in group I was 24.12±3.32 kg/m<sup>2</sup> and in group II mean BMI was 32.01±3.14 kg/m<sup>2</sup>. We found majority of the patients were males 55 (68.6%) and 51 (63.6%) among both groups. Fried food, fast food, fatty meats and poor sleep were the main causes of GERD among both groups (Table 1).

We found that severity of symptoms burning, regurgitation, dysphagia/odynophagia, dry cough and burping were higher in group I as compared to group II with p value <0.005 (Table 2). Esophagitis severity, barret esophagus and esophagus cancer were more prevalent in group II as per biopsy findings with p value <0.003 (Table 3). Frequency of hiatus hernia in group II was 32 (40%) higher as compared to group I 15 (18.6%) with p value <0.004 (Table 4)

**Table 1: Characteristics details of enrolled causes**

Variables	Group I	Group II
Mean age (years)	34.23±6.13	60.54±3.36
Mean BMI (kg/m <sup>2</sup> )	24.12±3.32	32.01±3.14
<b>Gender</b>		
Male	55 (68.6%)	51 (63.6%)
Female	25 (31.4%)	29 (36.4%)
<b>Cause of GERD</b>		
Fried food	30 (37.5%)	31 (38.6%)
Fast Food	28 (35%)	22 (27.5%)
Fatty meats	17 (21.3%)	25 (31.3%)
Poor Sleep	15 (18.8%)	2 (2.5%)

**Table 2: Comparison of severity symptoms of symptoms burning, regurgitation, dysphagia/odynophagia, dry cough and burping**

Symptoms	Group I	Group II
<b>Burning</b>		
Yes	42 (52.5%)	20 (25%)
No	38 (47.5%)	60 (75%)
<b>Regurgitation/Aspiration</b>		
Yes	35 (43.8%)	31 (38.8%)
No	45 (56.2%)	49 (61.2%)
<b>Dysphagia/Odynophagia</b>		
Yes	38 (47.5%)	19 (23.8%)
No	42 (52.5%)	61 (76.2%)
<b>Dry cough</b>		
Yes	28 (35%)	17 (21.3%)
No	52 (65%)	63 (78.7%)
<b>Burping</b>		
Yes	48 (60%)	24 (30%)
No	32 (40%)	56 (70%)

**Table No.3: Association of diseases among endoscopic biopsies**

Diseases	Group I	Group II
<b>Esophagitis severity</b>		
Yes	24 (30%)	55 (68.8%)
No	56 (70%)	25 (31.2%)
<b>Barret esophagus</b>		
Yes	7 (8.8%)	11(13.8%)
No	73(91.2%)	69 (86.2%)
<b>Esophagus cancer</b>		
Yes	1 (1.3%)	4 (5%)
No	79 (98.7%)	76 (95%)

**Table No.4: Comparison of HH among both groups**

Hiatus Hernia	Group I	Group II
Yes	15 (18.6%)	32 (40%)
No	65 (81.4%)	48 (60%)

## DISCUSSION

When GERD affects the elderly, it may lead to more life-threatening problems. Older people are also less likely to have symptoms of GERD, such as heartburn, regurgitation, and other clinical characteristics.<sup>17</sup> While retrosternal burning is more common in older individuals, dysphagia and excessive food regurgitation are more common in younger people. Even in stage C–D esophagitis, retrosternal discomfort and burning may not be noticed owing to alterations in the patient's perceptual threshold. This may be the most prevalent benign cause of swallowing difficulties in older people. Patients over the age of 60 should also be evaluated for the presence of comorbid disorders, such as neurological diseases (such as Parkinson's disease) or drug side effects (such as calcium antagonist usage). Reflux is a frequent medical condition. While community reflux prevalence ranges from 1% to 25%, it has been found that among men and women over the age of 65, reflux affects 10.9% and 5.3% of the population, respectively.<sup>18</sup> Degenerative alterations in smooth muscles, decreased pressure in the esophageal-sphincter, and reduced peristalsis are all signs of ageing. This leads to an increase in the esophageal reflux of stomach contents. An esophageal mucosal injury and symptoms might vary widely in this illness. When it comes to gastroesophageal reflux disease (GERD), heartburn and acid regurgitation are the most prevalent symptoms, and antacid medication is generally enough to alleviate them. Although heartburn is more common in older people, the incidence of severe heartburn declines, presumably owing to decreased pain sensitivity and atrophic gastritis.

Only one in 350 000 people in NAP4 died from aspiration-related anaesthetic complications, which is lower than the prior estimates of between one in 50,000 and 200,000 people. Airway-related deaths are most frequently caused by aspiration.<sup>19</sup>

In the present study, the mean age in group I was 34.23±6.13 years and in group II mean age were 60.54±3.36 years. Mean BMI in group I was 24.12±3.32 kg/m<sup>2</sup> and in group II mean BMI was 32.01±3.14 kg/m<sup>2</sup>. Above mentioned findings of our study was comparable to the studies conducted in past.<sup>20,21</sup> We found that severity of symptoms burning, regurgitation, dysphagia/odynophagia, dry cough and burping were higher in group I as compared to group II with p value <0.005. Esophageal and extraesophageal symptoms were greater in young patients in a research by Sidhwa et al<sup>22</sup> which is comparable to our investigation. The LES tonus may be damaged in elderly people with GERD who also have a

concomitant illness. Anxiety medicine, antidepressants, and anticholinergics may potentially cause reflux in patients with concomitant conditions, such as nitrates.<sup>23</sup> Comorbid illnesses were shown to be more prevalent among the elderly. However, esophagitis is more common in elderly people, and this may be due to this disorder. Our theory is supported by research indicating that lung and heart problems and the medications used to treat these conditions may cause gastroesophageal reflux disease.<sup>21</sup> Despite the fact that polypharmacy, a typical practise among the elderly, has been linked to GERD, the study's retrospective design prevented researchers from getting access to the drugs used by study participants.

We found that dysphagia and/or odynophagia were more prevalent in the younger group than in the elderly in our research. Smoking and drinking, fast food diets, and irregular lifestyles (eating late, going to bed soon after supper) among the young patient population may be to blame for this problem.<sup>24</sup> Esophagitis severity, barret esophagus and esophagus cancer were more prevalent in group II as per biopsy findings with p value <0.003.<sup>25,26</sup> Frequency of hiatus hernia in group II was 32 (40%) higher as compared to group I 15 (18.6%) with p value <0.004. Although the frequency of hiatus hernias has been shown to increase with age, no sex effect has been established; different studies show male predominance, female preference, or no difference.<sup>20</sup> During our research, we found that hernia and sex were not statistically different (p = 0.50). One important distinction could be found between the young and the elderly. Only 5% of young patients and 13.8 percent of elderly patients (p = 0.002) had hiatus hernias larger than 2 centimetres in size. As a result of our research, we found that older and younger patients with GERD had distinct differences. While their symptoms may be less severe than those of younger people, the endoscopic results are more worrisome in older patients with GERD.

## CONCLUSION

Rare and severity of symptoms were high in the group of patients presented with young age had GERD as compared to elder group but as per endoscopic biopsy under anesthesia findings severity of esophagitis, cancer and hiatus hernia was more prevalent in the patients with ages > 40 years had GERD as compared to young age patients with GERD.

### Author's Contribution:

Concept & Design of Study: Syed Sohail Abbas Naqvi  
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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