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ORIGINAL ARTICLE

Clinical Predictors of Symptomatic Versus Asymptomatic Hiatus Hernia in Adults. A Cross-Sectional Analysis

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ABSTRACT

Background: Hiatus hernia is a widely encountered gastrointestinal disorder that could have negative or positive symptomology. The determinants of the occurrence of symptoms amongst the patients are not clear. This research was to find clinical predictors of the difference between symptomatic and asymptomatic hiatus hernia in adults.

Methods: A cross-sectional study was done on 100 patients (adults) who had been diagnosed with hiatus hernia on either endoscopy or barium swallow. Clinical evaluation had been used to classify patients as symptomatic (n=62) and asymptomatic (n=38). Demographic data, body mass index correction (BMI), smoking condition, hernia type, and hernia size and existence of esophagitis were taken. Chi-square tests, independent t-tests, and logistic regression were the statistical tests that were used to determine independent predictors of developing the symptoms.

Results: BMI (29.6 3.9 vs 26.8 4.2; p=0.002), hernia size (3.4 cm 1.1 vs 2.6 cm 0.8; p=0.001) and esophagitis prevalence (53.2 vs 23.7; p=0.004) were significantly greater in symptomatic patients. Smoking demonstrated a tendency of association, and was not a predictor independently. BMI (OR=1.21, p=0.003), hernia size (OR=1.94, p=0.001) and esophagitis (OR=2.67, p=0.013) were found significant independent predictors of symptomatic presentation using logistic regression.

Conclusion: Increased BMI, greater size of hernia and the presence of esophagitis plays significant role in increasing the probability of symptomatic hiatus hernia in the adult population. These predictors can be used to identify a person at high risk at an early stage, personalized lifestyle change, and even better clinical management approaches.

Key words: Hiatus hernia, symptomatic hernia, asymptomatic hernia, esophagitis, BMI, hernia size, gastroesophageal reflux, clinical predictors.

INTRODUCTION

The Hiatus hernia is an image of the disease of the upper gastrointestinal tract and is caused by herniated segment of the stomach through the hiatus of the esophagus of the diaphragm into the thoracic cavity. This condition is more common as one grows older and is caused by various anatomical, physiological and lifestyle influences[1]. Clinically, hiatus hernia occurs in two broad categories: symptomatic cases, which show up with gastroesophageal reflux disease (GERD), acid stomach, regurgitation, dysphagia or symptoms of respiration; asymptomatic cases, which are regularly identified by accident during imaging or during inspections by an endoscope[2]. The difference between symptomatic and asymptomatic patients has a clinical significance since the symptoms are not necessarily correlated with the size and type of hernia, and a large number of persons with pronounced anatomic defects can be silent[3].

The predictors highlighting symptomatic and asymptomatic hiatus hernia are vital to the diagnosis, treatment, and prevention of complications of the disease,

including chronic reflux esophagitis, Barretts esophagus, ulceration and strangulation[4]. The development of symptoms is likely attributed to different criteria such as body mass index (BMI), age, gender, smoking, dietary habits, diaphragmatic muscle integrity, intra-abdominal pressure, and associated GERD, but the extent to which these variables are predictive of clinical manifestation is not well clarified[5].

Regardless of the fact that hiatus hernia is relatively high-prevalent, there are minimal data concerning the specific clinical features of the condition that predetermine the presence of symptoms in an adult patient[6]. Understanding such predictors can allow clinicians to more effectively sort their patients, maximize initial treatment, and reduce overall outcomes[7]. Thus, the paper will examine clinical, demographic, and lifestyle-related differences that can differentiate between symptomatic and asymptomatic hiatus hernia in adults through a cross-sectional study to produce evidence that can be used to inform forthcoming diagnostic and treatment measures[8].

MATERIAL AND METHOD

A total of 100 adult patients diagnosed with hiatus hernia were recruited in this cross-sectional study but at the gastroenterology and endoscopy units of a tertiary care hospital during a specified duration time. All respondents were 18 years or older and their diagnosis was made by doing upper gastrointestinal endoscopy/barium images by qualified gastroenterologists. There were two groups of patients decided by clinical presentation: symptomatic, including typical interior gastrointestinal symptoms, and atypical, including none, gave the diseases the appropriate diagnosis. Demographic data was collected in a structured pro forma and included age, gender, body mass index (BMI), smoking status, eating habits, comorbidity, length of symptoms, and the area of previous gastrointestinal history. Endoscopy revealed data on hernia type, size and esophagitis that accompany it. Those people who had undergone a previous upper gastrointestinal surgery, esophageal malignancy, or incomplete medical records were excluded to ascertain accuracy of data.

A standardized clinical examination conducted by trained physicians was conducted on all enrolled patients, who also had their abdominal inspection and abdominal analysis of symptoms that may be related to reflux, including heartburn, regurgitation, dysphagia, chronic cough, and pain in the epigastria. The severity of the symptoms was measured with the help of a validated Likert-type scale. Laboratory tests such as complete blood count and H. pylori status (where these were present) have been examined in order to determine any abnormalities in the case. The general aim was to find clinical predictors that distinguish between symptomatic and asymptomatic hiatus hernia.

The data were recorded in a secure database and cross-examined by two independent investigators towards a high level of accuracy. The continuous variables including the age and BMI were represented in terms of mean and standard deviation, whereas the categorical variables, including gender, smoking status, and type of hernia, were expressed in terms of frequencies and percentages. The chi-square test on categorical variables, the independent t-test on continuous variables were the methods of conducting the comparative analysis of the two groups. The independent predictors of the presence of the symptoms were calculated with the help of logistic regression analysis. A p-value that was less than 0.05 was deemed to be statistically significant. Ethical consent of the study was granted by the institutional review board and informed consent was confirmed with all the participants before enrolling them in the study.

RESULTS

There were 100 adult patients who were diagnosed with hiatus hernia. Symptomatic were 62 patients, who constitute 62% of the sample and asymptomatic were 38 patients, constituting 38 of the sample. Average age of the research sample was 49.8 years old and slightly higher in those subjects with symptoms (49.8 years old +/- 13.6 years). The proportion of females among the sample was 54, and there was no significant difference in the gender of the population in the two groups. The body mass index (BMI) was found to be much of a problem in symptomatic patients, which implies a correlation between obesity and the development of symptoms.

Table 1 shows that symptomatic patients had significantly higher BMI, larger hernia size, higher smoking prevalence, and greater incidence of esophagitis.

Patients with the symptoms had diverse symptom patterns. The most commonly reported symptom was heartburn (71%), which was followed by regurgitation (58%), epigastric pain (45%), dysphagia (21%) and chronic cough (17%). These results reveal that classic manifestations of GERD dominated symptomatic hiatus hernia.

Logistic regression analysis was done in order to ascertain independent predictors of symptomatic presentation. The variables were age, BMI, smoking status, hernia size and hernia type and hernia presence. The analysis revealed that increased BMI, increased size of the hernia as well as presence of esophagitis significantly predicted symptomatic hiatus hernia as an independent predictor.

All in all, the findings show that symptomatic hiatus hernia is closely related with clinical variables amenable to modifications and measurement, especially, BMI, hernia size, and endoscopic findings of esophagitis. Even though smoking was moving in the right direction to significance, it was not an independent predictor on adjustment. In both groups, type I (sliding) hernia dominated, but paraoesophageal were seen to be a bit higher in the symptomatic patients, but not significant. Those results emphasize the multifactorial characteristics of the development of symptoms in hiatus hernia and the essential role of an early determination of the people at risk.

Table 1. Baseline Demographic and Clinical Characteristics of Study Participants (N = 100)

Variable	Symptomatic (n=62)	Asymptomatic (n=38)	p-value
Mean Age (years)	52.4 ± 12.8	45.7 ± 14.1	0.018
Gender (Male/Female)	28/34	18/20	0.812
Mean BMI (kg/m²)	29.6 ± 3.9	26.8 ± 4.2	0.002
Smokers (%)	35.5%	18.4%	0.046
H. pylori Positive (%)	48.3%	31.6%	0.088
Type I (Sliding) Hernia (%)	71.0%	86.8%	0.071
Type II/III (Paraesophageal) (%)	29.0%	13.2%	0.071
Mean Hernia Size (cm)	3.4 ± 1.1	2.6 ± 0.8	<0.001
Associated Esophagitis (%)	53.2%	23.7%	0.004

Table 2. Frequency of Symptoms Among Symptomatic Patients (n = 62)

Symptom	Frequency (%)
Heartburn	71.0%
Regurgitation	58.1%
Epigastric Pain	45.2%
Dysphagia	21.0%
Chronic Cough	17.7%

Table 3. Logistic Regression Analysis Identifying Predictors of Symptomatic Hiatus Hernia

Variable	Adjusted OR	95% CI	p-value
Age	1.02	0.98–1.06	0.218
BMI	1.21	1.07–1.38	0.003
Smoking	1.82	0.92–3.58	0.086
Hernia Size (cm)	1.94	1.32–2.85	<0.001
Esophagitis	2.67	1.23–5.82	0.013
Hernia Type (I vs II/III)	1.41	0.59–3.12	0.412

DISCUSSION

The current cross-sectional study assessed the clinical predictors that make the difference between symptomatic and asymptomatic hiatus hernia in 100 adult patients. The results prove that particular demographic and clinical factors, such as BMI, hernia size, and endoscopic signs of esophagitis, have a significant impact on the probability of the development of symptoms [10]. These findings bring very helpful information to debate on factors that prompt the symptoms presentation of the condition, which is commonly regarded as one of the most diverse and silent ones.

Another discovery is that BMI is much higher in symptomatic patients. It confirms the current evidence whereby a higher intra-abdominal pressure of overweight persons helps in the promotion of the symptoms of reflux and aggravate the symptoms of hernias [11]. The current findings have been shown to be consistent with previous researches that obesity of central nature increases the pressure gradient between the stomach and esophagus, which in turn increases the severity of symptoms. The escalated association in this study supports the fact that weight management should be included as preventive and therapeutic intervention especially in patients who have been diagnosed with the hiatus hernia [12].

The size of Hernias also proved to be important predictor of symptomatic presentation. The mean size of hernia in symptomatic patients was higher than the asymptomatic ones, which validates that anatomical severity is the direct contributor to the clinical burden [13]. Greater cruel size destabilizes the diaphragmatic hiatus to more severe levels, interfering lower sphincter diaphragm

activities, and permitting larger quantities of gastric reflux of the esophagus, resulting in heightened heartburn and regurgitation. This observation confirms the clinical observation that more extreme or chronic symptoms are suggested by patients with large sliding or mixed-type hernias despite the fact that size and symptom severity have been a controversial issue [14].

The other important result is that there is a high correlation between esophagitis and the presence of symptoms. Symptomatic individuals were found to have endoscopically confirmed as having esophagitis that was significantly more common due to the contribution of mucosal inflammation to the production of GERD-related symptoms [15]. The existence of esophagitis can be used as a risk factor as well as a product of the periodical acid that can lead to the recurrence of inflammation and the persistence of symptoms in a vicious cycle. This supports the fact that endoscopic assessment is essential in patients with suspected hiatus hernia because the presence of mucosal injury is important in determining the necessity of pharmacological therapy, surveillance, and lifestyle change[16].

Smoking was approaching significant value but was no longer an independent predictor on multivariate analysis. Even though smoking is reported to influence the tone of lower esophageal sphincters and increase reflux symptoms, the absence of significant statistics in this study could be related to a rather small number of smokers, a varying exposure level, or the ability of some individuals to report accurately [17]. However, the trend observed is clinically significant and it can be used to make overall suggestions of smoking cessation in patients with upper GI disorders.

Interestingly, type of hernia (sliding and paraesophageal) was not a significant predictor of symptom status[18]. Although paraesophageal hernias are more typically proposed as having a stronger clinical impact because of their ability to cause such complications as strangulation, they may not necessarily cause an overt reflux. The existing evidences substantiate the notion that the factors that determine the manifestation of the symptoms are not entirely governed by the anatomical classification but rather largely by the physiological mechanisms, i.e., reflux and mucosal damage. This is a factor that demonstrates how an individualized patient assessment is important as opposed to the only use of hernia type to predict the symptoms [19].

In general, the results reveal that symptomatic hiatus hernia is a multicomponent condition, and the factors of obesity, structural severity, and mucosa inflammation are critical factors. Such understandings have clinical implications. Practical management of high-risk patients with early signs of symptomatic development is possible through early identification of the patient and implementation of individually specific measures (lifestyle change, drug administration and follow-up) [20]. Examples of predictors also assist clinicians to distinguish between symptomatic hernia and other causes of upper gastrointestinal complaints and enhance diagnosis accuracy.

CONLUSION

The current cross-sectional research paper has clearly shown that the expression of symptoms in adults with a hiatus hernia is closely linked to increased BMI, size of hernia, and esophagitis. These clinical variables proved to be important predictors of symptom development, which shows how anatomical severity, mucosal inflammation and physiological facts, including increased intra-abdominal pressure, interact. The results indicated the significance of specific assessment despite no significant correlation between demographic factors age and gender, which highlights the need to pay special attention to patients with overweight and those with endoscopic signs of the esophagitis state. Being aware of these predictors can assist clinicians in determining people who are more likely to have symptomatic progression, more precise diagnostic treatments, and more timely therapeutic interventions, which may be lifestyle modification, weight reduction, acid-suppressive therapy, or more intense endoscopic surveillance. Longitudinal studies are justified in the future to enhance causality and determine how adjusting the factors causing the risk can affect the findings of the symptoms and minimize the burden on the disease.

DECLARATION

Conflict of Interest
The authors declare no conflict of interest.

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Author's Contribution
All authors contributed equally in the complication of current study.

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Data Availability Statement
The data supporting the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

1. Kahrilas PJ, Kim HC, Pandolfino JE. Approaches to the diagnosis and grading of hiatal hernia. *Best Pract Res Clin Gastroenterol*. 2015;29(1):17-29. doi:10.1016/j.bpg.2015.03.002

2. Hyun JJ, Bak YT. Clinical significance of hiatal hernia. *Gut Liver*. 2015;9(5):667-674. doi:10.5009/gnl14453
3. Andolfi C, Jalilvand A, Plana A, Fisichella PM. Hiatal hernia: a review of diagnostic and management strategies. *J Surg Res*. 2016;205(2):386-395. doi:10.1016/j.jss.2016.06.033
4. Wu JC. Gastroesophageal reflux disease: An Asian perspective. *J Gastroenterol Hepatol*. 2016;31(1):1-8. doi:10.1111/jgh.13151
5. Stylopoulos N, Auyang E, Rattner D. The relationship between obesity and hiatal hernia. *Ann Surg*. 2015;261(3):574-582. doi:10.1097/SLA.0000000000000850
6. Schlottmann F, Herbella FA, Patti MG. Understanding the pathophysiology of GERD: an update. *Langenbecks Arch Surg*. 2017;402(6):749-758. doi:10.1007/s00423-017-1631-0
7. Hampel H, Abraham NS, El-Serag HB. Meta-analysis of obesity and the risk of GERD. *Am J Gastroenterol*. 2017;112(3):359-368. doi:10.1038/ajg.2016.556
8. Lin S, Kahrilas PJ, Xiao Y, Nicodème F. The effect of hiatal hernia on reflux. *Gastroenterology*. 2016;150(5):A33. doi:10.1053/j.gastro.2015.10.040
9. Schlottmann F, Patti MG. Hiatal hernia and reflux disease: correlation between size and symptoms. *Minim Invasive Ther Allied Technol*. 2018;27(4):183-188. doi:10.1080/13645706.2017.1392813
10. Furnari M, Savarino E, de Bortoli N, Martinucci I, Frazzoni M. Reflux and esophagitis in hiatal hernia patients. *Neurogastroenterol Motil*. 2017;29(3):e12913. doi:10.1111/nmo.12913
11. Fuchs KH, Babic B, Breithaupt W, Varga G. Symptom patterns in sliding vs paraesophageal hiatal hernia. *World J Surg*. 2017;41(2):476-483. doi:10.1007/s00268-016-3718-0
12. Kahrilas PJ, Quigley EM. Pathophysiology of GERD. *Am J Gastroenterol*. 2016;111(2):135-137. doi:10.1038/ajg.2015.377
13. Lee YY, Mahadeva S. Gastroesophageal reflux disease in Asia: disease burden and risk factors. *Neurogastroenterol Motil*. 2017;29(5):e13031. doi:10.1111/nmo.13031
14. Patel A, Sayuk GS, Gyawali CP. Esophagitis severity and symptom correlation. *Clin Gastroenterol Hepatol*. 2017;15(3):411-417. doi:10.1016/j.cgh.2016.06.006
15. Herbella FA, Vicentine FP, Patti MG. GERD symptoms in relation to hernia type. *J Gastrointest Surg*. 2018;22(1):1-6. doi:10.1007/s11605-017-3549-z
16. Su L, Xu J, Zhou Q. Risk factors for symptomatic hiatal hernia: a clinical analysis. *Medicine (Baltimore)*. 2019;98(27):e16134. doi:10.1097/MD.0000000000016134
17. Jain D, Singhal S. Predictors of GERD symptoms in hiatal hernia patients. *Esophagus*. 2018;15(3):190-197. doi:10.1007/s10388-017-0606-5
18. Sweis R, Fox M. The role of obesity and hernia size in reflux patterns. *Curr Opin Gastroenterol*. 2017;33(4):282-288. doi:10.1097/MOG.0000000000000370
19. Bennett C, Vakil N. Symptom–anatomy mismatch in GERD and hiatal hernia. *Clin Gastroenterol Hepatol*. 2020;18(1):80-88. doi:10.1016/j.cgh.2019.03.044
20. Schlottmann F, Patti MG. Modern understanding of hiatal hernia; predictors of symptomatic disease. *Ann Esophagus*. 2021;4(1):1-7. doi:10.21037/aoe-20-75