ORIGINAL ARTICLE

Frequency of Gastroesophageal Reflux Disease in Chronic Smokers

SAJJAD ALI[1], FOUAD NAFEES[2], BUSHRA JAVED[3], BILAL RAFIQUE MALIK[4]

ABSTRACT

Background: Smoking is not only a risk factors for lung diseases but it is also a risk factors of developing gastrointestinal diseases. GERD is one of the common complaint of smokers.
Aim: To assess the frequency of Gastroesophageal reflux disease in chronic smokers
Methods: The cross sectional study was conducted at at Outpatients Department (OPD) and Indoor Department of Medicine, Chaudhary Rehmat Ali Memorial Trust Hospital, Lahore from 1st March to 31st August 2017. 140 smokers were included in the study. Then all patients will undergo endoscopy for confirmation of presence of absence of GERD. Data was a recorded on proforma and analyzed through SPSS v. 21.0.
Results: Out of 140, GERD was detected in 26 (18.6%) cases. The frequency of GERD was significantly high in patients aged ≤45years, Overweight or obese and smokers who are also junk food users.
Conclusion: GERD is present in less than 20% cases, although not negligible. Further studies with larger cohort should be done in order to confirm the association of GERD with smoking.
Keywords: Chronic smoking, Gastroesophageal reflux disease, endoscopy

INTRODUCTION

Gastroesophageal reflux disease (GERD) is a common disorder of upper gastrointestinal region, usually observed in old age. All over the world, it is a common problem. Its prevalence is 10%-20% in Western countries[1]. It is highly prevalent not only in western countries but also in Asian countries[2]. Although it is not deadly, but has significant impact on health-related quality of life (HR-QOL) as compared to normal adultsor patients of systemic diseases including hypertension, diabetes or angina[3].

Lifestyle of an adult like smoking, obesity and consumption of evening meals late at night are most common risk factors of GERD. But the alteration of such factors canavert GERD and improve its management[4]. Acute experiments showed that among smokers,lower esophageal sphincter pressure chronically diminishes and because of that derating smoking, reflux events are more common. Salivary function also become weak which results in long duration required for acid clearance. Therefore, frequency of reflux events and prolonged esophageal acid clearance time are potentially smoking potentially rises esophageal acid exposure[5].

MATERIALS AND METHODS

This cross-sectional study was done at Outpatients Department (OPD) and Indoor Department of Medicine, Chaudhary Rehmat Ali Memorial Trust Hospital, Lahore from 1st March to 31st august 2017. Sample size of 140 smokers with 95% confidence interval and 5% margin of error and taking prevalence of GERD i.e., 10%[1]. Smokers of age 20-70years of either gender who were smoking from at least 5 years were included. Patients with other comorbid conditions including myocardial infarction, electrolyte disturbances, started smoking 1 year ago, or had GERD before smoking, patients with recurrence of GERD were excluded from the study. Non probability consecutive sampling technique was used to recruit the patients. Written informed consent was taken in each case after explaining all purpose of the study. Then patient were referred to the Department of medicine, and underwent endoscopy by a senior gastroenterologist. If patient complaint of reflux multiple times per day and ECG showed Edema and basal hyperplasia, lymphocytic or neutrophilic inflammation, elongation of the papillae, or thinning of the squamous cell layer, then GERD was labeled. Data was collected on proforma. Collected data was analyzed in SPSS 21. Frequency and percentage was calculated for gender, use of junk food and GERD. Mean±SD were calculated for age, BMI and duration of smoking. Data was stratified for age, gender, BMI, duration of smoking and use of junk food. Chi-square test was applied to compare GERD in stratified groups with p-value≤0.05 as significant.

[1]*Assoc Professor of Medicine, Continental Medical College Lahore*
[2]*MO, Kot Khawaja Saeed Teaching Hospital, Lahore*
[3]*HO Medicine, Jinnah Hospital, Lahore*
[4]*Assistant Professor of Medicine, Medical Ward, Mayo Hospital, King Edward Medical University, Lahore*
Correspondence to Dr. Sajjad Ali, Email id: dr.sajjadalikhan@yahoo.com

RESULTS

The mean age of candidates was 52.37±14.52years. There were 127 (90.7%) males and 13 (9.3%) females included in the study. Mean BMI of candidates was 27.51±10.33kg/m^2. The mean duration of smoking was 33.28±9.313years. There were 97 (69.3%) individuals who take junk food >once a week (Table 1). GERD was present in 26 (18.6%) of the cases (Fig 1).

In patients aged ≤45years, GERD was present in 21(23.9%) smokers and in patients aged >45 years, GERD was present in 5(9.6%) smokers. The difference was significant (p<0.05). In males, GERD was present in 22(17.3%) while in 4 (30.8%) females (p>0.05). GERD was significantly high in overweight or obese patients 19(26%) than underweight 6(16.7%) and normal weighted patients 1(3.2%). GERD was more common in junk food consumers 23(23.7%) than non-consumers 3(7%) (Table 2).

Table 1: Baseline characteristics of patients

Age (years)	52.37±14.52
Male / Female	127 (90.7%) / 13 (9.3%)
BMI (kg/m^2)	27.51±10.33
Duration of smoking	33.28±9.31
Use of Junk food	97 (69.3%)

Fig 1: Distribution of GERD in smokers

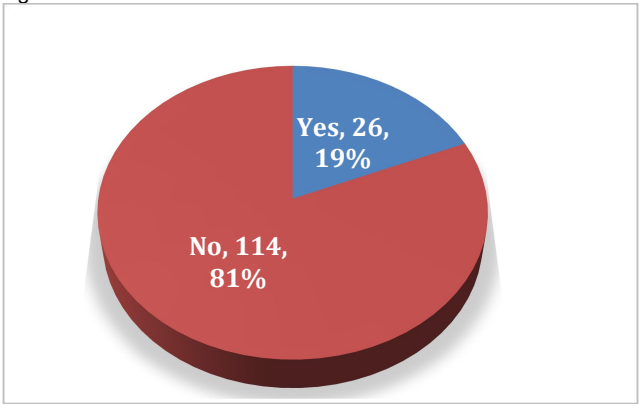

Table 2: Comparison of GERD for effect modifiers

Other parameters	GERD+ (n=26)	GERD- (n=114)	Total	P value
Age ≤45years	21(23.9%)	67 (76.1%)	88	0.036
Age>45years	5 (9.6%)	47 (90.4%)	52	
Male	22(17.3%)	105(82.7%)	127	0.236
Female	4 (30.8%)	9 (69.2%)	13	
Underweight	6 (16.7%)	30 (83.3%)	36	0.022
Normal weight	1 (3.2%)	30 (96.8%)	31	
Overweight or obese	19 (26%)	54 (74%)	73	
Use junk food	23(23.7%)	74 (76.3%)	97	**0.019**
No use of junk food	3 (7%)	40 (93.0%)	43	

DISCUSSION

The prevalence of GERD, especially in individuals who had reflux at least once in a week, differs significantly with ethnicity & geography: 18.1–27.8% in North America, 8.8–25.9% in Europe & 2.5–7.8% in East Asia[6]. Recently, in Northern India, GERD was prevalent in 16.2% individuals employed in a large hospital.[7] But, epidemiological data is scarce in general populations in Southern India regarding prevalence of GERD. Previous surveys conducted in Europe & North America implemented a symptom-based methodology. This methodology permits family practitioners & gastroenterologists to identify GERD more precisely[3,8].

Literature showed a significant association between smoking & GERD[3]. It has been found that the lifestyle factors significantly associated with GERD. In males, smoking (OR=2.06, 95%CI;1.13-3.74) is a significant risk factor of GERD. Use of junk food at night (OR 2.09, 95% CI 1.06-4.13) can aid the frequency of GERD among smokers[9].

In another study conducted in Japan, in a cohort, 6.7% individuals had GERD. Smoking was found to be significantly associated with GERD than no smoking (OR=1.35, 95%CI, 1.01-1.82). Thus cigarette smoking is associated with high risk of GERD in Japanese people[10].

Previous cross sectional studies suggested a significant association of tobacco smoking with GERD symptoms.[11, 12]The steady dose response association was found between both; years of daily smoking &total number of cigarettes smoked in life and GERD, provide substantial evidence that prolonged smoking is certainly a risk factor for GERD. Experimental trials reported significant reduction in lower esophageal sphincter pressure and raised frequency of GERD episodes during smoking, which is main factor of GERD[13].

Nilsson et al., through a case control study, on 3,153 cases of GERD and 40,210 healthy controls, got a significant effect of treatment between smoking and GERD symptoms. Smokers who smoke>20 cigarettes per day had high risk (OR = 1.7) of GERD than non-smokers. But still it is unclear whether GERD treatment or smoking cessation resolved the GERD symptoms[13].

But Wang et al[15] through a study, could not find any association between cigarette smoking and presence of GERD, however, previous studies which were conducted in Sweden, Spain and United States showed association[12]. Obesity is a significant risk factor of GERD, but there is no evidence found that weight reduction is associated with improvement in GERD.Family history is also a significant risk factor proposes that GERD may be an inherited disorder. We also found significantly high GERD frequency in smokers[12,15,17]. Recently, another large cohort found that smoking cessation enhanced the symptoms of severe GERD in normal BMI cases[14].

CONCLUSIONS

GERD is present in less than 20% cases, although not negligible. Further studies with larger cohort should be done in order to confirm the association of GERD with smoking.

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