Factors Associated with Etiology of Peptic Ulcer

Abstract

Peptic ulcer embraces both gastric and duodenal ulcers and has been a major threat to the world's population over the past two centuries, with a high morbidity and substantial mortality. Infection with Helicobacterpylori (H. pylori) causally related to a majority of cases of both duodenal and gastric ulcer, in developing countries. (Taylor WH). Despite extensive scientific advancements, this disease remains an important clinical setback, largely because of H. pylori infection and widespread use of non-steroidal anti-inflammatory drugs (NSAIDs). Management of peptic ulcer disease generally involves the practice of H_2 receptor antagonists, use of proton pump inhibitors, antacids and different H. pylori eradication regimens.(Boston MA). The study was conducted on 75 subjects (both males and females) suffering from peptic ulcer of 20-60 years of age from Rohtak city of Haryana. Dietary intake of the subjects was recorded by 24-hour recall method. The results indicated that peptic ulcer patients consumed inadequate intake of protective foods. Higher consumption of tea ,alcohol, smoking habits, irregular meal pattern, excessive consumption of hot food play a significant role in etiology of peptic ulcer.

Keywords: Peptic Ulcer, Duodenal Ulcer, H. Pylori

Savita Budhwar
Assistant Professor,
Deptt. of Food & Nutrition,
K.V.M.College,
Rohtak, Haryana

Introduction

Peptic ulcer disease is a group of disorders characterized by the presence of ulcers in any portion of gastrointestinal tract(GIT) exposed to acid in sufficient concentration and duration. Although these ulcerations most commonly occur in the stomach (gastric ulcer), or small intestine (duodenal ulcer), this disease also includes Barrett ulcer of the esophagus (Barrett's esophagus or Barrett's metaplasia) and other upper GI ulcers.(Tortora GJ) An ulcer is a crater like lesion in a membrane; ulcers that develop in areas of the GIT exposed to acidic gastric juice are called peptic ulcers. Word '*peptic*' derives from the Greek term '*peptikos,*' meaning related to digestion. Peptic ulcer is due to exposure of stomach and duodenum to pepsin and gastric acid. Imbalance occurs between aggressive factors like acid, pepsin, *H. pylori* and defensive factors such as gastric mucus, bicarbonate ions, and prostaglandins along with innate resistance of mucosal cells. (Power 2003) Gastroduodenal mucosa utilizes several defense mechanisms against the aggressive factors such as hydrochloric acid and pepsin.

Types of Peptic Ulcer

Ulceration of the gastrointestinal mucosa is caused by disruption of normal balance of the corrosive effect of gastricjuice and the protective effect of mucus on gastric epithelial cells. On the basis of location, peptic ulcers are categorized as follows - *Gastric ulcer*: means occurrence of ulcer in stomach. These ulcers occur more generally in the older age group.

Duodenal Ulcer

Occurrence of ulcer in the duodenum is referred as duodenal ulcer. These ulcers are more common than gastric ulcers. They occur commonly in younger individuals and are evenly distributed among various socio- economic groups. Duodenal ulcer patients have higher than normal levels of acid secretion rates. (Raghuram, T.C) Depending on severity, peptic ulcers are also classified as: *Acute peptic ulcers*:   These ulcers involve tissues to the depth of the submucosa. They may arise in the form of single or multiple lesions. They are found in many sites of stomach and in the first few centimeters of duodenum. *Chronic peptic ulcers*: These ulcers penetrate through the epithelial and muscle layers of stomach wall and may include the adjacent pancreas or liver. In majority of cases, they occur singly in the pyloric antrum of the stomach and in duodenum. (Helms RA, Herfindal ET) Peptic ulcer is closely

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related to diet and management. The major goals of management ofpeptic ulcer are, to achieve metabolic control near normal and to prevent or delay the complications. Hence, there is need to increase the public awareness regarding risk factors and their association with peptic ulcer. This can be achieved through improved education, health awareness and promotion of self-care.

Objective of the Study

The present study was conducted to assess the etiological factors of peptic ulcer patients.

Hypothesis

There is a significant association between peptic ulcer and the demographic variables (age ,educational qualification, occupation, monthly income of the family, religion, food habits. marital status .

Materials and Methods

Locale of the Study and Selection of Subjects

Rohtak city of Haryana state was selected purposively for carrying out the present study. Seventy five (both males and females) were randomly selected from medical college of Rohtak city on the basis of their endoscopic examination

Collection of Data

For collecting the requisite information, a well structured pre-tested questionnaire schedule was prepared and the data were collected with the help of interview method. Information regarding general background of subjects, health profile, dietary habits, food and nutrient intake were collected by interview-cum-questionnaire method.

Dietary Assessment

Information regarding the intake of food for three consecutive days was collected from the respondents using 24-hour recall method. Standard measures including containers of the consecutive sizes, spoons and glasses were shown to the subjects to help them to indicate exact amount of foods consumed by them. To assess the exact amount of wheat flour, the size of *chapaties*/*parantha* were weighed. General information on consistency of foods especially cooked pulses and vegetables were also collected for accuracy in calculations.

Food Intake

Cooked food consumed was converted into their raw equivalents. Mean daily intake of different food groups including cereals, pulses, fruits, green leafy vegetables, roots and tubers, other vegetables, milk and milk products, sugar and jaggery and fats and oils was calculated by taking mean intake of three consecutive days. Average daily dietary intake of the respondents was compared with the suggested intake given by Raghuram *et al.* (1998). Food Adequacy Ratio (FAR) was calculated as:

$$FAR (\%) = \frac{Food\ intake}{RDI} \times 100$$

Nutrient Intake

Different nutrients namely, energy, protein, fat, thiamine, riboflavin, niacin, vitamin B_{12}, folic acid, ascorbic acid, calcium, phosphorus, magnesium and zinc were calculated from foods consumed by the subjects using food composition table (Gopalan *et al.,* 2000) and Nutrient Adequacy Ratio (NAR) was calculated as:

$$NAR (\%) = \frac{Nutrient\ intake}{Nutrient\ RDA} \times 100$$

Statistical analysis

The data was analysed statistically with the help of frequency distribution, mean, standard error, percentage and paired 't' test (Panse and Sukhatme, 1961).

Results and Discussion

Personal and health profile of respondents

Majority of the subjects (62.6%) from Rohtak city were in the age group of 30-40 years. The peak incidence of peptic ulcer was found in the third decade of life. Relatively, higher incidence of peptic ulcer in this age was probably due to the fact, that this period is a transient phase of life in which important events like marriage, stabilization of economic resources, widening of social relationship and expansion of family takes place. With the increase in responsibility in this age group stress and strain are the major predisposing factor leading to ulcer. A greater proportion (76%) of the patients were males and only 24% of the sample constituted female patients. It seems that incidence of peptic ulcer is three times greater in males as compared to females. With regard to education of male and female subjects, 10 % were postgraduates, 20% were educated up to graduate level and only 34% were educated up to secondary level. Peptic ulcer was primarily hitting the patients with low level of education, low income level and more prevalent in patients doing manual kind of job. .A greater portion of patients (92%) did not have positive history of peptic ulcer. Majority (80 %) of the patients reported to have some family problems or other tension which may be constant cause of stress for them. Psychological factors such as anxiety ,stress and tension were the contributory causes of peptic ulcer (Table 1)

Table 1
Personal and Socio-Economic Background of the Patients

Variable	N 75	Percentage
Age(yrs)		
20-30	10	13.4
30-40	47	62.6
40-50	14	18.6
Above 50	4	5.4
Sex		
Male	57	76
Female	18	24
Educational qualification		
Illiterate	6	8
Can read and write	3	4
Primary	8	10.7
Middle	9	12
High school	26	34.6
Graduate	15	20
Post graduate	8	10.7
Family history		
Yes	6	8
No	69	92
Family problem /Tension		
Yes	60	80
No	15	20

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Majority of the subjects (78.7 %) had monthly family income   less than Rs 5000 per month (Fig.1). Only 12 and 9.3 % were having income between Rs.5000-10000 per months. The data shows that the disease were more common in lower socio economic group as they had poor buying capacity, which exerts its influence on dietary pattern.
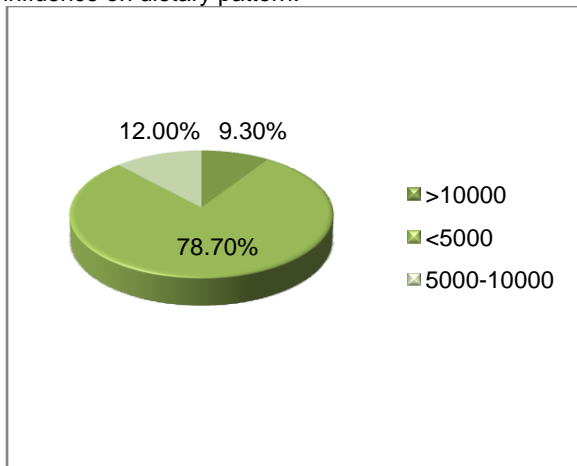

Fig1 Distribution of Patient According to Income

Hospital record showed that majority (84%) of the patients had gastric ulcer and only (16%) had duodenal ulcer. About half of the patients had moderate type of mucosal lesions (49.3 %) and more than one third (38.7%) had mild lesions.(Table 2).A large section (81.4%) 0f patients were prescribed treatment in the medicine as well as modification of diet.

Table 2
Distribution of Patients According To Types of Ulcer

	Respondent	Percentage
Type of ulcer		
Gastric	63	84
Duodenal	12	16
Severity		
Mild	29	38.7
Moderate	37	49.3
Severe	9	12
Type of treatment		
Dietary management	14	18.6
Dietary + medical management	61	81.4

Information on consumption of different beverages of the subjects is presented in (Table 3.) It was found that before diagnosis maximum number of patients 47.8% were taking tea more than thrice a day. Majority 86% patients were consuming milk only once a day. Consumption of tea by the patient might have played role in predisposing the patient to ulcer or in the development of symptoms, because tea and coffee are known to increase the secretion of gastric acid. Black tea leads to more acid output than tea with milk.

Table 3.
Distribution of Patients According To Frequency of Consumption of Tea and Milk Per Day.

Item	Once	Twice	Thrice	More than thrice
Tea (n=69)	12 (17.4)	10 (14.5)	14 (20.3)	33 (47.8)
Milk (n=26)	22 (84.6)	4 (15.4%)	-	-

Epidemiologic studies suggest that smokers are about twice as likely to develop peptic ulcer disease as non-smokers .About one third of the patients reported to be smokers and alcoholics. Smoking and consumption of alcohol might have played a role in predisposition to ulcer .18.6 and 22.6% of the patients were habitual to pan masala and tobacco chewing.(Table 4) . Alcohol, smoking increases the susceptibility to the disease as it is known to stimulate the acid secretion and produce gastric mucosal injury.

Table 4
Distribution of Patients According to Personal Habits.

Items	Percentage			
	Yes		No	
Pan Masala	14	18.6	61	81.4
Tobacco chewing	17	22.6	58	77.4
Smoking	46	61.3	29	38.7
Alcohol	49	65.3	26	34.7
Alcohol with snacks	26	53.2	23	46.9

Conclusion

The results of the present study revealed that factors causing this disease include stress and strain ,smoking habits, alcohol consumption, excessive tea and coffee drinking. and Epidemiologic studies suggest that smokers are about twice as likely to develop peptic ulcer disease as non-smokers. Smoking increase gastric acid secretion and duodenogastric reflux and decreases both gastroduodenal prostaglandin production and pancreatic duodenal bicarbonate production. Milk, on the other hand, seems to have an adverse effect on the healing rate of duodenal ulcers. Peptic ulcer disease has also been considered to be a stress-associated psychosomatic disease. Importance of emotional disturbances due to stress has long been shown to be a consideration in the pathogenesis of this disease. There is evidence that psychological stress induces many ulcers and impairs response to treatment. This stress probably functions most often as a cofactor with *H. pylori*. It may act by stimulating the production of gastric acid or by promoting behavior that causes a risk to health Hence, there is need to increase the public awareness through   education regarding risk factors and their association with peptic ulcer.

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