Epidemiology of Functional Dyspepsia

Arvind Kumar*, Jignesh Patel**, Prabha Sawant***

Introduction

Dyspepsia is derived from the Greek words dys and pepse and literally means “difficult digestion.” Dyspepsia can occur due to organic causes, but the majority of patients suffer from functional dyspepsia (FD). It is broadly defined as pain or discomfort centred in the upper abdomen with symptoms such as epigastric pain, postprandial fullness, early satiety, anorexia, belching, nausea and vomiting, upper abdominal bloating, and even heartburn and regurgitation. People with functional dyspepsia have a significantly reduced quality of life when compared to the general population.

In a recent community survey of several European and North American populations, more than 50% of dyspepsia sufferers were on medication most of the time and approximately 30% of dyspepsics reported taking days off work or schooling due to their symptoms.

Definition

Several consensus definitions of dyspepsia and FD have been proposed. Earlier definitions considered dyspepsia to consist of all upper abdominal and retrosternal sensations. With time, definitions of dyspepsia have evolved to become more restrictive and more focused on symptoms thought to arise from the gastroduodenal region and not the esophagus. The Rome I and II consensus committees both defined dyspepsia as pain or discomfort centred in the upper abdomen.

According to Rome II committee consensus if the heartburn is the predominant symptom, the patient should be considered to have GERD and not dyspepsia. Rome III a recent consensus, has defined dyspepsia as the presence of symptoms considered by the physician to originate from the gastroduodenal region and only four symptoms (bothersome postprandial fullness, early satiety, epigastric pain, and epigastric burning) are now considered to be specific for a gastroduodenal origin, although many other symptoms are acknowledged to coexist with dyspepsia. Patients having chronic dyspeptic symptoms for the past 3 months with onset at least 6 months before diagnosis in absence of structural abnormality on upper GI endoscopy and metabolic or systemic causes explaining the symptoms are classified as FD.

Prevalence of Dyspepsia

True prevalence of FD is difficult to determine in population studies. Several studies have been done to provide a reflection of the prevalence of FD.

The prevalence of dyspepsia varies considerably between different populations. this difference might be related to, (1) true difference in frequency of the condition, (2) criteria used to diagnose it and (3) degree of meticulousness to exclude organic causes. The annual incidence of dyspepsia is approximately 9–10%, and 15% of patients have chronic (> 3 months in a year), frequent (> 3 episodes per week) and often severe symptoms.

In studies using “upper abdominal pain” as the definition, the prevalence of uninvestigated dyspepsia (UD) has varied between 7%-34.2%.}

Epidemiological Factors

Age

In various surveys age does not appear to be related to any particular age. Although most of the studies have included population above the age of 18 years or older, the references regarding dyspepsia in children are limited, it appears that dyspepsia represents a common situation (60%-80%) under the broad spectrum of recurrent abdominal pain. In studies of Asia, FD is more common in younger age group. A study from Japan reported that prevalence of FD was 13% and 8% in age groups below and above 50 years, respectively. Peak prevalences of FD appeared to peak in Chinese subjects 41–50 years. While in other studies from China, reported prevalence of FD among 662 consecutive IBS patients consulting gastroenterologists, was 64%. Due to this overlapping of symptoms some time patients of IBS may be misdiagnosed as dyspepsia and is likely to be a greater problem in Asia than in the west. IBS patients in Asia appear to present more commonly with upper abdominal pain. In studies from India, more than half of their patients complained of upper abdominal pain, whereas in western series only about a quarter do so.
In the latter survey, there was a significantly lower prevalence of UD in adults > 70 years (10%) compared to those < 60 years (18.4%).

**Gender**

Majority of population-based studies do not show any gender difference in dyspepsia prevalence. While few studies from different populations, have noted a consistent female preponderance with dyspepsia.17-19,26-29,32,50

**Ethnicity**

The role of ethnicity for dyspepsia has not been established and it requires more data to conclude the role of ethnicity.

In most of the population based studies role of ethnicity in dyspepsia has not been examined. Most surveys have been done on populations of single/similar ethnic groups, mostly of Caucasian or Oriental background. Few studies from Asia also reflect the prevalence of dyspepsia in different populations. Two studies from Malaysia on about 2000 patients on applying Rome II criteria showed a prevalence of dyspepsia in Malay, Chinese and Indian populations is 231 (14.6%), 30 (19.7%) and 28 (11.2%) respectively.51-52

**Infections**

Does the *Helicobacter Pylori* (*H pylori*) have any role to play in FD? The evidence is still unclear and most *H pylori* eradication trials in FD have been badly designed and gave conflicting results. The reviews by both O’Morain and Malferttheiner evidence were provided of well conducted randomized control trials and meta-analysis, showing a small but significant effect in eradicating *H pylori* in dyspeptic patients.53-54 A recent well done meta-analysis and Cochrane Database systematic reviews show that there is a small but significant benefit of eliminating *H pylori* in patients with dyspepsia.55-56

There is some evidence though data is less that enteric infection caused by bacteria and protozoa such as *Giardia lambia* may be followed by development of post-infectious irritable bowel syndrome (IBS) and FD.58 A study in an area which is not endemic for Giardia, demonstrated Giardia in 15.5% of patients presenting with dyspepsia and its prevalence is similar with or without obvious lesions at endoscopy.59 While in other study from Giardia endemic area, 44% patients of dyspepsia were found Giardia positive.60 In another study of 522 patients from China, 35 (6.7%) patients developed FD on follow-up after acute gastroenteritis.61

However in a recent large prospective study of a well documented single source out-break of salmonella gastroenteritis demonstrated the development not only of IBS, but also for the first time, of dyspepsia. The three most common dyspeptic symptoms were pain, bloating and fullness. Prolonged abdominal pain and vomiting during the acute episode were found to be positive predictors. In patients who developed IBS, there was a 62% overlap with FD at 12 month post-infection. In patients who developed FD, there was a 46% overlap with IBS.62

**Dietary Factors**

Due to the diversity of dietary habits within individual populations the role of diet in dyspepsia has not been established. Some western studies have reported that excessive coffee or tea intake has not been shown to be related to the presence of dyspepsia/UD.17,19,23,26,27,62 However one Canadian survey showed that heavy intake of cola was associated with markedly increased prevalence of dyspepsia.63 Study from Mumbai India have shown that vegetarians or non vegetarian diet have no effect on dyspeptic symptoms, and spicy, fried or food prepared outside the home contributed insignificantly to worsening of symptoms.15 While a population-based study from Malaysia showed that high chilly intake was an independent risk factor for dyspepsia (OR, 2.35; 95% CI, 1.15-4.80).64 Rice-based diet, popular among many Asian population may be better tolerated than Western wheat-based diet by many patients with functional bowel disorders.65 However this data on diet and dyspepsia seems to be insufficient and more studies on the role of diet in dyspepsia are needed.

**Smoking, alcohol and Non-steroidal anti-inflammatory drugs (NSAIDs)**

Association of regular smoking and dyspepsia has not been consistent. In the few population-based studies that have examined FD, smoking has not been shown to be a risk factor.26,27,36,37 In surveys from US,63 Canada,60 UK23 and India15 of patients with UD have showed regular smoking as an identifiable risk factor. The relationship of regular alcohol intake and dyspepsia, has been not proven in various studies. Two studies from India15 and New Zealand66 have showed definite associations between alcohol and UD. Two population based studies have revealed a relationship of dyspepsia and NSAIDs. In a British study of 4982 adults, NSAID usage was identified as an independent risk factor for UD and thought to be responsible solely for 4% of dyspepsia in the community.23 In a study of American adults from a single institution, regular usage of NSAIDs and Aspirin, bought over the counter, were strongly associated with UD than in controls without dyspepsia.19

**Socio-economic associations**

In majority of population-based studies prevalence of dyspepsia have not been found to be linked with social class. However studies examining details of socio-economic status were able to elicit associations with dyspepsia. In study of Drossman et al in the US noted a strong relationship between lower household income and larger household membership with increased functional GI diseases, including FD.35 Similarly in a British survey, factors including rented accommodation, no central heating, low educational level and sharing a bed with siblings (surrogate for crowded household) were found to be predictive of UD in adults.23 Other study from China on dyspepsia have shown that “dissatisfaction with financial income” was associated with FD.26

**Psychological Associations**

A biopsychosocial model to explain FD has been proposed, whereby biological, psychological and social factors interact to account for patient’s symptoms, behavioural response and disease outcome. FD can then be seen as a result of dysregulation of intestinal motor, sensory and CNS activity, resulting from interruptions at some level of the brain gut axis. Early life stress and acute life threatening situations are strong risk factors for developing FD in the genetically predisposed individual, later on in life. The most common psychiatric comorbidities in patients with functional dyspepsia are anxiety disorders, depressive disorders, somatoform disorders, and a recent or remote history of physical or sexual abuse. Talley et al had reported in an American adult population that sexual, emotional and verbal abuse either in childhood or adulthood were significantly associated with dyspepsia.9 In an Australian survey where adults with FD scored highly on anxiety and depression scales.37 A population-based study from Hong Kong revealed that anxiety was associated medical consultation and sick leave among patients with dyspepsia and IBS and degree of anxiety was an independent factor associated with health care seeking behaviour in dyspeptic patients.65
Quality of Life in Patients with Dyspepsia

Dyspepsia is rarely fatal, with a majority of patients suffering from significant levels of abdominal pain that interrupt daily activities and treatment remains unsatisfactory in this chronic condition. It poses significant burden to the society due to work absenteeism, reduced productivity and use of health care resources. The impact of dyspepsia has therefore been largely assessed by its impact on health-related quality of life (HRQOL) in several Western populations. Two studies were ‘positive’ in showing a significant reduction at least in some domains of HRQOL among patients with functional dyspepsia compared to controls,66,67 while one study was negative.68 In general, the decline in scores of physical domains was similar to those on mental domains. However, data on QOL of patients with FD from Asia are scanty. Health-related QOL scores, evaluated by Korean version of SF-36, were worse for all 8 domains in patients with dyspepsia and IBS compared with those not having chronic GI symptoms.69 Two other studies from Asia one on rural and other on urban populations showed that subjects with dyspepsia(Rome II and III criteria) had lower health-related QOL using EuroQOL (EQ-5D) instrument.51,52,70

Summary

Functional dyspepsia (FD) is the most common cause of dyspeptic symptoms. It refers to a heterogeneous group of symptoms located in the upper abdomen. The prevalence of dyspepsia is variable in different populations and is related to the different definitions of dyspepsia as inclusion criterias, variation in survey population and environmental factors. Epidemiologically some risk factors have been identified and underlying psychological disturbances have been shown to be important factors in FD. Age and ethnicity do not appear to be predictive of dyspepsia. A majority of patients suffering from significant levels of abdominal pain that interrupt daily activities and treatment remains unsatisfactory in this chronic condition.

References


