

Original Research Article

Association between cholelithiasis and hiatus hernia in patients with dyspepsia: a prospective study

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ABSTRACT

Background: An association between hiatus hernia and cholelithiasis has been suspected for a long time but has never been adequately documented. Cholelithiasis is an asymptomatic disease. The precise incidence of hiatus hernia is not known. In current era as the practise is getting result oriented not diagnosing Hiatus hernia and persistence of symptoms is considered as failure in case of surgery. Coexistence if diagnosed preoperatively is of great help in management of the patient. The purpose of the study is to study association of Hiatus hernia with cholelithiasis in patients with dyspepsia.

Methods: This is a prospective study conducted in DR. D. Y. Patil Medical College, Pune, Maharashtra for a period of two years. 100 patients of dyspepsia were enrolled in the study. All patients of dyspepsia were subjected to USG-abdomen. Patients were divided into diagnosed cholelithiasis (A) and non-cholelithiasis (B) as per USG findings. Both groups were subjected to upper gastro intestinal scopy. Appropriate statistical method was applied to know the incidence of hiatus hernia in cholelithiasis and non -cholelithiasis patients. Comparison was done to know the association between hiatus hernia and cholelithiasis in the patients with dyspepsia.

Results: Total 24% patients had both hiatus hernia and cholelithiasis. Whereas 23% patients had neither hiatus hernia nor cholelithiasis on applying chi-square, p-value is 0.58. This is statistically insignificant.

Conclusions: There is no obvious association between hiatus hernia and cholelithiasis in patients with complains of dyspepsia.

Keywords: Gastro oesophageal reflux disease, Gall bladder disease, Gastro-intestinal tract, Gall stones, Left iliac fossa, OGD scopy: esophago-gastroduodenoscopy, Per rectum, Ultrasonography

INTRODUCTION

Cholelithiasis is considered asymptomatic disease however symptoms of dyspepsia are frequently attributed to cholelithiasis, the reason although may not be gall stones. Therefore, common occurrence of dyspepsia with cholelithiasis needs to be evaluated. Dyspepsia is a very common symptom in India affecting more than one fourth of general population and is a frequent reason for

medical consultation.¹ New onset dyspepsia occurs in upto 10% of this population each year and upto 15% of patients with significant dyspepsia seek medical attention within a period of 3 months.^{2,3} Common occurrence of cholelithiasis with GERD prominently can be blamed for most of the dyspeptic symptoms and symptoms may be solely because of hiatus hernia. Common occurrence of these two diseases however needs to be evaluated. In current era as the practice is getting result oriented not diagnosing hiatus hernia and persistence of symptoms is

considered as failure in case of surgery's-existence if diagnosed preoperatively is of great help in management of the patient. A case of operable hiatus hernia can be managed at the same time of cholecystectomy and thus avoid repeat surgery. Hence, the present study was done to assess the association of hiatus hernia and cholelithiasis in patient with symptoms of dyspepsia and to find out the presence of hiatus hernia in patient with cholelithiasis and non-cholelithiasis patients. Objectives were to study incidence of cholelithiasis in patients of dyspepsia. To study presence of hiatus hernia in patient with cholelithiasis (group A) and non-cholelithiasis patients (group B) and to compare the results of group A and group B and to find out a correlation between hiatus hernia and cholelithiasis (group A vs group B).

METHODS

This is a prospective study conducted between July 2016 to September 2018 (for two years) at Dr. D.Y. Patil Medical College and Hospital and Research Centre, Pimpri, Pune. The study sample size is 100 cases. Ethical committee approval is taken for the study.

Inclusion criteria

- Patients of age >18 years of age and <65 years of age.
- Patient with complaints of dyspepsia.

Exclusion criteria

- Patient operated for upper gastrointestinal surgery.
- Patient diagnosed with Common bile duct/Pancreatic stones.
- All acute abdomen cases.

All patients of dyspepsia were subjected to USG-abdomen. Patients were divided into diagnosed cholelithiasis (group A) and non-cholelithiasis (group B) as per USG findings. Both group A and group B patients were subjected to upper gastro intestinal -scopy (OGD-scopy). Incidence of hiatus hernia was assessed in both the groups. Observations were collected accordingly and master chart is prepared.

Appropriate statistical method was applied to know the incidence of hiatus hernia in cholelithiasis and non -cholelithiasis patients. Comparison between the two groups was done to know the association between hiatus hernia and cholelithiasis in the patients with dyspepsia. Conclusion is drawn and study is summarized at the end. All the investigations are done in this institute and the patient were not charged for the same. For any special investigations done outside this institute, the principle investigator bears the cost of it and the patient was not charged.

RESULTS

Present study was a hospital based prospective study of 100 patients of dyspepsia who were subjected to ultrasound abdomen followed by esophago-gastroscopy and conclusion were drawn. Dyspepsia is common among the middle-aged group i.e.; 31-45 years. The incidence of dyspepsia decreases in older age group in the case study (Table 1). 60 of the patients of dyspepsia are in 31-45 age group. 64 of patients of dyspepsia are females (Table 1).

Table 1: Age and gender wise distribution of cases in study group (n=100).

Age (years)	Male	Female	Total
18-30	10	15	25
31-45	18	42	60
46-60	8	7	15
Total	36	64	100

Chi-square = 3.07, P=0.22.

Table 2: Symptoms wise distribution of cases in study group.

Symptoms	No. of cases (n=100)	Percentage (%)
Dyspepsia	100	100
Constipation	19	19
Vomiting	9	9
Painful defecation	5	5
Epigastric burning	4	4
Pain in LIF	3	3

Table 3: Signs wise distribution of cases in study group.

Signs	No. of cases (n=100)	Percentage (%)
Fissure in ano	15	15
Bleeding PR	8	8
Umbilical hernia	3	3

Table 4: USG finding wise distribution of cases in study group.

USG findings	No. of cases (n=100)	Percentage (%)
Cholelithiasis	34	34
Chronic appendicitis	6	6
Diverticulosis	3	3
Mesenteric lymphadenopathy	2	2
Normal	55	55
Total	100	100

The commonest symptom following dyspepsia are constipation (19%), vomiting (9%), painful defecation (5%), epigastric burning (4%) and pain in left iliac fossa (LIF) (3%) (Table 2).

Table 5: Gastroscopy (OGD scopy) finding wise distribution of cases in study group.

Gastroscopy finding	No. of cases (n=100)	Percentage (%)
Hiatus hernia	67	67
GERD	37	37
Gastritis	15	15
Gastric ulcer	2	2
Pyloric stenosis	2	2
Normal	18	18

Table 6: Incidence of cholelithiasis in study group.

Cholelithiasis	No. of cases (n=100)	Percentage (%)
Yes	34	34
No	66	66
Total	100	100

Table 7: Incidence of hiatus hernia in study group.

Hiatus hernia	No. of cases (n=100)	Percentage (%)
Yes	67	67
No	33	33
Total	100	100

The patients in study group presented with fissure in ano (15%), bleeding PR (8%) and umbilical hernia (3%) (Table 3).

Table 8: Age and gender wise distribution of cholelithiasis cases in study group.

Age (years)	Male	Female	Total
18-30	1	3	4
31-45	5	17	22
46-60	4	4	8
Total	10	24	34

Chi-square = 2.14, P= 0.34.

Table 9: Age and gender wise distribution of hiatus hernia cases in study group.

Age (Yrs.)	Male	Female	Total	Percentage
18-30	10	14	24	35.8%
31-45	14	21	35	52.2%
46-60	5	3	8	12%
Total	29	38	67	-

Chi-square = 1.38, P= 0.50.

The USG was normal in 55 patients, the incidence of cholelithiasis was 34 % in the study group followed by chronic appendicitis (6%), diverticulosis (3%) and mesenteric lymphadenopathy (2%) (Table 4). The incidence of hiatus hernia was 67% followed by GERD (37%) and gastritis (15%) in the study group on OGD-scopy (Table 5). The incidence of cholelithiasis is 34% in patients of dyspepsia (Table 6).

The incidence on hiatus hernia was 67 % in patients of dyspepsia (Table 7). The incidence of cholelithiasis is higher in females (70.5%) and in middle age group (64%) (Table 8). The incidence of hiatus hernia is equal in both gender, age wise incidence is 18 to 35 years (35.8%), 36 to 45 years (52.2%) and above 46 to 60 years is 12% (Table 9).

Table 10: Association between hiatus hernia and cholelithiasis in study group.

Hiatus hernia	Cholelithiasis		Total
	Yes	No	
Yes	24	43	67
No	10	23	33
Total	34	66	100

Chi-square = 0.30, P=0.58.

Incidence of hiatus hernia is 24% in patients with cholelithiasis (group A) and 43% in patients of non-cholelithiasis (group B) in patients with dyspepsia. This showed that 24% patients had both hiatus hernia and cholelithiasis. Whereas 23% patients had neither hiatus hernia nor cholelithiasis on applying chi-square, p-value is 0.58. This is statistically insignificant (Table 10). 60 of the patients of dyspepsia are in 31-45 age group. 64 of patients of dyspepsia are females (Table 1).

There is no obvious association between hiatus hernia and cholelithiasis in patients with complains of dyspepsia. There is increased incidence of dyspepsia in hiatus hernia, whereas in patients with cholelithiasis the incidence of dyspepsia is lower. Even if the association not proved, it is observed that patients of cholelithiasis having dyspepsia also have frequent occurrence of hiatus hernia

DISCUSSION

The study conducted by us primarily intended to know aetiology of dyspepsia and its relation with cholelithiasis and hiatus hernia. After completing observations and through statistical analysis some inferences could be drawn which we could compare with similar studies and have the conclusion.

Age and gender wise incidence of dyspepsia

Amongst all dyspepsia patients in present study, (60 %) patients were in the age group of 31 to 45 years i.e.; in middle age group. Similar results are seen in a study

conducted by Venkatarathnamma et al, about prevalence of dyspepsia in rural Medical College, Kolhar. It suggested Prevalence of dyspepsia in patients between 18-40 years was 56%. Male to female gender ratio was 1.4: 1.⁴

A study by Shaw et al, for epidemiology of dyspepsia in the general population in Mumbai in 2001, however showed that dyspepsia was more prevalent in older age group i.e. >40 years. The incidence of dyspepsia was almost equal in both the genders.⁵

The prevalence of dyspepsia in female in our study is 64%. According to Yazdanpanah et al, in a study of Dyspepsia prevalence in general population aged over 20 years in Iran, among 590 respondents, the prevalence of dyspepsia was 54.6% (n=322). The mean age was 40.3±14 years and 68.3% patients were females.⁶

In a meta-analysis by Ford et al, 55 studies were done to see prevalence of dyspepsia as per gender. Dyspepsia was more in women than in men. Significant heterogeneity between studies was observed.⁷ All above results suggest higher occurrence of dyspepsia in female gender, age however is not a very constant factor. This could be because of different socioeconomic structure, working age of different population in different study groups and many more such risk factors aggravating stress, thereby occurrence of dysphagia.

Age and gender wise distribution of cholelithiasis

The incidence of cholelithiasis was 34% on ultrasonography. Most common age group is middle aged group i.e. 30-45 year (64%) and most common gender is females (70.5 %).

According to a study conducted by Novacek et al, for cholelithiasis and gender in 2006, most common gender is female. The ratio of male to female is 1:3 and middle age group is most commonly involved.⁸

According to Alishi et al, a study for prevalence of cholelithiasis in patients of dyspepsia in Riyadh city in year 2017, however, showed very low overall prevalence of gallstone disease i.e. 8.6%. The study also suggested that older age group i.e. >40-year age is significantly associated with gallstone i.e. 88.4% as compared with 11.6% in the younger age group (30-45 years old). The female gender showed a significant association with gallstones where 72.1% of females suffered from gallstones compared with 27.9% of males.⁹ The older age, female gender, physical activities and obesity are key factors in the gallstones' progression.

According to a study by Vijayanthi et al, a case control study showed equal number of male and female diagnosed with cholelithiasis on USG. 65% patients were in the age range of 30 to 60 years.¹⁰

Sarin et al, reported that 94% of patients with gallbladder stones are multiparous women who are at twice the risk as compared to other women with gallbladder stones.¹¹

Most of the studies agree that cholelithiasis is a disease of predominantly female gender. Sex hormones are associated with increased risk. Oestrogen leads to biliary cholesterol secretion causing cholesterol supersaturation. So, oral contraceptive pills are associated with high risk of gall stones.⁸

Age however is not a constant factor. Many studies suggest that while middle age group is more associated with cholelithiasis, older age group is associated with complicated disease. This may suggest that cholelithiasis is asymptomatic to begin with as the age increases, complications lead to presentation of cholelithiasis. This proves that cholelithiasis is an asymptomatic disease.

Incidence and gender-hiatus hernia

Incidence of hiatus hernia is 67% in dyspepsia on gastroscopy. The most common age of presentation is 31-45 years. The incidence decreases after 45 years of age. Female gender is more commonly involved. According to a study by Umakanth et al, prevalence of hiatal hernia among dyspepsia patients in year 2017, hiatal hernia was seen in 50.52% patients of dyspepsia. Complaints of dyspepsia are more common in age group greater than 50 years. Dyspepsia is more common in females than in males. OGD-scopy also revealed gastritis as commoner presentation following hiatus hernia.¹²

A study conducted by Santosh et al, for clinico-endoscopic profile of patients presenting with dyspepsia in year 2017 showed that the commonest age group was 30-40 years (30%). OGD-scopy finding was normal in 44%, Peptic ulcer and oesophagitis were seen 26% and 4% in patients of dyspepsia. Hiatus hernia was noted in only 2 patients.¹³

According to Kaplan et al, in his study oesophageal hiatus hernia, a clinical study of forty-five cases, dyspepsia was the commonest symptom complex to be encountered in the patients of hiatus hernia. 55% patients of hiatus hernia had dyspepsia. Of these 25 cases of hiatus hernia, 19 were females and six males, suggesting higher incidence in female gender.¹⁴

Presentation of patients

Study suggests that most common symptom after dyspepsia is constipation (19%) followed by vomiting (9%) and painful defecation. Most common sign is fissure in ano (15%) followed by bleeding PR (8%).

In Umakanth et al, study for prevalence of hiatal hernia among dyspepsia patients, the patients complained of pain in abdomen (left iliac fossa), followed by heart burn

seen in (38%) and regurgitation seen in (35%), acid reflux, dysphagia and malena.¹²

According to Shah et al, in his study epidemiology of dyspepsia in the general population in Mumbai in year 2001, abdominal fullness followed by pain in abdomen, heart burn and belching were other common symptoms following dyspepsia.⁵

This reflects that there might be association of dyspepsia with lower gastrointestinal symptoms of diverticulosis, colitis and fissure in ano. However, further studies are required in this direction to prove the association of dyspepsia with lower gastro-intestinal diseases.

USG findings

Authors have reported the frequency of cholelithiasis found by ultrasonography in patients with dyspepsia. 34% patients with dyspepsia had gall stones with predominance in middle aged females followed by normal in 55% and chronic appendicitis in 6% patients.

In a study conducted by Froutan et al, gallstone disease found by ultrasonography in functional dyspepsia in year 2015, the overall frequency of gallstones in the study was 19%, with 17% males and 83% females.¹⁵

Similarly, Shaffer et al, reported the prevalence of cholelithiasis found by ultrasonography in dyspepsia in several American and European populations was ranging from 4.6% to 61.5%.¹⁶

Whereas according to Heikkinen et al, in his study-Diagnostic methods in dyspepsia: the usefulness of upper abdominal ultrasound and gastroscopy, out of the 400 patients of dyspepsia, 49 patients showed operated gall bladder i.e.; post cholecystectomy status on USG. Hepatomegaly and benign renal lesions were other common findings on USG.¹⁷

This suggests that dyspepsia may be attributed to cholelithiasis. Other findings on USG like chronic appendicitis, diverticulosis and mesenteric lymphadenopathy also may be the reason of dyspepsia. Common presentation of dyspepsia in all these conditions suggests some link between gastro-intestinal motility and other pathologies like appendicitis and diverticulosis. This might also be the reason for common occurrence of Hiatus hernia, cholelithiasis and dyspepsia as in Saint's triad.

OGD-scopy findings

We have reported that 67% of patients of dyspepsia have hiatus hernia followed by GERD and gastritis. This proved that there is significant association between hiatus hernia and symptoms of dyspepsia.

In a study by Manes et al, for-hiatus hernia and symptoms in patients with functional dyspepsia in Italy in year 2016, prevalence of hiatus hernia was 57 % in patients of dyspepsia. Hiatus hernia is the likely cause for dyspeptic symptoms.¹⁸ This showed similar results as our study.

A study by Umakanth et al, on endoscopic examination revealed that gastritis was seen in 65% followed by a hiatal hernia was seen in 51% patients of dyspepsia.¹²

This suggests that dyspepsia has a strong association with hiatus hernia. The other common findings on OGD scopy like GERD and gastritis strongly support the association of dyspeptic symptoms with upper gastro-intestinal diseases. This emphasizes the role of OGD scopy in patients of dyspepsia.

Association between cholelithiasis and hiatus hernia

Present study suggested that 24% patients had both hiatus hernia and cholelithiasis. Whereas 23% patients had neither hiatus hernia nor cholelithiasis. This is statistically insignificant. It shows that there is no significant association between hiatus hernia and cholelithiasis in patients of dyspepsia

Gupta et al, carried out a study to see OGD scopy findings in cholelithiasis patients presenting with dyspepsia, in the year 2016. According to the study about 40 % patients' OGD scopy was normal. Whereas GERD was the most common finding. Hiatus hernia was not seen in the patients on OGD scopy.¹⁹

This shows that upper gastro-intestinal disorders like GERD, gastritis also have a significant role in occurrence of dyspeptic symptoms.

CONCLUSION

Dyspepsia is most commonly seen in young and middle age group patients with female predominance. The most common symptom after dyspepsia is constipation followed by vomiting, painful defecation. The most common sign on clinical examination is fissure in ano followed by bleeding PR. This reflects that there might be association of dyspepsia with lower gastrointestinal symptoms of diverticulosis, colitis and fissure in ano. However further studies are required in this direction. The most common age group of patients with cholelithiasis is 31-45 years with female predominance. In older age group incidence appears to be equal. The most common age group of patients presenting with hiatus hernia is 31-45 years. The incidence of hiatus hernia decreases after age of 45 years. Female sex is more commonly involved in hiatus hernia. Cholelithiasis appears to be a silent disease which presents after complications. Cholelithiasis cannot be attributed as the sole cause of dyspepsia. Therefore, treatment of cholelithiasis may not relieve symptoms of dyspepsia.

Treatment of hiatus hernia however can relieve majority of the patients from dyspepsia.

The other incidental findings on USG in patients with dyspepsia are chronic appendicitis, diverticulosis and mesenteric lymphadenopathy appear non-significant. Large no. of patients of dyspepsia presented with hiatus hernia (67%) followed by GERD. This may be the actual pathology behind dyspepsia and this is confirmed by significant incidence and association of hiatus hernia with dyspepsia.

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