Is there any Change in Demographic Pattern of Patients with Cholelithiasis?

Wasim Ahmed¹, Muhammad Iqbal², Ishtiaq Ahmed³

ABSTRACT

OBJECTIVE: To see any change in demographic pattern among patients with gallstone disease in our setup.

STUDY DESIGN: A Descriptive analytic study.

PLACE AND DURATION: Department of Surgery at Al-Nafees Medical College Hospital, Islamabad from 7th July 2016 to 6th August 2016.

METHODOLOGY: The study includes all the patients presented with gallstone disease in Surgery OPD. A specially designed questionnaire was used for collection of data which include biographic profile, Clinical presentation, duration of symptoms, associated illness, family history, previous surgical history, contraception history, and dietary habits of the patients. All the data was analyzed statistically to see any change in demography of the patients with Gall stone disease.

RESULTS: Female are almost two times more susceptible to have gallstone disease as compare to male i.e. 67.31% and 32.69% respectively. Patients with Increasing age, height, BMI and positive family history have more chances of gallstones. Patients suffering from chronic illness (84.61%) and those who have underwent major surgery (40.38%) in their past also have increased risk to develop Cholelithiasis. Patients consuming diet rich in lipids and carbohydrates (38.46%) were also higher with gallstones.

CONCLUSION: There is a notable change in demographic pattern of our patients with gallstone disease as compare to the literature, which needs further studies.

KEY WORDS: Demographic Variables, gall stones, diet, BMI, age, Risk Factors

INTRODUCTION

The great physician Alexander Trallianus has first described the Gallstones and he reported the calculi within the bile duct. By the 16th century, the Fallopius and Vesalius have reported the gall stones found in the gall bladder of a human body during dissection.

Gallstone disease is a worldwide medical problem with geographical, racial and ethnic variations and there is less prevalence reported in Africans. There prevalence is 3 to 4 times higher among the female and it increases as age advance. Gall stones are rare before 20 year of age and frequency increase as age advances in both sex. In Asian countries, the prevalence of gallstone disease ranges from 3% to 10%. Incidence of Gall stone is increasing worldwide and during last fifty years its prevalence has doubled in Japan and change in prevalence from pigment to cholesterol gall stone has also reported. Similarly, the high prevalence of gallstone disease is also observed in Native American Indians (Pima) in Arizona which is 73% in Pima women around the age of thirty. Clinically, the prevalence of gallstone in Asia has increased in last decade which is coincident with the increased calorie and fat consumption, decreased dietary fiber intake and increase prevalence of the sedentary lifestyle in the Asian population. According to recent studies, the prevalence of gallstone disease in Japan was 3.2% in China10.7%, Northern India 7.1%, and in Taiwan 5.0%. Clinically about 2/3 of the Patients with gall stone remain undiagnosed because they remained asymptomatic throughout their life. Symptoms of gallstones vary from patient to patient and if occurs it could range from abdominal discomfort to biliary colic and jaundice. When the gallbladder with stones gets inflamed, than it can lead to pain, infection and serious complications.

Many studies in literature shows that the gall stone disease has strong relation to multiple factors like age, sex, BMI, parity, diet and metabolic disorders such as diabetes, hyperlipidemia along with socioeconomic status. In past, the Gallstone disease was considered a disease of the West but due to variation in above mentioned factors, the prevalence of gallstone disease is high in western or developed countries as compared to East Asian countries. Due to change in socioeconomic factors and life style modifications, the prevalence of gallstone disease in East Asia is now almost similar to west. Studies has now explain better about the important modifiable risk and non-modifiable risk factors in gallstone pathogenesis. In Pakistan, we are...
family history, previous surgical history, contraception history, and diet history were recoded. Patients with incomplete information's or not willing were excluded from the study. All data was collected by final year MBBS students by asking direct close ended questions or on examination. Data was analyzed in which association of all variable with gall stone disease were analyzed and compared with national and international literature to see any change. For statistical analysis all data was analyzed on SPSS version 20 in which frequencies and percentages were used and confidence interval was calculated of each variable.

RESULTS

A total of 52 patients were studied during the study period. Among them 17 (32.69%) were male and 35 (67.31%) patients were females. Majority of the patients were from 5th decade (n=23, 44.24%) followed by 3rd decade (n=10, 19.30%) of life (Table – I). Among them majority were married 31 (59.61%) followed by Single 14 (26.95%). Regarding educational status, about 17 (32.69%) were metric and 15 (28.84%) were having primary qualification. Among all patients, majority were house wife i.e. 28 (53.84%) followed by employees (Govt/Private) i.e. 14 (26.43%), 05 (9.62%) were doing business and only 04 (7.69%) were students. Most of the participants (n=22, 42.30%) were having income of 10000-20000 rupees/month followed by income of more than Rs. 30000 /month (n=13, 25.0%). Majority of them were living in rural areas (n=34, 65.38%). Regarding BMI of patients, majority of them were overweight (BMI 25-29.9 kg/m²) or obese (30-39.9 kg/m²) i.e. 24 (46.15%) and 15 (28.84%) respectively (Table – II).

### METHODOLOGY

This descriptive analytic study was carried out in the Surgical Department of Al-Nafees Medical College Hospital, Islamabad from 7th June, 2016 to 6th August, 2016 in which all the patients reporting to clinic or admitted with Cholelithiasis were included. The approval for this study was taken from Institutional Review Board Committee (IRBC), Al-Nafees Medical College and Informed consent was taken from the patients before including them in this study. All patients with diagnosed gallstone disease on Ultrasound scan abdomen or on CT scan abdomen were included in the study. A predesigned structured questionnaire was used for collection of data in which hospital ID, age, gender, marital status, parity, occupation, income, education, residence, body mass index, clinical presentation, duration of symptoms, associated illness,
Table – III shows the clinical presentation of the patients. Pain is the commonest symptom (n=43, 82.69%), followed by vomiting and fat intolerance (n=30, 57.69% each), nausea and indigestion (n=22, 42.30% each), bloating (n=15, 28.84%) and dyspepsia (n=13, 25%). Regarding duration of symptoms majority of patients (n=30, 57.69%) had symptoms from less than six months followed by (n=12, 23.01%) with less than one year and (n=10, 19.23%) had symptoms greater than one year. When we inquired about any previous surgical history, (n=21, 40.38%) patients had surgery in their past. Regarding any associated illness, (n=15, 28.84%) were diabetic, (n=9, 17.30%) were hypertensive, (n=6, 11.53%) have cardiac disease and (n=14, 26.91%) were suffering from liver disease. Among all participants in the study, (n=32, 61.53%) have positive response when inquired about history of gallstones in their family. Among female, (n=6, 11.53%) have used oral contraceptive in past. About diet, majority of participants (n=18, 34.62%) were using dairy and meat products regularly during last ten years and (n=20, 38.46%) were in habit of using junk food and fatty food routinely. Only (n=14, 26.92%) were in habit of using more fruits and vegetables in their diet (Table – IV).

<table>
<thead>
<tr>
<th>Clinical presentation</th>
<th>Ci</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>43 (82.69%)</td>
</tr>
<tr>
<td>Fat intolerance</td>
<td>30 (57.69%)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>30 (57.68%)</td>
</tr>
<tr>
<td>Nausea</td>
<td>22 (42.30%)</td>
</tr>
<tr>
<td>Indigestion</td>
<td>22 (42.30%)</td>
</tr>
<tr>
<td>Bloating</td>
<td>15 (28.84%)</td>
</tr>
<tr>
<td>Dyspepsia</td>
<td>13 (25.0%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of symptoms</th>
<th>Ci</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 months</td>
<td>28 (57.69%)</td>
</tr>
<tr>
<td>&lt;1 year</td>
<td>12 (23.07%)</td>
</tr>
<tr>
<td>&gt;1 year</td>
<td>10 (19.23%)</td>
</tr>
</tbody>
</table>

### DISCUSSION

A study conducted by Jorgensen over Danish population shows that the prevalence of gallstones is almost 4 times higher in female during 3rd, 4th decade which reduced to almost twice higher in female after 4th decade group. The prevalence in 3rd decade is 1.8% and 4.8% in male and female respectively which rises up to 2.9% in male and 22.4% in female 6th decade of life. Other studied also shows almost the same results in India the prevalence of gall stone disease is increasing progressively to reach a peak in the sixth decade. Gallstones are rare below 20 years of age and prevalence increase from 3rd to 5th decade i.e. 4% in 3rd decade to 27% in 7th decade among both sexes. Similar trend is also reported by Njeze in his meta-analysis. Our study shows that about 20% of the patients are in 3rd decade of life which is quite high as compared to 3rd decade gallstone frequency reported in literature. Highest frequency of gall stone disease is found in 5th decade in our study i.e. 44.24% which is again high as compared to frequency reported in other parts of the world.

Studies shows that in all populations, regardless of overall gallstone prevalence, female are almost double at risk of developing gallstones during their fertile years but this preponderance become less during postmenopausal period i.e. with increasing age this gender difference gets narrow. Fertile and multiparous women are affected more commonly then the non-fertile women. The female with multiple pregnancies and longer fertility periods reported to have a more likelihood of having gall stones as compared to nulliparous. About 67.31% of female were reported with gallstone disease as compared to 32.69% of male in our study which is 2:1 ratio. In contrary the literature has reported female to male ratio is 4:1 or 3:1. After comparing with literature, the frequency of male is quite high (32.69%) in our study which is quite alarming and needs to be studied further. Among the female, most of them (59.62%) were married and only few of them (11.53%) have used contraceptive in past. Whereas the literature reports oral contraceptives is one of the risk factor in gallstone pathogens. Whereas majority of (88.47%) females in our study has not used oral contraceptives.

Obesity is another important risk factor for gallstone especially cholesterol stones, which is more so for female as compared to male. Different epidemiological studies have found that the risk of gallstones in obesity is strongest in young women, and slimness is protective against gallstone formation. About 60% of patients with gallstone were obese as observed by Ahmed et al in their study. About 46.15% of our patients were overweight and 28.84% were obese. Among all patients, almost ¼th of our patients were either obese or overweight which is again high frequency as compared to international literature. Exposure to western diet, i.e., increase intake of refined carbohydrates, fatty food and reduced fiber content is a potent risk factor for gallstones formation. Calcium, Vitamin C and Coffee consumption seems to be inversely associated with gallstone pathogenesis as reported in literature. Majority
of our patients have bad dietary habits i.e. 34.62% were using more dairy and meat products and 38.46% were using junk food and fatty food routinely. This shows that the dietary habits could be one of the predominant factors in this demographic change of gallstone diseases among our studied population. The exact association of socioeconomic status with gallstones is controversial. It is however, may be an indirect marker for other risk factors like obesity and chronic medical conditions. Studies have proved that the reduced physical activity increases the risk of gallstone disease whereas increased physical activity helps to prevent the cholelithiasis, independent of its role in weight loss. Most of the participants in our study who presented with gallstone disease belong to rural areas (65.38%) and have low socioeconomic background (51.93%). Genetic susceptibility is a key factor in gallstone formation. Familial studies reveal an increased frequency with a nearly five times increased risk in the relatives of patients with gallstone. These rate are even higher in monozygotic twins at 12% and dizygotic twins at 6%. Both autopsy and population based studies clearly prove the existence of racial differences which cannot completely be explained by different environmental or demographic factors. The prevalence of cholesterol stone varies widely, from extremely low (<5%) in Africans and Asian population, to intermediate (10-30%) in Northern American and European peoples, to extremely high (30-70%) among Native American ancestry i.e. Pima Indians in Arizona, Mapuche Indians in Chile. More than 70% of Pima women more than 25 years of age had gallstones or a history of cholecystectomy. High prevalence of gallstone have also reported in other North American Indian tribes, including the Chippewas, Navajo, Micmacs, and Cree-Ojibwas. Ahmed and colleagues also reported strong family history in his study population. In our study, about 61.53% of the patients gave history of gall stone among their family members or first relatives in family. Frequency of this association is again high in our studied population as compared to literature. The diabetics generally have high levels of triglycerides in blood which may increase the risk of gallstones. In addition, the Gallbladder function is also impaired in patients with diabetic neuropathy, and hyperglycemia regulation with insulin considered to raise the lithogenic index. Different studies shows higher prevalence of gall stones in diabetics, chronic liver disease and dyspeptic symptoms. About 28.84% of the patients in our study were diabetic and 26.92% have liver disease. Most patients with gallstones usually have no symptoms and these gallstones are called “silent stones” which may not require treatment. The symptomatic stones commonly present with recurrent episodes of right-upper-quadrant or epigastric pain which is probably due to impaction of stone in cystic duct. This may cause nausea and vomiting or dyspeptic symptoms. A patient may also experience intolerance to fatty food and often, the attacks typically occurs after a fatty meal and almost always happen at mid night. Pain is the dominant symptom in 82.69% of patients in our study. Other commonest symptoms were vomiting, fat intolerance indigestion and nausea. Almost 40.38% of the patients in our study had history of previous surgery in their past and among them C-section is the commonest (17.30%) in female. Previous surgery may be associated with gallstone but it is not yet proved in literature. Epidemiological studies have showed a marked variation in prevalence between different populations. Gallstone is the disease which is less prevalent in developed nations, but it is more prevalent in the developing populations that mostly consume traditional diets. In our study it was noticed that most of the patients with gall stones were males (58%). the age group in which most of the patient’s presents to our study setup was 41 to 60 years which shows that prevalence and males are now equal or more prone to have Cholelithiasis.

CONCLUSION

There is a notable change in demographic pattern of our patients with gallstone disease as compare to the literature, which needs further studies.

Limitation of Study:
This is a small scale and single center study, which needs further multi-center large scale studies.

Contribution of Author:
Ahmed W: Designed Research Study, Data Collection, Statistical Analysis, Manuscript Writing, Literature Review.
Iqbal M: Data Collection, Statistical Analysis, Literature Review
Ahmed I: Conceived the Idea, Manuscript Final Reading and Approval

Disclaimer: None.
Conflict of Interest: None.
Source of Funding: None.

REFERENCES