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Original Research Article

Gall bladder specimen histopathological findings after cholecystectomy

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ABSTRACT

Background: Cholecystitis is a generally widespread problem in adult population. Multiple finding has been found in gross and microscopic examination of gallbladder. Existence of stones is one of the known causative factors that lead to histopathological changes in gallbladder. It is also responsible for the development of gallbladder carcinoma. The purpose of this study was to find out the histopathology of gall bladder specimens following surgical intervention.
Methods: This observational study included 116 patients admitted in the department of general surgery, PMCH, Patna with acute or chronic cholecystitis from August 2018 to July 2019. Written and informed consent was taken from all the participants. Data was analyzed using SPSS version 20.
Results: A total of 116 gallbladder specimens that presented for histopathological examination during the study period were included into the study, with male to female ratio of 1:3. The highest prevalence was found in the age group of 31-50 years. The results of histopathological examination of these gallbladder specimens showed that chronic cholecystitis was found in 93 (80.1%), acute cholecystitis in 17 (14.6%), and dysplasia was found in 5 (4.3%) patients, and gall bladder carcinoma was detected in 1 (0.8%) patients. On morphological analysis, the commonest gall stones were made up of cholesterol and the most common lesion was chronic cholecystitis by histopathology.
Conclusions: This study concludes that the chronic calculus cholecystitis was dominant in our population. It is assumed that routine histopathological examination following cholecystectomies essential for all gallbladder specimens even in the non-existence of macroscopic signs of carcinoma, which was the case in our patients.

Keywords: Gall bladder, Histopathology, Cholecystitis, Cholecystectomy, Gangrenous chole-cystitis, Dysplasia, Cholestrolosis, Gall bladder carcinoma

INTRODUCTION

Gallbladder is a small pear-shaped sac that stores and helps to concentrate bile. It is linked to the liver (which forms the bile) by hepatic duct. When food comprising fat enters into the small intestine, the hormone cholecystokinin is formed by discrete endocrine cells in intestinal wall and is transferred to the gall bladder through the bloodstream. Due to this hormone, gall bladder contracts, forcing bile into common bile duct that aids in digestion of fat.[1]

Occasionally the substances contained in bile come together and crystallize in the gall bladder that produces gallstones. These tiny, solid concretions are more frequent in an individual over age of 40, especially in women and overweight people. They are responsible for irritation of the gall bladder's mucosal wall that can create hurdles to biliary tree and are responsible for swelling of gall bladder mucosa. A severe episode of pain also occurs throughout this period.

Gall stone disease (GSD) has a high prevalence in the western world as well as in our country. 10% of adult patients have no symptoms of gall stones. The prevalence

is affected with age, sex and ethnic group.[2] GSD was formerly regarded as the disease of western population, due to changes in pattern of food utilization, but in the developing countries, it has now become an increasingly common cause of morbidity.[3] In the developed countries like UK, USA and Italy the rate of recurrence has been reported 10% to 20%.[4]

Gall stones differ in their composition, most of them are composed of cholesterol, the remaining being mixed and can be pigmented. Generally, cholesterol stones are the most common type. Stones that are having rich in bilirubin are known as pigment stones. Persistent gall stones also responsible to be a common risk factor in formation of carcinoma of gall bladder.[5]

It is confirmed that multiple risk factors are involved in GSD, which includes ageing, gender, dietary habits, intake of high calorie, low fiber diet, refined carbohydrates in high amount, lack of physical activity, pregnancy, parity, heavy weight and obesity.[6] Furthermore, the risk of disease increases with the increasing age in both male and female with a high rate of incidence from the range of 40 to 50 years of age.[7] It is stated that the ratio of females is three times more than males for this disease. A mnemonic for remembering the risk factors linked with gall- stones is female, fat, fertile and forty. Symptoms of cholelithiasis are presented in the form of pain in the upper abdomen, indigestion to fatty food, nausea or vomiting, mass felt in right hypochondrium. Female gender with increasing age is an important risk factor for the gall stone formation. Risk factors that can be changeable are obesity, inactive life style result in hypomotility of gall bladder. Overweight patients have increased chances of cholecystitis.

Cholecystitis is one of the frequent problems that lead the patients to surgical intervention and in an emergency. Inflammation of gall bladder can be acute, chronic or acute on chronic cholecystitis. Presence of gall stones is the leading cause of cholecystitis in most of the cases.[8]

Gall bladder containing stones must be surgically removed because if they persist having a potential risk of formation of malignant disease. Pathological changes can differ from inflammation to malignancy. Analysis of histopathology of gall bladder specimen is therefore compulsory for diagnosis of early carcinomas. Early diagnosis gives a good prospect of outcomes in patients with gallbladder carcinoma especially that discovered in stage-I disease.

A diverse histopathologic change that occurs in GSD is gall bladder mucosal changes like acute inflammation, chronic inflammation, granulomatous inflammation, dysplasia and carcinoma. The mucus of gall bladder plays a regulatory role in gall stone formation as it regulates and supports the nucleation of stones. Mucus, calcium and lipids are combined to form the gallstones.[9]

The study focuses to enumerate the various consequences of routine examination of gall bladder specimen following cholecystectomy. A variety of patterns of histopathological changes can be evaluated and most probable risk factors can be investigated in order to reduce the chances of disease.

METHODS

This observational study was done in department of general surgery, PMCH, Patna from August 2018 to July 2019. Written and informed consent was taken from all participants. Data was analyzed using SPSS version 20.

Patients with confirmed cases of carcinoma gallbladder, on clinical findings and that were confirmed by ultrasonography or CT scan, were excluded from the study. Gallbladders showing gross abnormalities that were indicative to localized or infiltrative malignancy during surgery were also excluded.

The inclusion criteria were, all the cases of elective or emergency cholecystectomy, done for chronic or acute cholecystitis, including all age groups. Pre-operative assessment was done with a complete detailed history and thorough clinical examination of the patients. The systemic analysis was done in order to assess any co-morbidity. Baseline and particular investigation especially ultrasonography of the abdomen was done in all patients.

Laparoscopic cholecystectomy was carried out in all cases but had to be changed into open procedure in the minority of cases where anatomical alteration and dense adhesions hindered any further procedure of laparoscopic cholecystectomy. All gallbladder specimens, also including those with no noticeable gross anomaly, were sent for histopathology. Data was analyzed using SPSS version 20.0.

RESULTS

The 116 patients with symptomatic gallstones were admitted for cholecystectomy. There were 92 (80%) females and 24 (20%) males with a male to female ratio of 1:3.8. The age ranged from 19 to 80 years.

Table 1: Symptomatic gallstones admitted for cholecystectomy.

Sex	N (%)
Male	24 (20)
Females	92 (80)

Majority of patients presented with upper abdominal pain of varying duration. Only few cases were without gallstones.

Table 2: The histopathological findings.

Variables	N (%)
Chronic cholecystitis	93 (80.1)
Acute cholecystitis	17 (14.6)
Dysplasia	5 (4.3)
Carcinoma	1 (0.8)

The results of histopathological examination of these gallbladder specimens showed that chronic cholecystitis was found in 93 (80.1%), acute cholecystitis in 17 (14.6%), and dysplasia was found in 5 (4.3%) patients, and gall bladder carcinoma was detected in 1 (0.8%) patient.

Table 3: Surgery.

Surgery	N (%)
Laproscopic cholecystectomy	89 (76.7)
Open cholecystectomy	27 (23.3)

Laparoscopic cholecystectomy was performed in all cases but had to be converted to open procedure in few cases 27 (23.2%) where anatomical alterations and dense adhesions stopped any further progress in laparoscopic cholecystectomy.

DISCUSSION

It was also obvious that the frequency of gall bladder disease was more in females in comparison with males, particularly during the pre-menopausal phase. This finding is consistent with the previous studies.[10] The difference is due to the in- creased levels of estrogen which is known as the primary sex hormone in the female gender. The elevated levels of estrogen augment the excretion of cholesterol in bile which in turn increases its saturation resulting in the development of cholesterol gallstone.[11]

In our study, GSD was predominantly found in females (80%) as compared to males (20%). Female sex hormones play an important role, in particular between the ages of 30 and 50 years.

Associated chronic cholecystitis was seen in 85.3% of cases in the Zafar study.[12] These results have coincided with results of our study that proved 80.1% cases were associated with chronic cholecystitis.

Persistent chronic inflammation, infection, and stones that retained for a longer period of time are presently believed to be the causes of malignant change in the epithelium of gallbladder. Carcinoma of gallbladder was detected in 1 (0.8%) of cholelithiasis cases. Prolonged chronic inflammation that is caused by gallstones are responsible for this association. On the other hand, only inflammation at the gallbladder wall is generally not a definite sign as it can also be found in chronic inflammatory diseases.

Our results showed that the frequency of chronic cholecystitis was the most common pathology among the diseases associated with unpredicted gallbladder cancer and our results are consistent with this fact.

The incidence of gallbladder malignancy in our study was significantly low as compared to other studies.[13] The low prevalence of carcinoma cases in our study can be attributed to high sensitivity to exclusion criteria, where all patients with any indication of malignancy before the operation were excluded from the study.

In addition, low incidence of malignancy in our patients can also be due to increased recognition and early decision taking for laparoscopic cholecystectomy. We therefore recommend to send every specimen for histopathology, to detect carcinoma in early stage, which is usually curable.

CONCLUSION

This study concluded that the most generally involved age group for cholelithiasis was found between 30-50 years. Female were more frequently affected as compared to males. Cholelithiasis was found as the most common causative factor, for causing carcinoma gallbladder, thus, histopathology of the gallbladder specimens after cholecystectomy is very important, to detect and treat the gallbladder carcinoma early.

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