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Spectrum of Histopathological Findings of Gall Bladder Diseases at A Tertiary Level Hospital of Nepal

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ABSTRACT

Background

Gallbladder diseases are a significant cause of morbidity, with chronic cholecystitis being the most prevalent histopathological diagnosis. This study highlighted the importance of routine histopathological evaluation of the gallbladder specimens while assessing the histopathological spectrum of gallbladder diseases in patients undergoing cholecystectomy at Bharatpur Hospital, Nepal.

Methods

An observational study was conducted including 200 gallbladder specimens from patients who underwent cholecystectomy between March 2022 and March 2023 at Bharatpur hospital, Chitwan, Nepal. Specimens were processed using standard histopathological techniques, including fixation in 10% formalin and Hematoxylin & Eosin staining. Data were processed in Microsoft Excel and analyzed using Stata/BE version 18.0.

Results

The participants in the study aged between 8 to 78 years with mean age 41.87 ± 14.36. Among them 158 participants were females (79%) and 42 were males (21%). Chronic cholecystitis was the most common diagnosis (74.5%), observed in 115 females (73.0%) and 34 males (81.0%). Chronic cholecystitis with cholesterolosis was noted in 20% of cases, more frequent in females (20.9%) than males (16.7%). Rare findings, including adenomyosis, pyloric metaplasia, and intestinal metaplasia, were predominantly observed in females.

Conclusions

Chronic cholecystitis, either alone or with associated features, was the predominant histopathological diagnosis in this study. However, routine histopathological evaluation of gallbladder specimens should be carried out to ensure appropriate diagnosis of pathological conditions associated with gallbladder.

Keywords: cholecystectomy; chronic cholecystitis; gallbladder; histopathological evaluation.

INTRODUCTION

Cholecystectomy is widely performed in tertiary hospitals of Nepal to manage gallbladder diseases.[1] A routine systematic histopathological evaluation following cholecystectomy is crucial for accurate diagnosis and therapeutic decision-making.[2] This is particularly important in recent trends of increasing incidences of gallbladder diseases among young populations.[3] The diseases encountered in gallbladder are gall stones, cholecystitis, polyps, adenomyomatosis, and carcinoma. Among them the most prevalent pathology is gall stone, which may complicate as biliary colic, cholangitis, and pancreatitis.[4] Despite advancements in radiological diagnostic technology, differentiation between benign and malignant lesions often remains challenging and requires appropriate histopathological evaluation.[5] Furthermore, incidental findings in cholecystitis cases underscores the necessity of routine examination of post-cholecystectomy specimens for appropriate diagnosis of gallbladder diseases.[6] The aim of this study is to analyse current histopathological trends of gall bladder diseases among the patients who underwent cholecystectomy at a tertiary level hospital in Nepal.

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METHODS

This retrospective observational study was conducted in the department of pathology, Bharatpur Hospital, Chitwan, Nepal over a period of March 2022 till March 2023. The ethical clearance for the study was approved by the Institutional Review Committee (IRC) Bharatpur Hospital (Ref No. 080/081-007). A total of 200 gall bladder samples from patients who underwent cholecystectomy at Bharatpur hospital during the study period were included in the study. All patients admitted in the department of surgery at Bharatpur hospital who underwent cholecystectomy and with complete details and histopathological diagnosis were included in the study. The samples with incomplete patient details and histopathological diagnosis were excluded from the study. The gall bladder specimens received in the department for histopathological analysis were processed according to the standard operating procedure (SOP) of the department of pathology at Bharatpur hospital. The gallbladder specimens were fixed in 10% formalin, and grossing was done to obtain sections from the fundus, body, and neck of gallbladder and processed. Furthermore, additional samples were procured from regions exhibiting grossly visible abnormalities. Routine Hematoxylin and Eosin staining was carried out as per the SOP of the department of pathology, Bharatpur Hospital. The prepared slides were evaluated by a specialist pathologist to provide a histopathological diagnosis. A copy of the final reports was archived in the records of the pathology department of Bharatpur Hospital.

Gallbladder report data during the study period were extracted from the departmental register following approval from the Institutional Review Committee at Bharatpur Hospital. Patient details and the histopathological reports obtained from the register of department of pathology were first written in a predesigned proforma and then entered into Microsoft Excel for initial data processing. Descriptive data analysis was performed using Stata/BE version 18.0.

RESULTS

A total of 200 histopathological reports from the individuals presented to the hospital for cholecystectomy during the study period were included in this study. Age of the participants in this study ranged between 8 years to 78 years. The mean age of the participants was 41.87 years, with a standard deviation of 14.36 years, reflecting a wide and diverse age distribution. There was a marked predominance of female participants in the study comprising 79% (n=158) female participants and remaining were male participants i.e. 21% (n=42) (Figure 1).

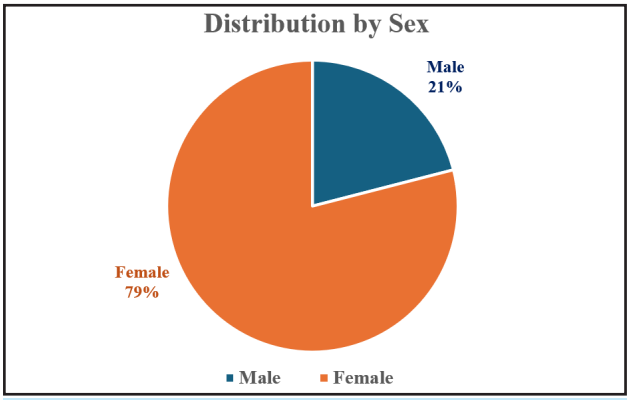

Figure 1. Sex distribution.

Table 1 demonstrates the frequency of histopathological diagnosis of gallbladder diseases. The most common diagnosis was chronic cholecystitis, which was identified in 149 cases, accounting for 74.5 percent of the sample. Chronic cholecystitis with cholesterolosis was observed in 40 cases, representing 20 percent of the sample, while chronic cholecystitis with adenomyosis was noted in 4 cases, comprising 2 percent of the total. Chronic cholecystitis with cholesterol polyp was identified in 2 cases, or 1 percent of the sample. Chronic

Table 1. Histopathological diagnosis.

Diagnosis	Frequency (%)
Chronic cholecystitis	149 (74.5%)
Chronic cholecystitis with cholesterolosis	40 (20%)
Chronic cholecystitis with adenomyosis	4 (2%)
Chronic cholecystitis with cholesterol polyp	2 (1%)
Chronic cholecystitis with pyloric metaplasia	2 (1%)
Acute on chronic cholecystitis	1 (0.5%)
Chronic cholecystitis with intestinal metaplasia	1 (0.5%)
Chronic cholecystitis with adenomyosis and pyloric metaplasia	1 (0.5%)

cholecystitis with pyloric metaplasia was present in 2 cases, corresponding to 1 percent, and acute on chronic cholecystitis was identified in 1 case, representing 0.5 percent. Chronic cholecystitis with intestinal metaplasia and chronic cholecystitis with adenomyosis and pyloric metaplasia were each identified in 1 case, both accounting for 0.5 percent of the sample. Overall, chronic cholecystitis, either in isolation or associated with other features, was the predominant diagnosis, encompassing 94 percent of cases.

Figure 2 represents the histopathological diagnosis of gallbladder lesions with respect to gender of the participants. The most common diagnosis was chronic cholecystitis, which affected 115 females (73.0%) and 34 males (81.0%), with a slightly higher proportion in males. Chronic cholecystitis with cholesterolosis was observed in 33 females (20.9%) and 7 males (16.7%).

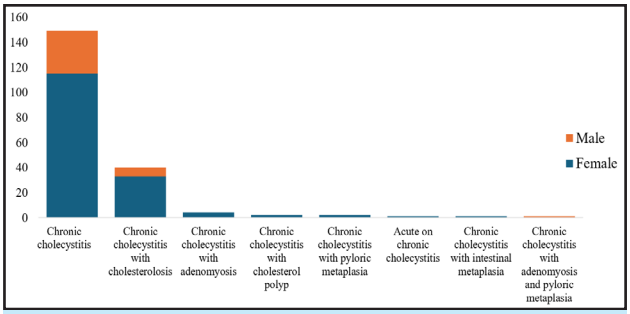

Figure 2. Histopathological distribution by sex.

Other diagnoses, such as chronic cholecystitis with adenomyosis, cholesterol polyp, pyloric metaplasia, and intestinal metaplasia, were only found in females. However, one case of chronic cholecystitis with adenomyosis and pyloric metaplasia was found in male.

DISCUSSION

Gallbladder diseases are one of the commonest diseases presenting in tertiary hospital in Nepal. Postoperative histopathological evaluation of cholecystectomy specimens is crucial for appropriate diagnosis of gallbladder diseases. In the present study, the age of participants ranged from 8 to 78 years, with a mean age of 41.9 ± 14.4 years. Similarly, an observational study by Pathak et al. reported an age range of 16 to 63 years, with a mean age of 40.54 ± 10.88 years.[7] The sex distribution in the study demonstrated a marked predominance of female participants, accounting for 79% (n = 158), compared to 21% (n = 42) male participants, resulting in a male-to-female ratio of 1:3.76. In the study by Pathak et al., among the 127 patients, 94 (74.0%) were female and 33 (26.0%) were male, with a male-to-female ratio of 1:2.8.[7] In another observational study by Kulkarni et al., females constituted 65.22% and males 34.78% of the total cases, resulting in a male-to-female ratio of 1:1.88.[8] The higher incidence among female participants aligns with the increased occurrence of gallstones and chronic cholecystitis in women, potentially due to hormonal influences that enhance cholesterol saturation in bile, promoting gallstone formation.[9] In the present study, chronic cholecystitis was the most common condition, observed in 149 cases (74.5%). This was followed by chronic cholecystitis with cholesterolosis in 40 cases (20%), and chronic cholecystitis with adenomyosis in 4 cases (2%). Chronic cholecystitis with pyloric metaplasia and chronic cholecystitis with cholesterol polyp was noted in 2 cases (1%) each, while acute on chronic cholecystitis, chronic cholecystitis with intestinal metaplasia, and chronic cholecystitis with both adenomyosis and pyloric metaplasia each accounted for 1 case (0.5%). The study conducted by Kulkarni et al. identified chronic calculus cholecystitis as the most common histopathological diagnosis (57.76%), followed by chronic acalculus cholecystitis (22.36%).[8] Additionally, the study by Pathak et al. found chronic cholecystitis to be the predominant non-neoplastic lesion, accounting for 68.5% of inflammatory lesions, followed by cholesterolosis (7.87%) and chronic cholecystitis with adenomyosis and pyloric metaplasia (6.3% each).[7]

Our study demonstrated that chronic cholecystitis, chronic cholecystitis with cholesterolosis, and chronic cholecystitis with adenomyosis and pyloric metaplasia affect both sexes. This finding is consistent with the study by Deo et al., which reported that 80.1% females and 19.9% of males underwent cholecystectomy for gallbladder diseases.[1] This aligns with the metabolic risk factors associated with occurrence of gallstones and chances of malignancy among both sexes. Despite being more prevalent in females, gallbladder diseases pose a significant health

burden among males necessitating a comprehensive histopathological evaluation of all cholecystectomy specimens, irrespective of sex to enhance diagnostic accuracy.[2,3,10]

CONCLUSIONS

In conclusion, chronic cholecystitis was the most prevalent histopathological diagnosis, with a higher incidence observed among female patients. Moreover, histopathological evaluation of cholecystectomy specimens should be routinely performed to enhance diagnostic accuracy and ensure appropriate clinical management of gallbladder diseases in tertiary hospital of Nepal.

Limitations

The generalizability of this study might be limited due to its limited sample size and duration of study. A large-scale, prospective study with a more diverse and expansive cohort is needed in order to enhance diagnostic accuracy and maximize management strategies for gallbladder diseases.

Conflict of interest: None

Funding: None

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