ORIGINAL ARTICLE

Histopathological Findings in Cholecystectomy Specimens of Gallbladder in a Tertiary Care Hospital in Kathmandu: A Descriptive Cross-Sectional Study

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Abstract

Introduction: Gallbladder specimen is frequently examined in a surgical pathology practice. It presents with a wide spectrum of lesions on histopathology. The gallbladder is among the most common organs where incidental carcinoma can occur. The study aimed to determine the various histopathological spectrum of gallbladder specimens and their prevalence in a tertiary care hospital in Kathmandu.

Methods: This cross-sectional study was conducted in the Pathology department of a tertiary care hospital between January 1, 2023, and December 30, 2024. Ethical approval (Reference number: NAPFH-037/2024) was granted by the Institutional Review Committee. All patients who had undergone cholecystectomy were included in the study. An enumerative sampling technique was used. Data were analyzed with Microsoft Excel and Statistical Package for the Social Sciences version 17.

Results: Out of 400 cholecystectomy specimens, the most common histopathological finding was chronic cholecystitis, with specific findings in 270 (67.50%) cases. 11 (2.75%) cases of dysplasia and one (0.25%) case of gallbladder adenocarcinoma were found. There were 125 (31.25%) males and 275 (68.75%) females. Male to female ratio was 1:2.2. The age ranged from 15 to 83 years, and the mean age was 44.32±13.55 years. Maximum number of lesions of gallbladder was observed in the 30-39 years age group, with 136 (34%) cases.

Conclusions: The prevalence of chronic cholecystitis with specific finding is high among histopathological findings of gallbladder specimens. Gallbladder diseases are more common in third to fourth decades with female preponderance. Incidental gallbladder carcinoma though rare may present in the routine histopathology of gallbladder specimens.

Keywords: *adenocarcinoma; cholecystitis; cholecystectomy; gallbladder; pathology.*

Introduction

Gallbladder specimen is one of the most frequently examined after resection in surgical pathology.[1] Cholelithiasis is a common disorder in developed countries affecting 10-20% of the adult population.[2] There are various changes in histopathology in the mucosa of the gallbladder- namely, acute inflammation, granulomatous inflammation, chronic inflammation, dysplasia, cholesterolosis,

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hyperplasia, and carcinoma.[3]

Gallbladder inflammatory lesions are common than other lesions, and carcinoma of the gallbladder is of rare etiology.[4] It is standard practice in the United Kingdom to send all the specimens of the gallbladder for routine histopathology to rule out malignancy.[5] All the specimens of the gallbladder should undergo routine histopathology, as significant pathology may occur with a macroscopically normal gallbladder.[6] The selective approach for gallbladder specimens sent to the histopathology laboratory results in chances of missing premalignant benign lesions like porcelain gallbladder, intraepithelial neoplasia and early carcinoma.[7]

This study aimed to determine the spectrum of histopathological findings in cholecystectomy specimen of gallbladder and its prevalence in a tertiary care hospital.

Methods

This cross-sectional study was conducted in the Pathology department at Nepal APF Hospital, Kathmandu. Data of histopathological reports of cholecystectomy specimens between January 1, 2023, and December 30, 2024, were taken from the medical record section. Ethical approval (Reference number: NAPFH-037/2024) was granted by the Institutional Review Committee. Patients with incomplete records and patients with known biliary malignancy were excluded. An enumerative sampling method was employed.

The specimens of the gallbladder were fixed immediately in neutral-buffered 10% formalin for fixation for about 24 hours. From the fundus, body, and neck of the gallbladder, each section was taken. The sections were kept in labelled tissue cassettes and processed in Myr Spin Tissue Processor STP 120. Blocks were made after tissue processing. 3-4 micron-thick sections were cut from each block and were stained using Hematoxylin and Eosin (H&E) stains. Thoroughly and carefully, the slides were examined, and all histopathological findings were noted. The medical record sheet of patient was used for details of demography and findings of histopathology. Data were analyzed with Microsoft Excel and Statistical Package for the Social Sciences version 17.

Results

Out of 400 cholecystectomy specimens over two years period, chronic cholecystitis with specific findings were 270 (67.50%), chronic cholecystitis without specific findings 112 (28%), carcinoma one (0.25%) case (Table1). There were 125 (31.25%) male and 275 (68.75%) female. Male to female ratio was 1:2.2. The age ranged from 15 to 83 years. The mean age was 44.32±13.55 years.

Gallbladder lesions were most commonly found in individuals aged 30–39 years, with 136 cases (34%) reported (Table 2).

Table1: Distribution of gallbladder lesions with respect to gender (n=400).

Diagnosis	Gender n(%)		Total
	Male	Female	
Chronic Cholecystitis with specific finding			
Cholesterolosis	42(10.50)	95(23.75)	137(34.25)
Pyloric metaplasia	27(6.75)	52(13)	79(19.75)
Intestinal metaplasia	9(2.25)	24(6)	33(8.25)
Adenomyomatosis	2(0.50)	17(4.25)	19(4.75)
Xanthogranulomatosis	-	2(0.50)	2(0.50)
Chronic Cholecystitis without specific finding	36(9)	76(19)	112(28)
Acute Cholecystitis	3(0.75)	3(0.75)	6(1.50)
Dysplasia	5(1.25)	6(1.50)	11(2.75)
Carcinoma	1(0.25)	-	1(0.25)

Table 2: Gallbladder lesion distribution according to age group (n=400).

Age group (years)	n(%)
10-19	2(0.50)
20-29	37(9.25)
30-39	136(34)
40-49	90(22.50)
50-59	64(16)
60-69	57(14.25)
70-79	12(3)
80-89	2(0.50)

Discussion

Chronic cholecystitis with specific findings is the most common finding in gallbladder histopathology in our study. Specific findings like pyloric metaplasia, cholesterolosis, intestinal metaplasia, adenomyomatosis, and xanthogranulomatosis occur with chronic cholecystitis. These findings are similar to the common specific findings of chronic cholecystitis of the other studies.[8-10] Acute cholecystitis was found in 1.50% cases only, which shares similarity with a study done by Beena D et al.[11] In contrast, other studies found more number of acute cholecystitis up to 20%.[10, 12] These differences may be due to patient selection, study population or diagnostic criteria. Gallbladder mucosa may show various degrees of changes in epithelial lining, which include hyperplasia, atrophy, and metaplasia.[13] The prevalence of pyloric metaplasia was 19.75% whereas intestinal metaplasia was 8.25% which shows similarity with a study done by Khanna R et al.[13] But the prevalence of pyloric metaplasia was high (59.50%) in Mukhopadhyay S et al.[14] The precursor lesion of dysplasia and carcinoma has been documented as gallbladder metaplasia.[14] In our study, there were only 11 (2.75%) cases of dysplasia, which is similar to Talreja V et al.[9] But in contrast, study done by Mukhopadhyay S et al. shows dysplasia in 5%.[14] Xanthogranulomatosis prevalence was 0.50%, which is comparable to other studies.[9-11] While the prevalence was 6% in Kafle SU et al, which is greater than that of our study.[8] In our study, there was an incidental gallbladder carcinoma one (0.25%) case, which is in concordance with Talreja V et al.[9] In this study, gallbladder carcinoma was seen in the fourth decade of life. However, not a single gallbladder carcinoma was found among 732 cases in the Awasthi N et al. study.[2] In contrast, a study done by Vahini G et al. shows 4.50% cases of gallbladder carcinoma.[10] This emphasizes the routine histopathology of a grossly normal gallbladder, as incidental gallbladder carcinoma is not uncommon.

Gallbladder lesion is more common in 30-39 years age group which is comparable to many other studies.[8,15,16] In contrast other studies show more common in fourth decade.[2, 10, 11] Female preponderance is common and is also reported by several studies.[2,8,10-13,15,16] The estrogen, is a female hormone which increases the risk of gallstone formation and produces various changes in histopathology of gallbladder mucosa.[17]

The single center study findings may not be generalizable to the entire population. We recommend that the study needs to be backed up by further large-scale studies for more generality of the results. Also, biochemical tests of gallstones must be carried out for the possible etiopathogenesis of cholelithiasis.

Conclusions

The prevalence of chronic cholecystitis with specific finding is high among histopathological findings of gallbladder specimens. Gallbladder diseases are more common in third to fourth decades with female preponderance. Incidental gallbladder carcinoma though rare may present in the routine histopathology of gallbladder specimens.

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Conflict of Interest

The authors declare no competing interest. Rajendra Maharjan is currently serving as Editor of Medical Journal of Armed Police Force Nepal. He was not involved in the editorial review or decision-making for this manuscript.

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References

1. Ghartimagar D, Shrestha MK, Jhunjhunwala A, Ghosh A, Thapa S, Regmi S, et al. Non-Neoplastic Lesions of Gallbladder Among Cholecystectomy Specimens of a Tertiary Care Center: A Descriptive Cross-Sectional Study. J Nepal Med Assoc. 2021 Oct 31;59(242):970–4. DOI: 10.31729/jnma.5861

2. Awasthi N. A Retrospective Histopathological Study of Cholecystectomies. Int J Health Allied Sci. 2015 Jul 1;4(3):203-6. DOI: 10.4103/2278-344x.160902
3. Baidya R, Sigdel B, Baidya NL. Histopathological Changes in Gallbladder Mucosa Associated With Cholelithiasis. J Pathol Nep. 2012;2(3):224–5. DOI: 10.3126/jpn.v2i3.6027
4. Thukral S, Roychoudhury AK, Bansal N, Rani E. Histopathological Spectrum of Gall Bladder Lesions in a Tertiary Care Hospital in the Malwa Belt: A Hospital-Based Study. Ann Pathol Lab Med. 2018;5:878–81. DOI: 10.21276/apalm.2192
5. Jamal K, Ratansingham K, Siddique M, Nehra D. Routine Histological Analysis of a Macroscopically Normal Gallbladder: A Review of the Literature. Int J Surg. 2014 Sep 1;12(9):958–62. DOI: 10.1016/j.ijsu.2014.07.010
6. Howat A, Boyd K, Douce G. Histopathology of Limited or No Clinical Value. London (GB): Royal College of Pathologists; 2002. DOI: 10.1136/jcp.55.11.850
7. Underwood JC. A Recovery Plan for Histopathology. R Coll Pathol Bull. 2001;113:12–4. DOI: 10.1046/j.1365-2559.2001.01175.x
8. Kafle SU, Sinha AK, Pandey SR. Histomorphology Spectrum of Gall Bladder Pathology in Cholecystectomy Specimens With Clinical Diagnosis of Chronic Cholecystitis. J Nepal Med Assoc. 2013 Nov-Dec;52(192):600–7. DOI: 10.31729/jnma.2434
9. Talreja V, Ali A, Khawaja R, Rani K, Samnani SS, Farid FN. Surgically Resected Gall Bladder: Is Histopathology Needed for All? Surg Res Pract. 2016;2016:9319147. DOI: 10.1155/2016/9319147
10. Vahini G, Premalatha P, Mathi A, Krishna R, Renuka IV. A Clinicopathological Study of Gallbladder Lesions. IOSR J Dent Med Sci. 2015 Feb;14(2):15–20. DOI: 10.5958/2394-6792.2015.00013.7
11. Beena D, Shetty J, Jose V. Histopathological Spectrum of Diseases in Gallbladder. Natl J Lab Med. 2017 Oct;6(1):6–9. DOI: 10.24041/ejmr2024.5
12. Islam MJ, Akter S, Talukder AR, Haque MS. Role of Routine Histopathology of Gallbladder Specimen From Gallstone Disease to Detect Unsuspected Carcinoma. J Bangladesh Coll Physicians Surg. 2019 Sep 30;37(4):186–90. DOI: 10.3329/jbcps.v37i4.43348
13. Khanna R, Chansuria R, Kumar M, Shukla HS. Histological Changes in Gallbladder Due to Stone Disease. Indian J Surg. 2006 Aug 1;68(4):201–4. Available from: https://www.researchgate.net/publication/27796404_Histological_changes_in_gallbladder_due_to_stone_disease
14. Mukhopadhyay S, Landas SK. Putative Precursors of Gallbladder Dysplasia: A Review of 400 Routinely Resected Specimens. Arch Pathol Lab Med. 2005 Mar 1;129(3):386–90. DOI: 10.5858/2005-129-386-ppogda
15. Mohan H, Punia RP, Dhawan SB, Ahal S, Sekhon MS. Morphological Spectrum of Gallstone Disease in 1100 Cholecystectomies in North India. Indian J Surg. 2005 Jun;67(3):140–2. DOI: 10.18203/2349-2902.isj20205821
16. Shrestha R, Tiwari M, Ranabhat SK, Aryal G, Rauniyar SK, Shrestha HG. Incidental Gallbladder Carcinoma: Value of Routine Histological Examination of Cholecystectomy Specimens. Nepal Med Coll J. 2010 Jun 1;12(2):90–4. Available from: https://pubmed.ncbi.nlm.nih.gov/21222405/
17. Rawla P, Sunkara T, Thandra KC, Barsouk A. Epidemiology of Gallbladder Cancer. Clin Exp Hepatol. 2019 May 23;5(2):93–102. DOI: 10.5114/ceh.2019.85166

Bios

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