Original Article

Prevalence of gallbladder diseases at Khairpur, Pakistan: A histopathological approach

Javed Ali Lakho, Aneela Taj, Shameem Bhatti, Mushtaque Ahmed Mangrio

Department of Histopathology, Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences, University of Karachi, Pakistan

Objective: To study the incidence, risk factors and frequency of cholelithiasis and cholecystitis in the population of district Khairpur, Pakistan.

Methodology: A population based study was conducted in Department of Histopathology, PAQSJIMS, Gambat, Khairpur from January 2017 to August, 2018. A total of 56 cholecystectomy patients were included in the study. Post-surgery, gallbladder specimens were analyzed for histopathological spectrum after H&E stain. Microscopic observations were recorded.

Results: Out of 56 samples, 19.65% were from male whereas 80.35% from females. Chronic cholelithiasis (1.68%), chronic cholecystitis (22.96%), chronic cholecystitis with cholelithiasis (6.16%) and chronic ulcerated cholecystitis (0.56%) were the most common diagnoses. 16.07% of the male and 57.14% of female patients were found to be suffering from chronic cholecystitis. Age group 36 to 45 years was more prone to the gall bladder disease. Dyspepsia (92.85%) was the most common symptom. Focal ulceration and accumulation of acute and chronic inflammatory cells were observed both beneath the epithelium and subepithelium of the gallbladder.

Conclusion: The histopathological spectrum of gallbladder after cholecystectomy in district khairpur was observed to be quite diverse. The most dominant diagnosis was chronic cholecystitis followed by chronic cholecystitis with chronic cholelithiasis and chronic cholelithiasis whereas the chronic ulcerated cholecystitis was rarely observed. (Rawal Med J 202;46:327-330).

Keywords: Gallstones, chronic cholecystitis, histopathology.

INTRODUCTION

Cholelithiasis and cholecystitis are the common manifestations associated with gallbladder.[1] Nonetheless, chronic gallstones are known to be the most important risk factor of cholecystitis that may even lead to the gallbladder cancer.[2] Its prevalence is reported to be high in Western or developed countries as compared to Eastern and Asian countries at present. In particular, prevalence of gallbladder diseases (GDs) is rising gradually in Pakistani population.[3-5] Out of 100,000 individuals, 11.3 possess the risk of incidence of cholelithiasis in southern parts of Pakistan.[1,6,7]

A number of studies have reported that the GDs have strong relation to multiple factors like age, gender, BMI, parity, diet, estrogen, pregnancy, hemolytic diseases, cirrhosis and metabolic disorders such as diabetes, hyperlipidemia along with socioeconomic status.[3,7-9] To the extent that risk factors, increasing age is reported be at prime significance as 20% of adults over 40 years and 30% 70 years are usually prone to develop biliary calculi and female gender is another risk factor during the reproductive years.[10]

Clinical presentations of cholelithiasis range from abdominal discomfort, biliary colic, development of jaundice to pain, infection and serious complications. Symptoms may vary from patient to patient.[3,9,11] Cholesterol, bile pigment and calcium are the main constituents of the gallstones.[7,12] Additionally, some trace elements i.e. Sulfur, Chloride, Potassium, Vanadium, Chromium, Manganese, Iron, Nickel, Copper, Zinc, Bromide and Lead were also reported to be identified in gallstones.[7,13] Number of studies have been reported the prevalence of the cholelithiasis in different regions of Sindh province.[3,6,7,14,15] Conversely, the incidence of cholelithiasis and cholecystitis in the population of district Khairpur, Sindh was found underreported. The present study was aimed to evaluate the prevalence of aforementioned diseases in gallbladder samples provided in our setup for

histopathological investigations subsequent to cholecystectomy.

METHODOLOGY

The study 56 patients of varying age groups. All patients gave their informed consent. All procedures performed in this study were in accordance with the 1964 Helsinki declaration and its later amendments. History of all the patients consisting age, gender, residence, sign and symptoms was recorded. They were diagnosed with cholelithiasis and cholecystitis by ultrasonography. Later, they underwent cholecystectomy at Pir Abdul Qadir Shah Jeelani Institute of Medical Sciences (PAQSJIMS). This study was conducted on the gallbladder samples received at our department during January 2017 to August, 2018.

All the tissue samples were fixed in 10% formalin immediately after received. Fixed tissues were then embedded in paraffin blocks subsequent to processing in an automated tissue processer RwwMedizintechink (WeinkaufMedizintechnik, Hallerndorf, Germany). The sections were cut into 4mm thickness each from neck, body and fundus by using microtome (Leica, Wetzlar, Germany). All the cut tissue sections were then stained in Hematoxyline and Eosin stain. Histolopathological findings were noted in various layers of the gallbladder using microscope Leica, DM 1000 LED (Leica, Wetzlar, Germany).

Statistical Analysis: Statistical analysis was performed using SPSS version 20. Chi square test was conducted to determine association between age, gender and presenting symptoms. $p<0.05$ was considered significant.

RESULTS

Out of 56 samples, 19.65% were from male whereas 80.35% from females. Chronic cholelithiasis (1.68%), chronic cholecystitis (22.96%), chronic cholecystitis with cholelithiasis (6.16%) and chronic ulcerated cholecystitis (0.56%) were the most common gallbladder ailments. (Fig. 1). Distribution according to age and gender are shown in Fig. 2 and 3. Chronic ulcerated cholecystitis was confirmed in only one female patient.

Fig. 1. Most common ailments seen.

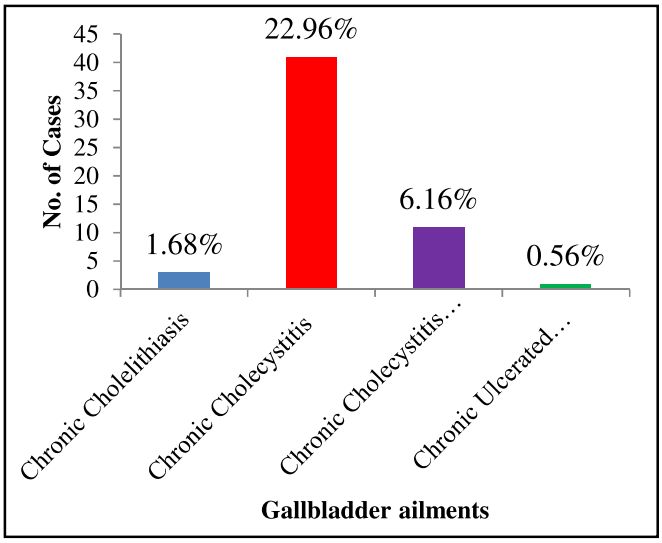


Fig. 2. Conditions according to gender.

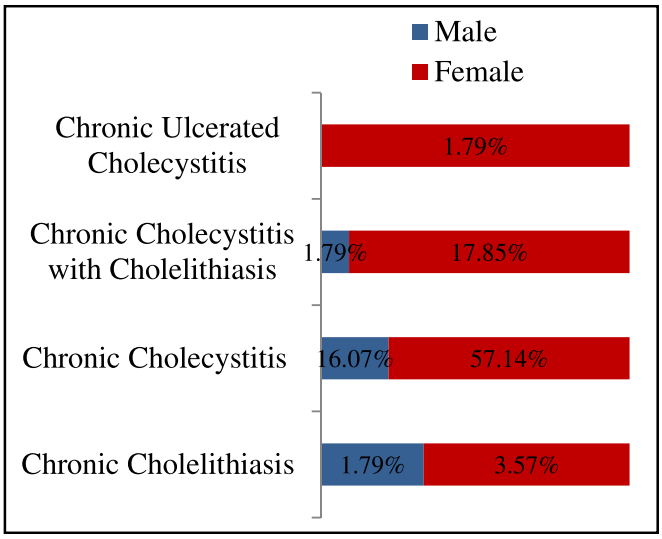


Fig. 3. Conditions according to age.

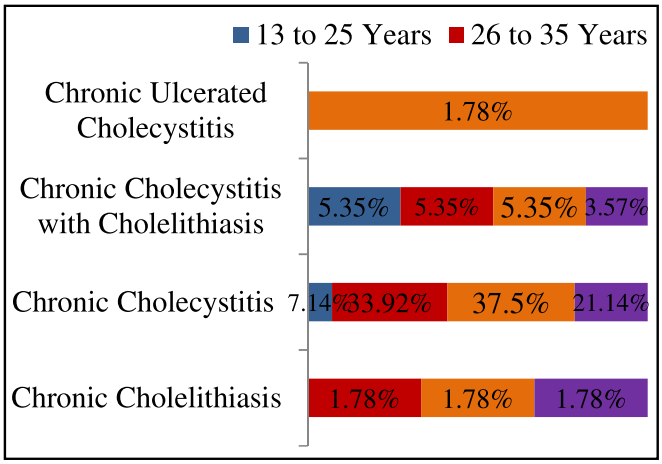
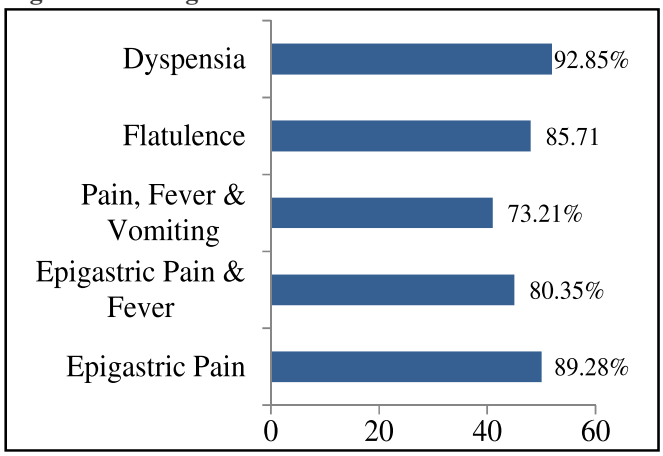


Fig. 4. Presenting features.



Results of our study significantly highlighted that age group 36 to 45 years and female gender is respectively more prone to the GDs in the district Khairpur. Among all patients, dyspepsia (92.85%) was the most common symptom followed by epigastric pain (89.28%) and flatulence (85.71%). Epigastric pain in combination with fever was found in 80.35% of the patients (Fig. 4). On histopathological examination, focal ulceration and accumulation of acute and chronic inflammatory cells consisting of neutrophils, lymphocytes and plasma were observed both beneath the gallbladder epithelium and subepithelium.

DISCUSSION

The results of the present study are in line with the other studies that have reported the same results.[3,4,9,16,17] The present study highlighted the presence of chronic cholelithiasis, chronic cholecystitis, chronic cholecystitis with cholelithiasis and chronic ulcerated cholecystitis as gallbladder ailments in District Khairpur. Our results are in part consistent with the other studies that mentioned the cholelithiasis as the most reported cause of cholecystectomy.[3,6,7]

These differences can possibly be explained by the fact that all the reports were based on the demographical data. Results of the present study indicated that 57.14% of female patients were found to be suffering from chronic cholecystitis. These results are corroborate the findings of other researcher.[3,7,9,14,15,18]

Our results take the findings reported elsewhere a step further and highlight that the aforementioned age group and compromised socioeconomic status of the patients may also be considered as an addendum in already existing risk factor associated with the incidence of GDs.[3,6,7,18] Dyspepsia (92.85%) was found to be the most pronounced symptom among the studied patients. Furthermore, epigastric pain (89.28%) and flatulence (85.71%) epigastric pain with fever (80.35%) and pain fever and vomiting (73.21%) were the most prevalent presenting symptoms in the patients studied in present study (Fig. 4). These results are in line with other studies reported that symptoms of GDs may vary from person to person.[3,7-9]

Our study mainly focused on the histopathological examination of the gallbladder specimen. It was interesting to note that, focal ulceration and accumulation of acute and chronic inflammatory cells consisting of neutrophils, lymphocytes and plasma observed both beneath the gallbladder epithelium and subepithelium. These results are consistent with the results of other researchers.[19,20] Cholecystitis is mainly characterized by the inflammation of the walls of gallbladder. This either may be attributed to the excessive retention of bile in the gallbladder and/or secondary to the bacterial infection. *Escherichia coli*, *Listeria monocytogenes*, *Pseudomonas aeruginosa*, *Klebsiella Spp*, *Enterobacter Spp* and *Bacteroides Spp* are known to infect gallbladder.[21]

CONCLUSION

The most dominant diagnosis was chronic cholecystitis followed by chronic cholecystitis with chronic cholelithiasis and chronic cholelithiasis whereas the chronic ulcerated cholecystitis was rarely observed. Nevertheless, histopathology of specimens is a vital cornerstone in patient care.

Author Contributions:
Conception and Design: Javed Ali Lakho, Shameem Bhatti
Collection and Assembly of data: Mushtaque Ahmed Mangrio
Analysis and interpretation of data: Javed Ali Lakho, Aneela Taj
Drafting of the article: Javed Ali Lakho
Critical revision of the article for important intellectual content: Aneela Taj
Statistical Expertise: Javed Ali Lakho, Aneela Taj
Final approval and guarantor of the article: Javed Ali Lakho
Corresponding author email: Javed Ali Lakho: javedalilakho786@gmail.com
Conflict of Interest: None declared
Rec. Date: Oct 30, 2019 Revision Rec. Date: Dec 14, 2020 Accept Date: April 7, 2021

REFERENCES

1. Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. Gut Liver 2012;6:172-87.
2. Karlatti SS, Kumar GR. Incidence of Various Types of Gallstones in Patients of Cholelithiasis in Belagavi. Int J Sci Stud 2016;4:21-23.
3. Ahmed W, Iqbal M, Ahmed I. Is there any change in demographic pattern of patients with Cholelithiasis? Isra Med J 2017;9:75-79.
4. Parambil SM, Matad S, Soman KC. Epidemiological, demographic and risk factor profile in patients harbouring various types of gallbladder calculi: a cross sectional study from a south Indian tertiary care hospital. Int Surg J 2017;4:525-28.
5. Chen Y, Kong J, Wu S. Cholesterol gallstone disease: focusing on the role of gallbladder. Lab Invest 2015;95:124-31.
6. Naeem M, Rahimnajjad NA, Rahimnajjad MK, Khurshid M, Ahmed QJ, Shahid SM et al. Assessment of characteristics of patients with cholelithiasis from economically deprived rural Karachi, Pakistan. BMC Resc Notes 2012;5:334.
7. Saqib A, Shaikh SS, Sodhar JM. Gall Stones; frequencies of gallstones in the patients attending surgical opd at isra hospital Hyderabad. Professional Med J 2014;21:386-90.
8. Chen YC, Chiou C, Lin MN, Lin CL. The prevalence and risk factors for gallstone disease in taiwanese vegetarians. PloS one 2014;9:e115145.
9. Rehman S, Afzal M, But MQ. Outcomes of laparoscopic cholecystectomy in acute cholecystitis. Pak Armed Forces Med J 2017;67:58-61.
10. Allen SN. Gallbladder disease: pathophysiology, diagnosis, and treatment. US Pharm 2013;38:33-41.
11. Bansal A, Akhtar M, Bansal AK. A clinical study: prevalence and management of cholelithiasis. Int Surg J 2016;1:134-39.
12. Shafique MS, Ahmad R, Ahmad SH, Hassan SW, Khan JS. Gallstones in Young Population. Ulutas Med J 2018;4:131-38.
13. Scherber PR, Lammert F, Glanemann M. Gallstone disease: Optimal timing of treatment. J Hepatol 2017;67:645-47.
14. Misrani JK, Iqbal S, Sasoli NA, Memon ZA, Ahmedani SA. Comparative Study of Clinical Profile in Patients with Solitary versus Multiple Gall Stone. J Liaquat Uni Med Health Sci 2016;15:12-15.
15. Channa NA, Khand F. Gallstones and dietary risk factors: an epidemiologic investigation in southern Sindh, Pakistan. Rawal Med J 2013;38:361-65.
16. Ahmed A, Ranjan SK, Sinha DK, Kerketta MD, Usha P. Changing Incidence of Gall Stone Disease: A Single Centre Study from Eastern India. IOSR J Dent and Med Sci 2015; 14:50-53.
17. Hundal R, Shaffer EA. Gallbladder cancer: epidemiology and outcome. Clin Epidemiol 2014;6:99-109.
18. Bhatti A, Waqar A, Zia S, Hussain N, Zulfiqar T. A cross sectional study on the risk factors of gallbladder stone. Int J Res Med Sci 2016;4:5041-46.
19. Memon W, Khanzada TW, Samad A, Kumar B. Histopathological Spectrum of gall bladder specimens after cholecystectomy. Pak J Med Sci 2011;27:553-56.
20. Srinivasan G, Sekar ASI. Study of histopathological spectrum of gallbladder in cholecystectomy specimens. Int J Res Med Sci 2019;7:593-99.
21. Maseda E, Maggi G, Gomez-Gil R, Ruiz G, Madero R, Garcia-Perea A, et al. Prevalence of and risk factors for biliary carriage of bacteria showing