**ORIGINAL ARTICLE**

# Morphological Spectrum of Gallbladder Disease: a retrospective study in a private medical college in Lahore

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## ABSTRACT

**Background:** Gallbladder disease is a major cause of morbidity and mortality around the world. Diseases of the gallbladder usually manifest as gallstones, cholecystitis or cancer.

**Aim**: To identifying the morphological spectrum of gallbladder disease with respect to age, gender and ethnicity of patients presenting to Ghurki Trust Teaching Hospital, a tertiary care hospital located in Lahore,

**Methods:** The retrospective study was conducted on 500 cholecystectomy samples, received at the histopathology section of the Pathology Department, Lahore Medical and Dental College, Lahore from affiliated Ghurki Trust Teaching Hospital. All cholecystectomy samples received from 3rd August, 2011 to 2nd October, 2015 were included in the study. Data for this study was collected from the Histopathology section records.

**Results:** Of the 493 were included in this study 81/493 (16.4%) were male while 412/493 (83.6%) were female, with the Male: Female ratio being **1:5.1**. The age of presenting complaints ranged from 14 years to 80 years of age. The maximum number of affected patients was between 19-39 years of age. On histopathological analysis, the most common pathology was found to be chronic cholecystitis with cholelithiasis (75%) followed closely by chronic acalculous cholecystitis (19%). However, gallbladder carcinoma was a rare finding in our study.

**Conclusion:** Identifying the morphology of gallbladder disease in this part of the country will lead to a better understanding of its underlying etiology. Future studies which focus on identifying risk factors for gallbladder disease can be conducted which will ultimately result in a better understanding of its prevention.

**Keywords:** Gallbladder, cholecystectomy, cholelithiasis,

## INTRODUCTION

Gallbladder bladder disease is a major cause of morbidity and mortality around the world. Diseases of the gallbladder usually manifest as gallstones, cholecystitis or cancer[1].

Many **risk factors** for gallbladder disease have been identified, namely; ethnicity, genetics, age, gender, female sex hormones, oral contraceptive use, obesity, rapid weight loss, diets high in cholesterol, fatty acids and carbohydrates, diabetes mellitus, hyperinsulinemia, sickle cell anemia, spinal cord injury, Wilson's disease and metabolic syndrome[1,2,4].

**Age** is an important predisposing factor for contracting gallstone disease, as illustrated by the fact that the likelihood of developing gallstones increases 4-10 times after the age of 40[3].

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Perhaps one of the major risk factor is Gender. Numerous local and international studies have shown that females show much greater prevalence of gallbladder disease (especially cholelithiasis) than men, the reasons being parity, oral contraceptive use, and estrogen replacement therapy.[1,11,12] Studies from East-Asian countries such as Korea and Japan however, displayed different results with little or no variation with respect to gender specific distribution[4]. Ethnicity and geography also play a significant role in the etiology of gallbladder disease. In fact, it has been identified as a major, non-modifiable risk factor for gallbladder disease[5]. Studies conducted in the United States have shown that cholelithiasis is especially common among the American Indian population.[8] The prevalence of cholelithiasis in Black Americans and Asian populations is shown to be lower.[9, 10] Second most common group of gall bladder disease is carcinoma. Gallbladder carcinoma is common in East Asian countries such as Japan, Korea or China. Gallbladder cancer is a rising issue in Pakistan with the frequency in South Pakistan being 13.8/100,000[4].

Studies pertaining to gallbladder disease that have been conducted in the Indian Subcontinent,

particularly in Pakistan, are limited. This study therefore, is aimed at identifying the morphological spectrum of gallbladder disease with respect to age, gender and ethnicity of patients presenting to Ghurki Trust Teaching Hospital, a tertiary care hospital located in Lahore, Pakistan.

## MATERIAL AND METHODS

The Retrospective study was conducted on 500 cholecystectomy samples, received at the histopathology section of the Pathology Department, Lahore Medical and Dental College, Lahore from affiliated Ghurki Trust Teaching Hospital. All cholecystectomy samples received from 3rd August, 2011 to 2nd October, 2015 were included in the study. Data for this study was collected from the Histopathology section records and comprised of Biopsy requisition slips (which accompanied the specimen), histopathological slides and Pathology reports. As a usual practice, all specimens submitted for biopsy, are received in 10% formal saline. The specimens, after gross examination, are submitted for processing in an automated tissue processor. Paraffin section slides are then stained with Hematoxylin and Eosin stain. All 500 cases were reviewed by two consultants independently and a consensus diagnosis was reached. Cases with deficient clinical information, including presenting symptoms and duration of the disease were excluded from this study. All the cases were categorized into three groups, i.e. inflammatory conditions, benign diseases and malignant diseases.

**Statistical analysis:** Microsoft Excel 2007 was used for data entry and analysis. Frequencies and percentages were calculated.

## RESULTS

Out of the 500 samples received, 493(98.6%) were included in this study (N=493). Seven (7) cases did not provide sufficient information on the biopsy request forms and were excluded. In this study, 81/493 (16.4%) were male while 412/493 (83.6%) were female. with the Male: Female ratio being 1:5.1. The gender distribution among the various gallbladder diseases is shown in Fig. 1.

The age of presenting complaints ranged from 14 years to 80 years of age. To assess the variation of age at the time of presentation, 4 age groups were identified. The relationship between the aforementioned age groups and the gallbladder diseases is shown in Fig. 2.

Percentage incidence of each gallbladder pathology is shown in Fig. 3. The morphological spectrum consisted of five major conditions, namely, chronic cholecystitis with cholelithiasis, chronic acalculous cholecystitis, acute-on-chronic cholecystitis, gallbladder carcinoma, and gallbladder empyema.

Fig. 1: Gender distribution among various gallbladder diseases

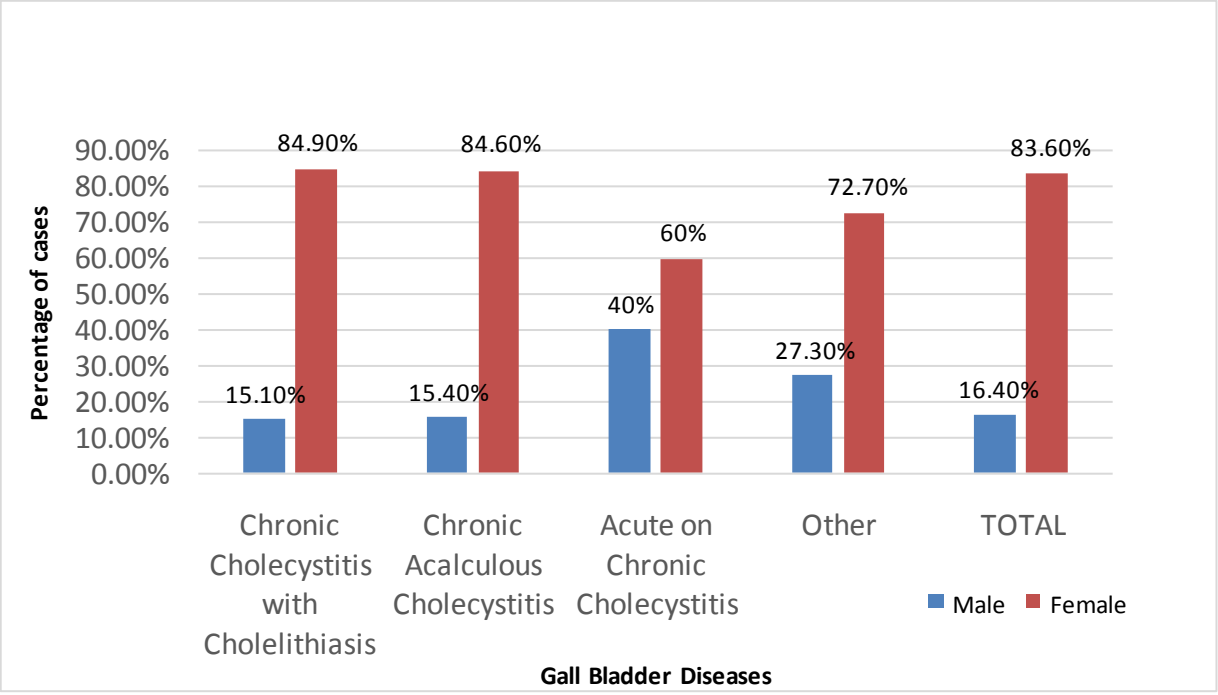



Fig. 2: Age distribution of gallbladder diseases

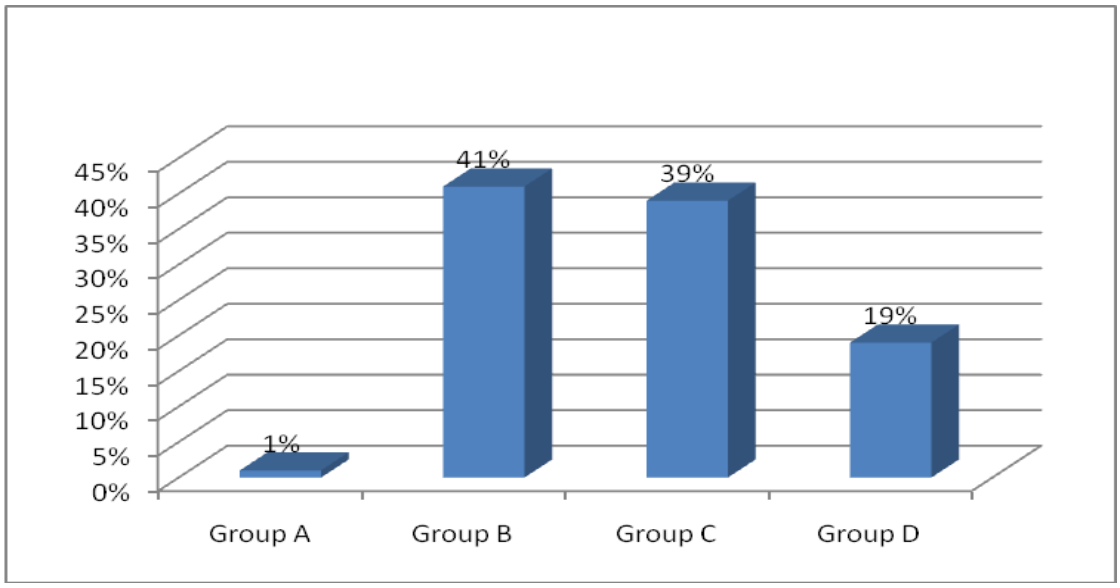
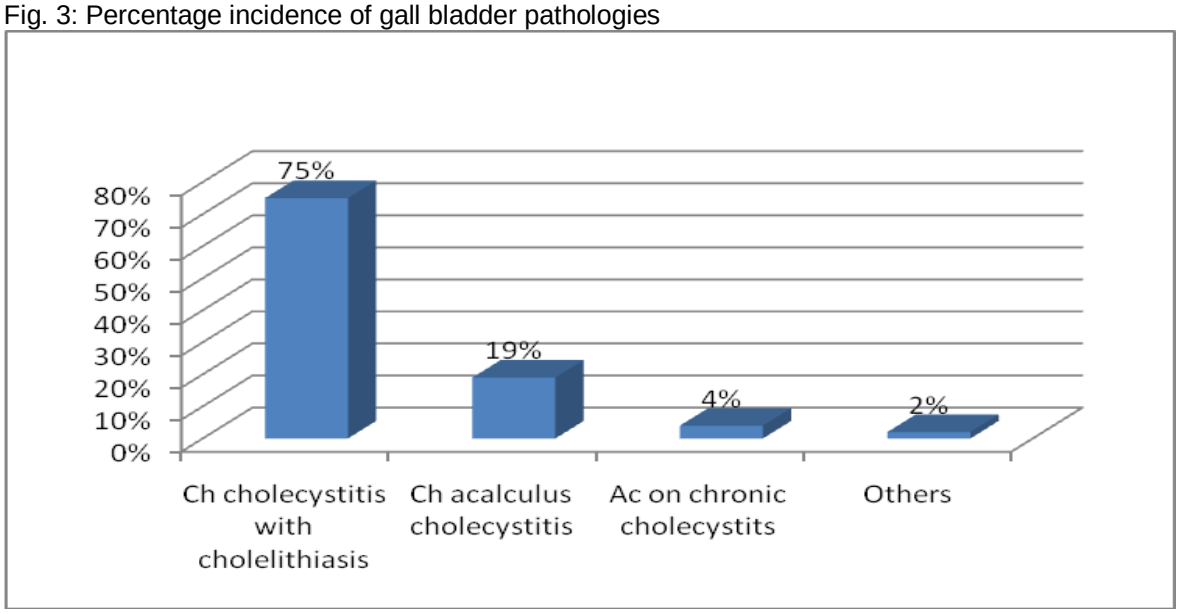



Fig. 3: Percentage incidence of gall bladder pathologies




## DISCUSSION

The relationship between age and gallbladder disease in our study was fairly consistent with both a local data which showed a peak incidence of cholelithiasis between ages 19-39, followed very closely by ages 40-54, and an international study, with 24.24% of the patients of gallbladder disease in the study belonging to the age group of 40-49 years[6,7].

The gender distribution found in this study is corroborative with the global pattern of prevalence of Gallbladder disease, save for certain East Asian populations such as Japan and Korea. Most studies report a high male to female ratio[6,7,11,12]. Study by Naseem A. Channa et al. showed male to female ratio of 1:3.3[6] Another study conducted in India along very similar parameters had corroborative results to this study, with the male to female ratio being 1:6.6[7]. Other studies showed variable gender distributions with common finding of female predominance of gallbladder disease[11,12]. An in-depth epidemiological study by Giorgia Randi et al. found that the male to female ratio generally was around 1:3, but it ranged from 1:1 in Far East Asian countries to around 1:5 in Columbian nations and Spain, showing a wide variation, with this study's results being a little higher than the global trend[4].

A study conducted by Faran Khan, et al. had comparable results of incidence of Chronic

Cholecystitis to ours, while another study by Faisal Ghani Siddiqui, et al. conducted in Hyderabad, Pakistan showed a slightly lower incidence[11 12]. An international study also showed a similar morphological spectrum of gallbladder disease compared to our study with 69% of cases showing patterns consistent with chronic cholecystitis and 12% of cases showing acute-on-chronic presentation. The same study also showed a slightly higher incidence of gallbladder carcinoma (2%) as compared to our study[7].

## CONCLUSION

The morphological spectrum of gallbladder disease in patients presenting to Ghurki Trust Teaching Hospital, Lahore, consisted almost exclusively of infective lesions, with majority of cases being female patients. The age-related incidence in our study showed disease incidence in patients between 19-39 years followed by patients aged 40-54 years.

The results show a predominant incidence of chronic cholecystitis with cholelithiasis with regards to gallbladder disease, followed by a much smaller but significant incidence of acalculous chronic cholecystitis. Not surprisingly, the number of reported cases of gallbladder carcinomas was 1.2% in comparison to a slightly higher incidence of acute-on-chronic cholecystitis (4%).

**Limitations:** The limitations in our study were as follows:

1. Our study was conducted using data from a single hospital and it may not be representative of the entire region as a whole.
2. The duration of disease, an important variable with regards to gallbladder carcinoma, was not always mentioned in the patient request form.

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