ORIGINAL ARTICLE

Clinico-pathological study of Eosinophilic Cholecystitis: A study at Khyber Teaching Hospital Peshawar, Pakistan.

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Abstract

Background: Transmural inflammatory infiltration of the gallbladder wall is an uncommon presentation of eosinophilic cholecystitis. If inflammatory cells and mostly eosinophils infiltrate reach up to 50–75% of the tissue, the condition is sometimes called lympho-eosinophilic cholecystitis. This study aimed to determine the frequency and clinicopathological features of eosinophilic cholecystitis in cholecystectomy specimens from Khyber Teaching Hospital's (KTH) surgical wards.

Material and Methods: This retrospective study was done on 50 cases of eosinophilic cholecystitis over one year from July 2022 to June 2023. All those specimens of Gall Bladder that were histopathologically proven cases of eosinophilic cholecystitis were included in this study and relevant clinical data were obtained from the HMIS. All those patients with incomplete data were excluded. The relevant information was recorded on a proforma tailored to the study aims. Ethical approval was taken from the IREB.

Results: Out of 2363 specimens, 50(2.11%) were diagnosed with eosinophilic cholecystitis. The patients' ages ranged from 20 to 50+. The male-to-female ratio was 1:1.3. The commonest symptoms reported were upper abdominal pain, nausea, vomiting, and fever. Peripheral eosinophilia was present in only 20(0.8%) cases. Abdominal ultrasound showed gallstones or sludge in almost all of the patients (99%).

Conclusion: Histopathology remains the main entity for diagnosing eosinophilic cholecystitis. In patients with this condition, a comprehensive assessment of the underlying causes is recommended.

Keywords: Eosinophilic, cholecystitis, cholecystectomy, surgical, histopathology

Received
Date: 10th December, 2023
Accepted
Date: 28th May, 2024

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Introduction:

A condition known as "eosinophilic cholecystitis" is acknowledged as a separate kind of cholecystitis.[1] An uncommon condition known as eosinophilic cholecystitis is identified by histopathology on the basis of unique features of the inflammatory infiltration of the gallbladder wall, which was first reported in 1949.[2] The diagnosis is based on leukocytic infiltration, which includes more than 90% of eosinophils infiltrating the gall bladder wall, and characteristic symptoms of acute cholecystitis.[3]

The primary method of diagnosing eosinophilic cholecystitis is histological, which involves examining the cholecystectomy specimens.[4] This is because the condition is clinically identical to other forms of cholecystitis.[5] The pattern of damage and the characterization of its clinical pathologic connections have not been uniformly defined, and the term "eosinophilic cholecystitis" has been used inconsistently.[6] While some researchers have characterized eosinophilic cholecystitis solely based on eosinophil density, others have included the criteria of specific gallbladder layers being affected while rendering the final diagnosis of eosinophilic cholecystitis.[7] Crucially, while eosinophils are implicated in some stages of acute cholecystitis, the major-

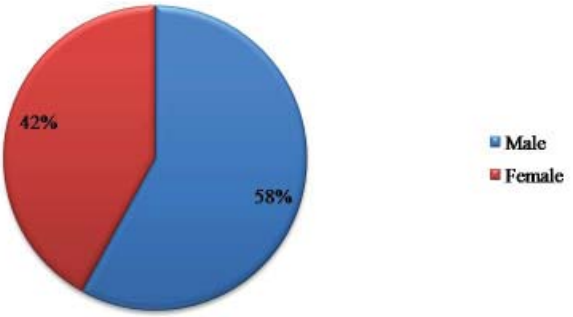

Figure 1: Frequency distribution of eosinophilic cholecystitis gender wise

ity of case reports and series have also labeled subacute instances as eosinophilic cholecystitis, and some writers have even used the word to describe chronic cholecystitis.[8]

Eosinophilic cholecystitis (EC) is a relatively uncommon condition and is found in 0.25–6.4% of people worldwide, according to studies. Gallstone prevalence has been observed to range from 10% to 15% in Europeans and from 3% to 5% in Asians.[9] Gallbladder stones are typically not associated with it.[10] When eosinophils account for more than 90% of the transmural cellular infiltration, EC is identified histopathologically.[11] If eosinophils and other inflammatory cells infiltrate between 50 and 75 % of the tissue, the illness is known as lympho-eosinophilic cholecystitis.[12]

The rationale is to find the frequency of eosinophilic cholecystitis in the cholecystectomy specimens collected from different surgical units of Khyber Teaching Hospital (KTH).

Material and Methods:
This retrospective study was carried out in the histopathology section of the Pathology department in collaboration with the surgical department of Khyber Teaching Hospital between July and June 2023. Ethical approval was taken from the IREB.

A total of 2363 cholecystectomy specimens were received from the different surgical units of Khyber Teaching Hospital for the clinical picture of acute/ chronic cholecystitis or cholelithiasis. Clinical data including biodata, and clinical features along with the relevant investigations were retrieved from the HMIS system. Patients' Histopathological data were obtained from the histopathological section of the pathology department. Patients with suspicious lesions other than the cholecystitis changes or with incomplete data were excluded from the study. The eosinophilic cholecystitis slides were re-examined for the final diagnosis.

SPSS version 22 was used for the statistical analysis. of to analyze the frequency distribution of eosinophilic cholecystitis patients aged 25 to 70 years old, male-to-female ratio, gallbladder wall thickness, and associated signs and symptoms. SPSS version 22 was used for statistical analysis to examine the frequency distribution of eosinophilic cholecystitis patients aged 25 to 70 years, the male-to-female ratio, gallbladder wall thickness, and associated signs and symptoms.

For this study, SPSS version 22 was used to perform statistical analysis. Descriptive statistics, including frequency and percentages, were calculated for histopathological proven eosinophilic cholecystitis and clinical symptoms. Ratio for the gender. Mean and standard deviation were used for patient age. To assess associations, the chi-square test was applied to examine the relationship between eosinophilic cholecystitis and categorical variables like gender, symptoms,

Results:
Of 2363 specimens, 50(2.11%) were diagnosed with eosinophilic cholecystitis. The patients' ages ranged from 20 to 50+. The male-to-female ratio was 1:1.3. The commonest symptoms reported were upper abdominal pain, nausea, vomiting, and fever. Peripheral eosinophilia was present in only 20(0.8%) cases. Abdominal ultrasound showed gallstones or sludge in almost all of the patients (99%).

The patient's gender, age group, and their relevant frequencies were noted.

The age-wise patients were distributed in three groups. In the young age group (20-29), there

Table 1: Frequency distribution of eosinophilic cholecystitis patient's gender and age groups

	Age Groups			
Gender	**Young Adults (20-29 years)**	**Middle-aged adults (30-49 years)**	**Older Adults (50+ years)**	**Total**
Male	3	13	13	29
Female	3	8	10	21
Total	6	21	23	50

Table 2: Gender-wise frequency distribution of gall bladder wall thickness of eosinophilic cholecystitis

Wall Thick (cm)	**Gender**		**Total**
0.10	6	3	9
0.60	6	2	8
0.80	4	6	10
1.00	13	10	23
Total	29	21	50

Table 3: Clinical features Gender-wise

Symptoms		**Male**	**Female**	**Total**
Abdominal Pain	Yes	29	21	50
	No	0	0	0
Nausea	Yes	29	21	50
	No	0	0	0
Vomiting	Yes	6	4	10
	No	23	17	40
Fever	Yes	4	6	10
	No	25	15	40

were 6 patients, out of which males n=3 and females n=3. In the middle-aged group (30- 49), there were 21 patients, out of which males n=13 and females n=8. In the older age group (50+ years), there were 23 patients, out of which males n=13 and females n=10 making a total of 23 patients in this age group as shown in table 1.

Based on gallbladder wall thickness, the cases were categorized into four groups. Furthermore, gender-wise frequency distribution was also noted for each group. In the 0.10 cm wall thickness category females were n = 3 and males n = 6 and in total there were n=9 patients in this category. There were two females and six males in the 0.60 cm gall bladder wall thickness category comprising eight cases in total. The second most cases were present the in 0.80 cm gall bladder wall thickness category (n=10). There were females n=4 and males n=6. Most patients were observed in the 1.00 cm gall bladder wall thickness where 23 cases were making it approximately half of the patients included in this study (46%). Out of these 10 were females and 13 were males as shown in table 2.

The commonest symptoms reported were abdominal pain and nausea followed by fever and vomiting as shown in table 3.

Discussion:

In this study, a cohort of 50-patients with eosinophilic cholecystitis (EC) was examined for demographic distribution. With 29 men and 21 women in the research group, there appears to be a little male predominance in this condition's prevalence. The research indicates that eosinophilic cholecystitis may have distinct gender dynamics, even though prior research has indicated that gallbladder disorders are more common in women.

In three age groups - young adults (20–29 years old), middle-aged adults (30–49 years old), and older adults (50+ years old). The study examined the demographic trends of eosinophilic cholecystitis. Elderly people had the highest prevalence of eosinophilic cholecystitis, making up about 46% of all cases. Adults in their middle years accounted for 42% of cases, and young people accounted for 12%. This suggests that eosinophilic cholecystitis is more common in the elderly, which is consistent with cholecystitis epidemiology.

It's interesting to note that, in every age category, there were more men than women, with ratios of 1:1, 1.6:1, and 1.3:1. This shows that, particularly in the middle-aged population, males receive eosinophilic cholecystitis diagnoses more frequently than females but this is in contrast with the study conducted bySabina Khan et al. where the male to female ratio was 1:2.7.[13]

This study identified a predominance of males in cases of eosinophilic cholecystitis (EC), particularly among middle-aged and older adults. This finding contrasts with the broader literature on

gallbladder disorders, where females are typically more prevalent.

Nonetheless, some research on eosinophilic cholecystitis has shown different gender distributions, occasionally pointing to a larger prevalence in men, which is consistent with our results.[14]

Compared to other kinds of cholecystitis, eosinophilic cholecystitis has unique demographic trends. With 46% of cases, elderly persons (50+) had the highest frequency of eosinophilic cholecystitis. This is consistent with several studies that show an age-related rise in the incidence of cholecystitis. A similar trend was also seen in studies by Mohammed Yousef Aldossaryet al.[15] and Ana M et al.,[16] and Ana María González-Castilloet al.,[17] which showed that there is a considerable rise in the incidence of eosinophilic cholecystitis morbidity rate in over 50 years old patients.

Gallbladder wall thickness was most commonly measured at 1.00cm, according to the study, especially in men. According to Ghannouchi Mosab et al., gallbladder wall thickening larger than 3mm (0.4cm) was noted in eosinophilic cholecystitis. This finding is consistent with that observation.[18]

According to our research, nausea, and stomach discomfort are not sex-dependent symptoms that affect people of either gender. According to further extensive cholecystitis research, people with the illness frequently experience a variety of abdominal pains. Based on the present studies showing the relationship between nausea and cholecystitis, equal attention needs to be given to both male and female diagnoses and treatment. The changes in metabolism, bile production, gallbladder contraction, and other functions are the same in both sexes and so are all the major symptoms of cholecystitis, which implies the soundness of the symptom-oriented diagnostic and therapeutic strategies in treating this disease. This aligns with clinical insights and literature discussed by O'Connor and Reed, emphasizing the importance of managing cholecystitis through effective symptom management.[19]

Conclusion:
This study refines the clinical understanding of eosinophilic cholecystitis, highlighting its occurrence across diverse demographics. Severe cases present with symptoms like fever, nausea, and ulceration, with gallbladder wall thickness emerging as a key diagnostic factor, especially in males. The findings emphasize the need for precise, gender-specific diagnostic strategies.

Conflict of interest: None

Funding source: None

Role and contribution of authors:
Purdil, collected the data, references and did the initial writeup.

Hizbullah Jan, collected the data and helped in introduction writing.

Farhan Abbas, collected the references and helped in discussion writing.

Mushtaq Ahmed, critically went through the article and made final changes.

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