

Incidence of Eosinophilic Cholecystitis in Northwestern Region of Rajasthan: A Study in Consecutive 867 Cholecystectomies

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Abstract

Introduction: Eosinophilic cholecystitis (EC) is an uncommon and poorly understood inflammatory condition of the gall bladder. EC is prevalent in 0.25-6.4% of all cholecystitis. The diagnosis of EC cannot be made before surgery and the histopathological examination remains the gold standard for diagnosis.

Materials and Methods: This prospective study was carried over a period of 22 months from January 2015 to October 2016, to find out the incidence of EC in cholecystectomy specimens received.

Results: A total of 867 cases were examined, out of which EC was found in 15 patients (1.73%). 4 out of 15 patients had pre-operative peripheral eosinophilia and 2 out of 15 patients had history of allergy to dust and smoke.

Conclusion: From the study it was concluded that there is a need for complete workout of patient by clinician, to exclude other organ involvement and associated syndrome. Furthermore, there is a need to understand the molecular mechanism predisposing to eosinophilic infiltration in patient with EC.

Key words: Eosinophilia, Eosinophilic cholecystitis, Histopathological examination

INTRODUCTION

Eosinophilic cholecystitis (EC) is an uncommon inflammatory condition of gall bladder, the pathogenesis and etiology of which still remains unknown. It was first described by Albot *et al.*¹ The clinical presentation is similar to that of typical cholecystitis with right hypochondrial pain, nausea, vomiting, fever, and an elicited murphys sign.

Histopathological examination of resected gall bladder remains the gold standard for diagnosis. EC is said to be present when cellular infiltrate in the gall bladder is more than 90% eosinophil. When the infiltrate comprises 50-70%

eosinophils along with other inflammatory cells in gall bladder they are termed lympho-EC.²⁻⁴

The incidence of EC is very low in India. It is prevalent in 0.25-6.4% of all cholecystitis.^{5,6} Pathogenesis of eosinophilic infiltration is poorly understood. Eosinophils are one of the immune system of body responsible for combating parasitic infections and along with mast cells control the mechanism associated with allergy and asthma. The proposed etiology for eosinophilic infiltration include local and systemic inflammatory reaction to parasite,⁷⁻⁹ bile or gall stone impacted at neck or hypersensitivity to antibiotics and herbal medicines.¹⁰⁻¹²

EC may appear alone or in association with hypereosinophilic syndrome,¹³ eosinophilic gastroenteritis,³ eosinophilic myalgia syndrome, parasitic infections (such as hydatid cyst, clonorchis sinensis, and ascaris),^{8,9} few herbal medicines, certain drugs such as erythromycin and cephalosporin.^{11,12} Therefore, the possibility of associated disorder must be ruled out once the diagnosis of EC is made. When the disease is confined to the gall bladder the treatment

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of choice is cholecystectomy. However, if a causative factor is discovered treatment may warrant more than cholecystectomy or may lead to findings of other organ infiltration. With this background, we carried out this study to find the incidence of EC in northwestern region of Rajasthan.

MATERIALS AND METHODS

This was a prospective study carried out over a period of 22 months from January 2015 to October 2016, in the department of Pathology, S.P. Medical College, Bikaner, Rajasthan.

Cholecystectomy specimens received were fixed in 10% neutral buffered formalin and embedded in paraffin. Three full thickness sections were obtained from fundus, body, and neck of the gall bladder. Additional sections were taken from any grossly abnormal area if present. Sections were then stained with H and E stain and examined microscopically.

RESULTS

A total of 867 gall bladder specimens were received during the period of January 2015 to October 2016. This included open cholecystectomy, laparoscopic cholecystectomy, and partially resected specimens. 15 out of 867 cholecystectomy patients (1.73%) aged between 20-60 years showed EC (Figures 1 and 2).

The patients with EC comprised 9 females (60%) and 6 males (40%) (Table 1) with median age of 39.8 years.

The main presenting complaint was upper abdominal pain and dyspepsia. Pre-operative eosinophilia was present in 4% patients (26.6%) and one patient had bilious perforation with peritonitis. Gall stone was present in 7 patients (46.6%) out of which 6 were female and 1 male. 2 of the patients had history of allergy to dust and smoke (Table 2). Remaining patients had no previous relevant preexisting medical condition and were considered idiopathic EC.

DISCUSSION

EC is an uncommon form of cholecystitis that was first described by Albot *et al.* in 1949.¹ The incidence of EC is low in India. Studies across the world showed its prevalence to be 0.25-6.4% with average age of presentation being 37 years.^{5,6,10} In this study, EC was diagnosed in 15 of 867 specimens (1.73%) which was comparable to the results of other reported cases.

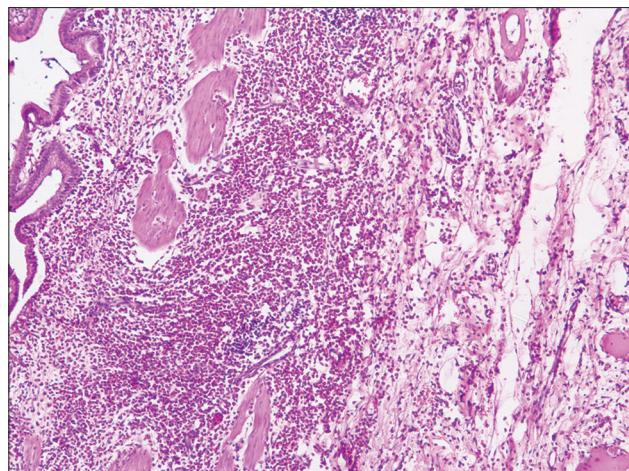


Figure 1: Histopathological slide of patient showing eosinophilic infiltration of gall bladder wall (H and E, $\times 100$)

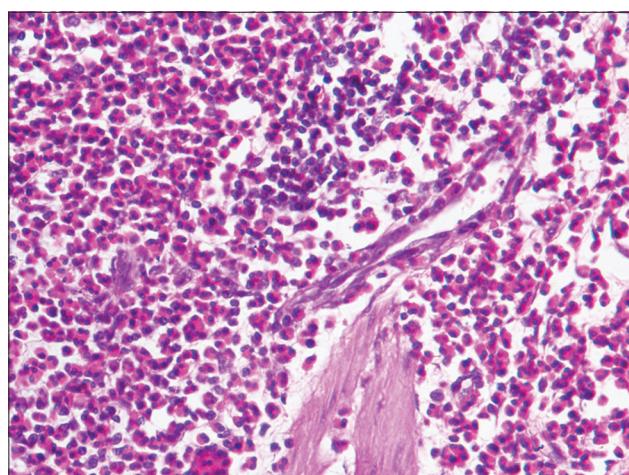


Figure 2: Histopathological slide of patient showing eosinophilic infiltration of gall bladder wall (H and E, $\times 400$)

Table 1: Age and sex distribution of patients with EC

Age group (years)	N (%)		Total
	Sex		
	Female	Male	
20-30	5 (55.6)	1 (16.7)	6 (40.0)
31-40	0 (-)	2 (33.3)	2 (13.3)
41-50	2 (22.2)	1 (16.7)	3 (20.0)
51-60	2 (22.2)	2 (33.3)	4 (26.7)
Total	9 (100)	6 (100)	15 (100)

EC: Eosinophilic cholecystitis

Histopathological examination of resected gall bladder remains the gold standard for diagnosis of EC. EC does not present any specific laboratory manifestation to distinguish from other causes of cholecystitis. In our study, the main presenting complaint was abdominal pain and epigastric discomfort. One patient had bilious perforation with peritonitis.

Table 2: Features of reported cases of eosinophilic cholecystitis

Case No.	Age (years)	Sex	Allergy/preexisting medical condition	Pre-operative peripheral eosinophilia	Gall stone present
1	24	Female	No	No	No
2	42	Male	No	No	No
3	51	Female	No	Yes (9%)	No
4	27	Male	No	Yes (14%)	No
5	30	Female	No	No	Present
6	27	Female	Allergy+	No	Present
7	60	Female	Allergy+	No	Present
8	30	Female	No	No	Present
9	20	Female	No	Yes (10%)	No
10	49	Female	Bilious perforation with peritonitis	No	Present
11	35	Male	No	No	No
12	56	Male	No	No	No
13	36	Male	No	No	No
14	50	Female	No	Yes (16%)	Present
15	60	Male	No	No	No

+Allergy to dust and smoke

Dabbes *et al.*⁵ reviewed 217 consecutive cholecystectomy specimens and found that eosinophilic infiltration is three times more common in acalculous cholecystitis. In our study, 7 out of 15 cases (46.6%) of EC had associated gall stone. The remaining 8 (53.4%) had acalculous cholecystitis, which on histopathological examination revealed EC.

Although there are quite few case reports on EC, the pathogenesis of eosinophilic infiltration is poorly understood. The proposed etiologies include local allergic reaction to substances released at foci of inflammation, local reaction to parasite, bile or gall stone impacted at neck.⁷⁻⁹ Certain drugs such as erythromycin, cephalosporin, and herbal medicine have been implicated in pathogenesis of EC.¹⁰⁻¹²

Eosinophilic infiltration may be limited to the gall bladder or associated with multiple organ involvement or several disease conditions like syndrome.^{3,13} A suspicion of this entity can be kept if peripheral eosinophilia is present. Kim reported that peripheral eosinophilia occurred in 4 of 15 cases.⁸ In the absence of any apparent precipitating etiology, it is considered idiopathic EC.

In our study, a thorough work up of patients was done to find possible etiology. 2 of the patients had history of allergy to dust and smoke and 4 patients had pre-operative eosinophilia. When peripheral eosinophilia is observed EC may be an expression of hypereosinophilic syndrome. However, we did not find any associated disease condition in our patients. Remaining patients had no previous relevant preexisting medical condition and were considered idiopathic EC.

The treatment of EC is cholecystectomy. Steroids may be used as an adjuvant therapy if the disorder is associated with gastroenteritis.³ In our patients, definitive therapy with cholecystectomy led to full recovery.

CONCLUSION

EC is a rare entity. EC is significant because it is not apparent solely through laboratory test. Once the diagnosis of EC is made by histological examination, there is a need for complete workout of patient by clinician to exclude other organ involvement and associated syndrome. The mechanism for recruitment of eosinophil is unknown. Therefore, there is a need to understand the molecular mechanism predisposing to eosinophilic infiltration in patients with EC.

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