Original article

Xanthogranulomatous inflammatory lesions: a 10-year clinicopathological study in a teaching hospital

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Abstract:

Objective: To review the demographic, clinical and histomorphological aspects of xanthogranulomatous inflammation (XGI) in different organs. ***Material and methods***: All the cases diagnosed as XGI by histopathology from the specimens received in the department of Pathology, Regional Institute of Medical Sciences, Imphal, Manipur, India over the period of 10 years from January 2001 to December 2010 were included in the study. All the available data including age, sex, organ of involvement, association with stone etc. were collected and analyzed retrospectively. All the slides were reviewed. The results were recorded and ana-lyzed. ***Results:*** A total of 98 cases of XGI were diagnosed out of a total of 9755 specimens received, constituted by 5382 of gall bladder, 4298 of appendix, 41 of kidney and 24 of tube and tubo-ovarian mass making an overall incidence of 1%. The incidence of XGI in kidney was 12.19%, followed by 4.16% in tube and tubo-ovarian mass, 1.5% in gall bladder and 0.25% in appendix. Maximum number of cases were in the age group of 41-50 years with 33.67%. The female to male sex ratio was 2.5: 1. 90.2% cases in kidney and 86.6 % in gall bladder were associated with calculi. One case was associated with adenocarcinoma of gall bladder. ***Conclusion:*** Xanthogranulomatous inflammation which often mimics malignancy clinically and morphologically, is increasingly recognized in different anatomic locations. An accurate diagnosis will relieve the psychological panic of suspected malignancy and prevent the patient from aggressive treatment.

Key words: xanthogranulomatous inflammation; histopathology; lipid-laden macrophages; malignancy

DOI: http://dx.doi.org/10.3329/bjms.v13i3.16266
Bangladesh Journal of Medical Science Vol. 13 No. 03 July '14. Page: 302-305

Introduction

Xanthogranulomatous inflammation(XGI) is a form of chronic inflammation that is destructive to the normal tissue of the affected organ and often presenting as tumour like mass. It is characterized by the presence of lipid-laden macrophages (xanthoma cells) admixed with lymphocytes, plasma cells and neutrophils. Multinucleated giant cells may be present[1]. Multiple organs have been reported to be affected by this type of inflammation, including kidney, gall bladder,appendix, female genital tract ,male genital tract, urinary bladder,stomach, bone,soft tissue etc.,most commonly the kidney followed by the gall bladder[2-4]. .The exact pathogenesis of XGI remains unclear.Various possible causes such as infection,ineffective antibiotic therapy, irradiation, abnormalities in lipid metabolism and ineffective clearance of bacteria by phagocytes have been suggested[5].

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Material and methods

All cases diagnosed as xanthogranulomatous inflammatory lesion by histopathology from the surgically removed specimens received during a period of 10 years from January 2001 to December 2010 in the department of Pathology, Regional Institute of Medical Sciences,Imphal, Manipur were selected for retrospective study.All the relevant available data regarding age, sex, organ of involvement and association with calculi were collected and recorded. All the slides were reviewed.The results were analyzed. This study was approved by local ethical committee.

Results

A total of 98 cases of xanthogranulomatous inflammatory lesion were diagnosed histopathologically out of which gall bladder constituted 81cases(82.65%) followed by appendix in 11cases(11.22%), kidney in 5 cases(5.1%) and 1case(1.02%) in tube.The number of surgically removed specimens of involved organs included 5382 of gall bladder,4298 of appendix,41 of kidney and 24 of tube and tubo-ovarian mass making a total of 9755 and the overall incidence of xanthogranulomatous inflammation being 1%. (Table 1). The female to male sex ratio was 2.5 : 1. The maximum number of cases were in the age group of 41-50 years with 33.67% followed by 29.59% in the age group of 31-40 years. (Table 2). 86.6% cases were associated calculi in gall bladder and 90.2% in kidney. One case was associated with adenocarcinoma of gall bladder.

Table 1. Anatomic distribution of Xanthogranulomatous inflammation

Specimen	Number	Xantho. inflam.	Percentage
Gall bladder	5382	81	1.5
Appendix	4298	11	0.25
Kidney	41	5	12.19
Tube & TO mass	24	1	4.16
Total	9755	98	1.0

Xantho. Inflam.: Xanthogranulomatous inflammation, TO mass: Tubo-ovarian mass

Table 2. Age wise distribution of Xanthogranulomatous inflammation

Age range (years)	Gall bladder	Appendix	Kidney	Tube & TO mass	Total (percentage)
10- 20	3	0	0	0	3 (3.06)
21 - 30	6	2	1	0	9 (9.18)
31- 40	22	5	1	1	29 (29.59)
41- 50	27	3	3	0	33 (33.67)
51- 60	15	1	0	0	16 (16.32)
61- 70	7	0	0	0	7 (7.14)
71- 80	1	0	0	0	1 (1.02)

Total : 98 TO mass: Tubo-ovarian mass

Discussion

The pre-operative diagnosis of XGI remains a challenge because it mimics malignancy clinically and morphologically. In a review of 53 cases of gall bladder adenocarcinoma, five cases were associated with diffuse XGI including close admixture of inflammatory and neoplastic components in three cases making a prompt diagnosis difficult[6]. The incidence of xanthogranulomatous cholecystitis varied from 0.7 -10% in different studies[7-9] . In another study xanthogranulomatous cholecystitis was found in 8.9% cases and one case was associated with adenocarcinoma[8]. In the present study xanthogranulomatous cholecystitis constituted 1.5% of the total cholecystectomy specimens and 86.4% cases were associated with calculi and one case with adenocarcinoma. The more number of xanthogranulomatous lesions in the gall bladder in our study (81/ 98) could be because of more number of cholecystectomy specimens received in our hospital and a higher incidence of cholelithiasis in the region.(Fig.1).

In a study of xanthogranulomatous pyelonephritis(XGP), 83% were associated with calculi[10], as compared to 90.2% in the present study. Moreover XGP constituted 5.1% of the total XGI(5/98) but the incidence was highest with 12.19% (5/41) of the total nephrectomy specimens in our study.(Fig.2). 100% association with calculi has also been reported in a series of 63 patients of XGP[11]. A case of XGI in the female genital tract has been reported that could be attributed to a smoldering infection with *Mycoplasma hominis*, most

likely a sequel of tubo-ovarian abscess[12]. A case of XGI in fallopian tube in our study was clinically diagnosed as hydrosalpinx. In our study , four cases of cholecystectomy and three cases of nephrectomy specimens were suspected of malignancy clinically, out of which only one turned out to be adenocarcinoma of gall bladder.

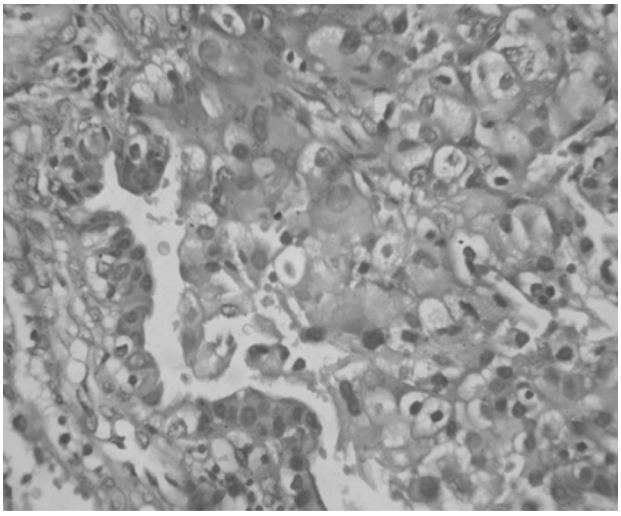

Figure 1. Photomicrograph of Xanthogranulomatous cholecystitis showing lipid-laden macrophages(xanthoma cells) admixed with mixed inflammatory cells (H&E, x40)

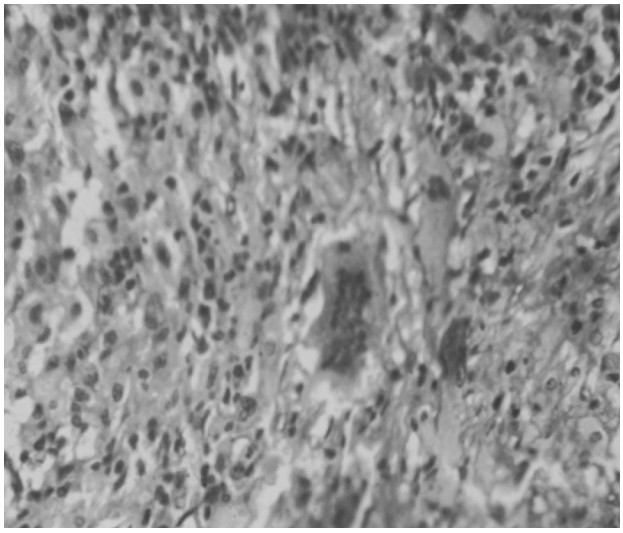

Figure 2. Photomicrograph of Xanthogranulomatous pyelonephritis showing xanthoma cells, Inflammatory cells and multinucleated giant cells (H&E, x40)

The aetiopathogenesis of XGI is still debated. Some reports have suggested that it is probably initiated by an obstructive and/ or an ischaemic process leading to infection and tissue necrosis followed by release of cholesterol and other lipids and phagocytosis by macrophages , from the studies of XGI of the genital tract, kidney and gall bladder. A combination of factors may be responsible in some cases[13].

Guo and Greenson[14] compared histopathology of all interval appendicectomy specimens with a control group of patients who had acute appendicitis and underwent appendicectomy, 36.4% of the interval appendicectomy cases had XGI compared to none in the acute appendicitis group ($p<0.0001$). Of the 11 cases of XGI in the present study, 8 cases had clinical evidence of acute appendicitis and the rest were of interval(delayed) appendicectomy cases. The incidence in appendix was lowest with 0.25% of the total appendicectomy specimens in the present series.

In the ultrastructural study of the cellular components ,the lipid droplets were also seen in cells other than histiocytes,suggesting that these changes are secondary to a common mechanism comprising factors such as obstruction, haemorrhage, inflammation and local hypoxia[15].

Conclusion

Although xanthogranulomatous inflammation is benign, it mimics malignancy clinically and morphologically. It is increasingly described in various anatomic locations. A few cases have been found to be associated with malignancy. So meticulous histopathological examination is necessary to rule out malignancy and correct diagnosis will prevent the patients from undergoing aggressive treatment. This benign diagnosis will relieve the psychological panic of patients and clinicians.

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