



Original Research Article

Histopathological study of cutaneous granulomatous lesions

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ABSTRACT

Introduction: Cutaneous granulomatous lesions are very common encountered by pathologist and dermatologists. Granulomatous dermatoses can be seen in infectious as well as non-infectious conditions leading to chronic inflammation. Clinical features are overlapping, a confirmatory causative finding is essential for the management of patient as treatment varies greatly according to cause. Histopathology remains a gold standard for diagnosis as well as further subtyping of granulomatous inflammatory disorders of skin.

Materials and Methods: A retrospective study of skin lesion biopsies performed for 2 years and 2 months, from November 2016 to January 2019. Clinical details were obtained from requisition forms and the cases of granulomatous lesions were diagnosed and subclassified with the help of H&E and special stains.

Result: The study includes 70 cases. A predominance of male were found with M:F ratio of 1.3:1. 21 to 30 years of age group was the commonest for granulomatous lesions with 34.3% of cases. Infectious granulomatous dermatoses were far high than non-infectious ones. Leprosy remained the major etiology followed by tuberculosis of skin.

Conclusion: Leprosy contribute the major cause of granulomatous dermatoses in this study. Histopathology is gold standard for diagnosis and subclassification of cutaneous granulomatous lesion with a proper history and clinical details.

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1. Introduction

The granulomatous inflammatory disorders are distinct type of chronic inflammatory processes where there is distinctive presence of granulomas. Granulomas are formed by accumulation of epithelioid type histiocyte, inflammatory cells and multinucleated giant cells.¹ Firstly granulomatous term was used by Virchow to describe a granule like tumor mass of granulation tissue.² Granulomatous inflammation is classified as type IV hypersensitivity reaction and can be induced by various kinds of infections, autoimmune, toxic, allergic and neoplastic conditions.

Different types are granulomatous inflammatory lesion of skin are seen in different geographic locations.^{3,4} A single etiology can produce varied histological features and

conversely many granulomatous skin lesion with almost similar histological features can have different etiologies.⁵ So cutaneous granulomatous lesion often present as a diagnostic challenge to pathologists and dermatologists. Granulomatous dermatoses due to infectious causes are very common and leprosy and tuberculosis are the leading etiologies.⁶ Histopathology with routine and special stains play important role in identifying the specific infectious agent¹ and in classification of Hansen disease.^{7,8}

This study was conducted with the aim to evaluate the frequency and patterns of different cutaneous granulomatous lesions with its clinico-histopathological correlation to reach etiological diagnosis.

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2. Material and Methods

70 cutaneous lesion biopsies showing granuloma formation studied retrospectively in “Department of Pathology, Teerthanker Mahaveer Medical college and research center, Moradabad” in duration of 2 years and 2 months from November 2016 to January 2019. Clinical findings and other related information were obtained from requisition forms of biopsies received.

Cutaneous biopsies were routinely processed and stained with H&E and special histochemical stains like Ziehl Neelsen (ZN), Fite Faraco (FF), Periodic Acid Schiff (PAS), Gomori Methenamine Silver (GMS) wherever necessary. Skin lesions having granuloma formation histopathologically were involved in the study. Cases without any granuloma formation and inadequate biopsies were excluded. Cases of cutaneous granulomatous lesion were studied on the basis of their histopathological and clinical findings.

3. Results

Among 70 cases were studied in which male predominance was noted with 40(57%) cases and females constituted 30(43%) case providing M:F ratio of 1.3:1. Most of the patients were noted in age group of 21 to 30 years i.e 24(34.3%) cases followed by 15(21.43%) case in 31 to 40 years. 82% of cases were seen below 50 years of age in our study.

Infectious granulomatous dermatoses were very common, only one case of sarcoidosis was found. Most cases of infectious dermatoses were noted in 21 to 30 years comprising 24(34.3%) cases. Leprosy remained the significant causative reason for infectious granulomatous dermatoses succeeded by tuberculosis of skin.

Borderline tuberculoid leprosy was found to be predominant, constituting 16 (22.86%) cases followed by indeterminate and lepromatous leprosy both had 14(20%) cases, tuberculoid leprosy 13(18.57%) case and 8(11.43%) of orderline lepromatous. In cases of leprosy, lepra bacilli were found to be positive in 21 cases by Fite Faraco stain. Lupus vulgaris constituted 2 cases (2.86%) and only one (1.43%) case of sarcoidosis was found.

Table 1: Shows distribution according to age group

Age distribution	Number of cases	Percentage
1-10	1	1.43
11-20	7	10
21 -30	24	34.3
31-40	15	21.43
41-50	10	14.3
51-60	6	8.6
61-70	3	4.30
71-80	1	1.43
81-90	1	1.43

Table 2: Shows distribution according to etiology of granulomatous skin lesion

Disease	Number of cases	Percentage
Indeterminate	14	20
Tuberculoid Leprosy	13	18.57
Borderline Tuberculoid	16	22.86
Borderline Lepromatous	8	11.43
Lepromatous Leprosy	14	20
ENL	2	2.86
Lupus Vulgaris	2	2.86
Sarcoidosis	1	1.43

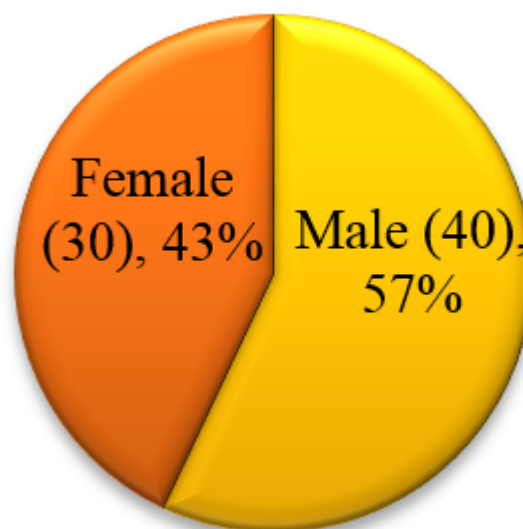


Fig. 1: Sex distribution (n=70)

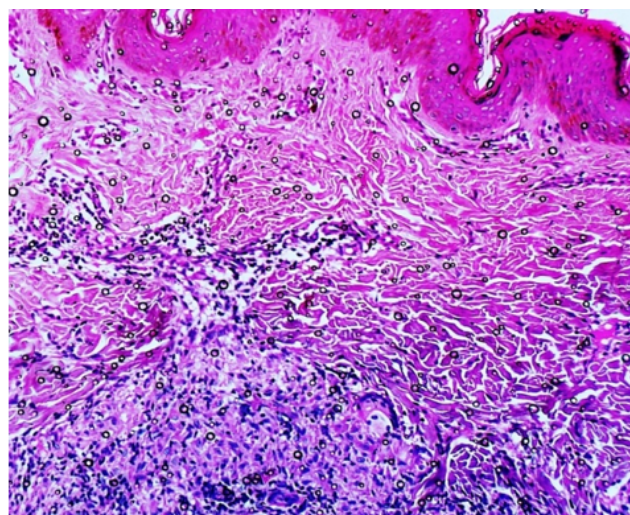


Fig. 2: Photomicrograph showing tuberculoid leprosy

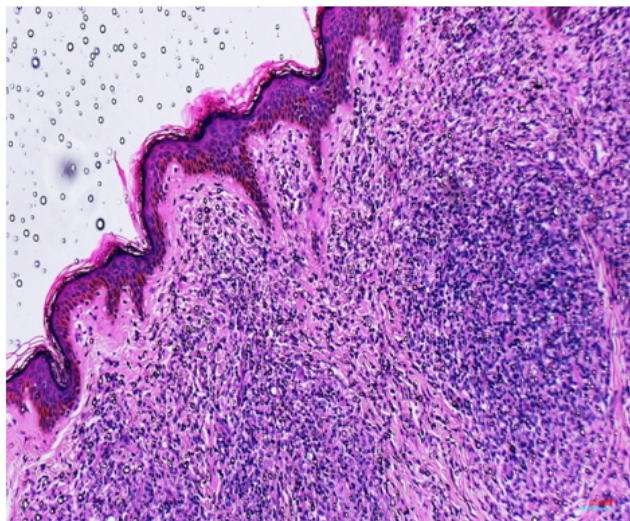


Fig. 3: Photomicrograph showing lepromatous leprosy

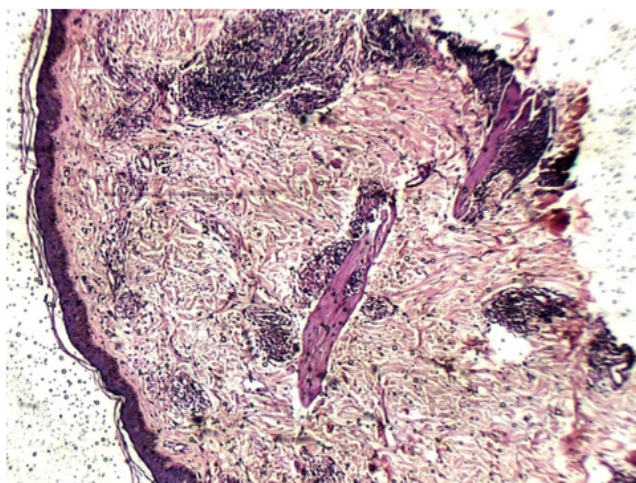


Fig. 4: Photomicrograph showing borderline tuberculoid leprosy

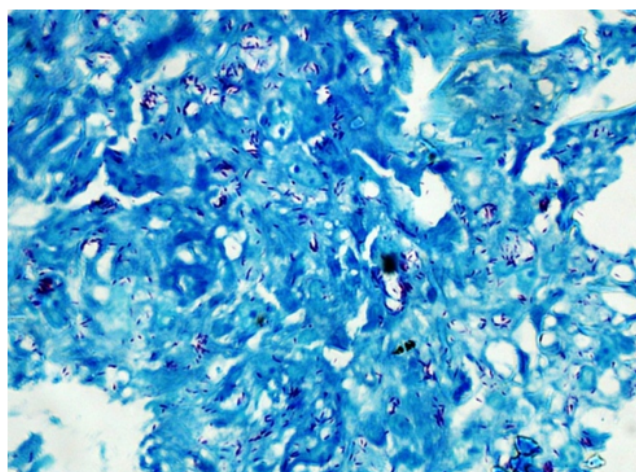


Fig. 5: Photomicrograph showing fite faraco stain

4. Discussion

Granuloma formation is due to type IV hypersensitivity reaction elicited by infectious and non infectious antigen. Granulomatous dermatoses are common in North India with overlapping clinical presentations. So, it becomes important to catch the definitive etiological diagnosis for their treatment.⁹ Histopathology plays a pivotal role for confirmatory diagnosis like in several diseases of other system of the body.⁶

The distribution of granulomatous dermatoses varies widely according to geographic location. Very less number of studies done on the infectious granulomatous dermatoses, showing broad statistical variation for several lesions.

This study is comparable to Gautam et al,⁷ Pawale et al,¹⁰ and Dhar et al¹¹ in finding of predominance of male in granulomatous skin lesion showing male(57%), female(43%) with M:F ratio of 1.3:1. Infectious granulomatous dermatoses were commonest in this study which is similar with the study by Bal et al.^{12,13} Commonest site of the skin lesions was upper extremity which is comparable with the study done by Gautam et al⁷ but not with Zafar et al¹⁴ in which most lesion were found in head and neck region.

Present study shows leprosy as the commonest etiological diagnosis 67(95.71%) cases succeeded by cutaneous tuberculosis 2(2.86%). Mh El Khalwary et al⁹ concluded 40.8% cases showing cutaneous tuberculosis followed by 31.7% case of leprosy. Rubina Qureshi et al¹³ concluded cutaneous leishmaniasis 56.7% as the leading cause of granulomatous dermatoses followed by 13.5% case of lupus vulgaris. Bal et al¹² and Potekar et al¹⁵ concluded leprosy as a leading cause of cutaneous granulomatous disease. The observations in this study is similar with the findings of studies by Bal et al¹² and Potekar et al¹⁵ done in India.

In our study the commonest subtype of leprosy was found to be borderline tuberculoid 16(22.86%) cases which is comparable with the findings of Gautam et al⁷ 46.7% cases, Bal et al¹² 55.2% cases and Chakrabarti¹⁶ et al 57.94% cases. On Morphology non-caseating granulomas were found in all the tuberculoid as well as in borderline tuberculoid leprosy which were same as granulomas in tuberculosis and sarcoidosis. Out of all 67 cases of leprosy, on Fite Faraco stain 21 cases were found to be positive. Strong positivity noted in all cases for lepromatous leprosy on Fite Faraco stain. Borderline tuberculoid leprosy show positivity in 3 cases for Fite Faraco stain but none in tuberculoid leprosy.

Granulomatous infiltration of nerve bundle, arrector pili muscle and adnexa along with proper clinical findings were helpful in the diagnosis of tuberculoid and borderline tuberculoid leprosy.

Cutaneous tuberculosis was the second commonest granulomatous dermatoses in this study, 2(2.86%) cases

were diagnosed as lupus vulgaris were found to be negative on Ziehl Neelsen stain. Bal et al¹² found 5% positivity Z-N staining in cases of Lupus vulgaris. Z-N staining is specific for acid fast bacilli, still its positivity is low and varies with different studies. The present study did not revealed any case of cutaneous leishmaniasis. Rubina et al¹³ found 56.7% cases in Pakistan. In this study one case was reported as cutaneous sarcoidosis based on epithelioid cell granuloma without caseation and presence of inflammatory cells or Langhans giant cells. In this study there was 1 (1.43%) case of sarcoidosis somewhat similar to reported by Gautam et al⁷ 1.88%.

In the present study two cases of fungal granuloma was noted similar to Potekar et al.¹⁵ Different studies reported fungal cutaneous granuloma in span of 2.7% to 3.3%.^{6,7,13,17–19}

5. Conclusion

Etiology of granulomatous dermatoses varies greatly according to geographic distribution. Infectious form of granulomatous dermatoses are important causes with leprosy as the commonest etiology. Clinically granulomatous skin lesions have overlapping presentations. Histopathology plays a pivotal role in the diagnosis and sub-classification of cutaneous granulomatous lesion, along with the proper history and relevant clinical examination. Special stains play supportive role. Our study reports the various important chronic granulomatous inflammatory dermatoses in this region of North India, which will be beneficial for management and implicating the health programmes.

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