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Original Research Article

Spectrum of Different Cutaneous Granulomatous Lesions with its Clinico-Histopathological Correlation to Reach Etiological Diagnosis

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Abstract

Aim: This study was conducted with the aim to evaluate the spectrum of different cutaneous granulomatous lesions with its clinico-histopathological correlation to reach etiological diagnosis.

Materials and Methods: The present observational study was conducted in the Department of Pathology, Patna Medical College and Hospital, Bihar, India for the period of 2 years. This prospective cross-sectional study enrolled 120 cases of skin biopsies after histopathological confirmation of granulomatous lesions.

Results: Among 120 cases were studied in which male predominance was noted with 73(60.84%) cases and females constituted 47(39.16%) case providing M: F ratio of 1.5:1. Most of the patients were noted in age group of 20 to 30 years i.e 45(37.5%) cases followed by 23(19.17%) case in 30 to 40 years. 85% of cases were seen below 50 years of age in our study. Infectious granulomatous dermatoses were very common, only 2 cases of sarcoidosis were found. Most cases of infectious dermatoses were noted in 20 to 30 years comprising 45(37.5%) 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 30 (25%) cases followed by indeterminate and lepromatous leprosy both had 26(21.67%) cases, tuberculoid leprosy 21(17.5%) case and 10(8.33%) of borderline lepromatous. Lupus vulgaris constituted 2 cases (1.67%) and only 2 (1.67%) case of sarcoidosis was found.

Conclusion: The most frequent cause of cutaneous granuloma was leprosy, which was followed by TB, fungal infection, and foreign body response. The most prevalent subtypes of leprosy were borderline tuberculoid leprosy and tuberculoid leprosy.

Keywords: Granuloma, Histopathology, Skin Biopsy.

Introduction

Granulomatous skin lesions are distinctive pattern of chronic inflammatory response of skin due to reaction against various organic and inorganic antigens. [1,2] Granulomas are characterized by focal collection of epithelioid cells or histiocytes, admixed with variable number of leucocytes (especially mononuclear cells) and multinucleated giant cells. Granulomatous reaction is a type IV hypersensitivity reaction evoked by poorly soluble reactive substances. Six types of granulomatous skin lesions are identified according to cellular constituents and associated changes: 1) tuberculoid, 2) sarcoidal, 3) necrobiotic, 4) suppurative 5) foreign body and 6) histoid type granuloma. [3,4]

Incidence and prevalence of different types of granulomatous dermatitis depend on geographic location. Granulomatous skin lesions are common in eastern India. Many granulomatous skin lesions have identical histomorphology and conversely a single pathology can produce varied histological features. [5]

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. [6] Firstly granulomatous term was used by Virchow to describe a granule like tumor mass of granulation tissue. [7] 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. [8,9] 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. [10] Histopathology with routine and special stains play important role in identifying the specific infectious agent1 and in classification of Hansen disease. [1,11]

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.

Material and Methods

The present observational study was conducted in the Department of Pathology, Patna Medical College and Hospital, Bihar, India for the period of 2 years. This study enrolled 120 cases of skin biopsies after histopathological confirmation of granulomatous lesions.

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 finding

Results

Table 1 gender base distribution

Gender	N=120	Percentage
Male	73	60.84
Female	47	39.16

Among 120 cases were studied in which male predominance was noted with 73(60.84%) cases and females constituted 47(39.16%) case providing M :F ratio of 1.5:1.

Table 2: distribution according to age group

Age distribution	Number of cases	Percentage
Below 10	3	2.5
10-20	13	10.83
20 -30	45	37.5
30-40	23	19.17
40-50	18	15
50-60	9	7.5
60-70	6	5
Above 70	3	2.5

Most of the patients were noted in age group of 20 to 30 years i.e 45(37.5%) cases followed by 23(19.17%) case in 30 to 40 years. 85% of cases were seen below 50 years of age in our study.

Table 3: Distribution according to etiology of granulomatous skin lesion

Disease	Number of cases	Percentage
Indeterminate	26	21.67
Tuberculoid Leprosy	21	17.5
Borderline Tuberculoid	30	25
Borderline Lepromatous	10	8.33
Lepromatous Leprosy	26	21.67
Fungal granuloma	3	2.5
Lupus Vulgaris	2	1.67
Sarcoidosis	2	1.67

Infectious granulomatous dermatoses were very common, only 2 cases of sarcoidosis was found. Most cases of infectious dermatoses were noted in 20 to 30 years comprising 45(37.5%) 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

30 (25%) cases followed by indeterminate and lepromatous leprosy both had 26(21.67%) cases, tuberculoid leprosy 21(17.5%) case and 10(8.33%) of borderline lepromatous. Lupus vulgaris constituted 2 cases (1.67%) and only 2 (1.67%) case of sarcoidosis was found.

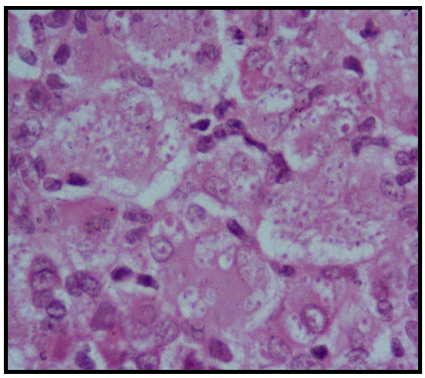


Figure 1: Histoplasmosis

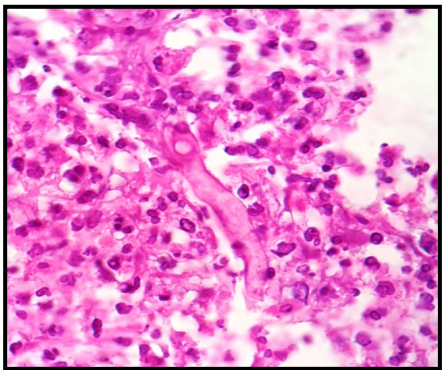
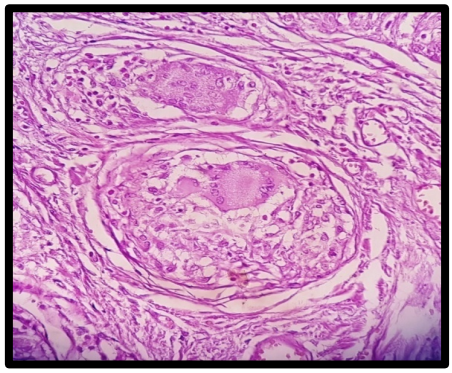


Figure 2: Mucormycosis



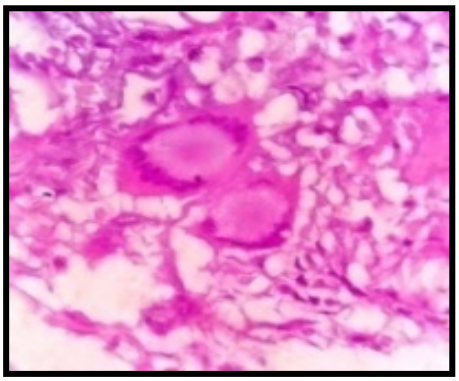


Figure 3: Sarcoidosis granuloma with asteroid body in high power

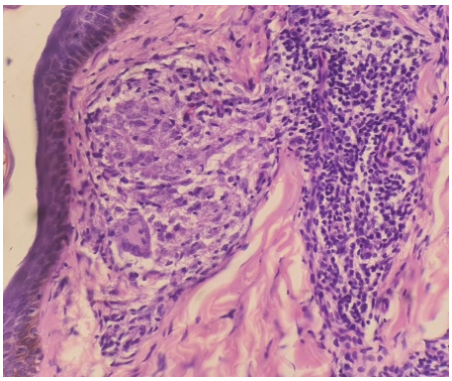


Figure 4: Borderline tuberculosis

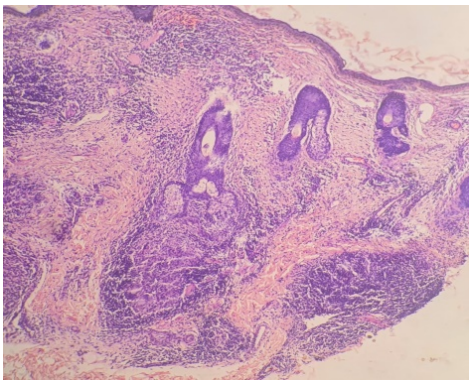


Figure 5: Lepromatous Leprosy

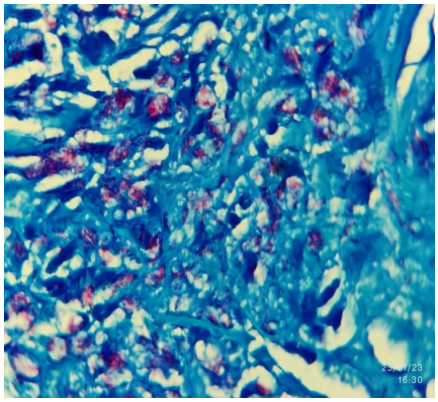


Figure 6: Positive lepra stain

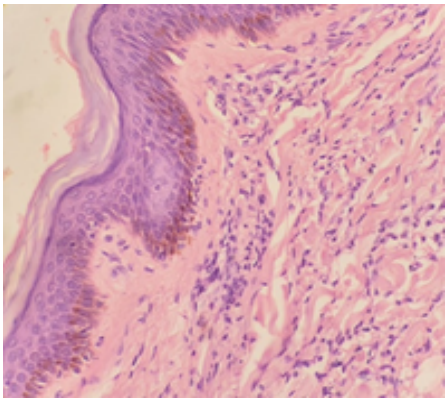


Figure 7: Genz Zone

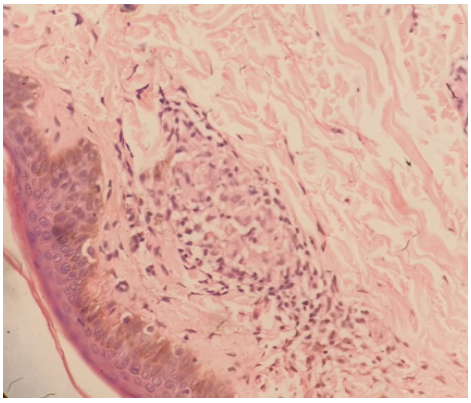


Figure 8: Cutaneous tuberculosis

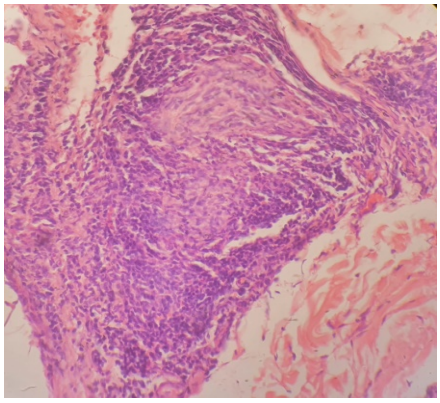


Figure 9: Perineural invasion

Discussion

Cutaneous granulomas are commonly encountered in skin clinics and pose considerable amount of diagnostic dilemma to the dermatologist. Skin biopsy helps confirm a granulomatous reaction and further may point towards a diagnosis in many cases. However, histology alone may also not be sufficient in many cases and other adjunctive tests may be essential to come to a final diagnosis. 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. [12] Histopathology plays a pivotal role for confirmatory diagnosis like in several diseases of other system of the body. [10] The distribution of granulomatous dematoses 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,1 Pawale et al [2] and Dhar et al [11] in finding of predominance of male in granulomatous skin lesion showing male(60.84%), female(39.16%) with M:F ratio of 1.5:1. Infectious granulomatous dermatoses were commonest in this study which is similar with the study by Bal et al. [10,13] Commonest site of the skin lesions was upper extremity which is comparable with the study done by Gautam et al [1] but not with Zafar et al [14] in which most lesion were found in head and neck region. Present study shows Tuberculoid Leprosy as the commonest etiological diagnosis 21(17.5%) cases. Mh El Khalwary et al. [9] concluded 40.8% cases showing cutaneous tuberculosis followed by 31.7% case of leprosy. Rubina Qureshi et al [13] concluded cutaneous leishmaniasis 56.7% as the leading cause of granulomatous dermatoses followed by 13.5% case of lupus vulgaris. Bal et al [10] and Potekar et al [15] concluded leprosy as a leading cause of cutaneous granulomatous disease. The observations in this study were similar with the findings of studies by Bal et al [10] and Potekar et al [15] done in India. In our study the commonest subtype of leprosy was found to be borderline tuberculoid 30(25%) cases which were comparable with the findings of Gautam et al 7 46.7% cases, Bal et al10 55.2% 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. Strong positivity noted in all cases for lepromatous leprosy on Fite Faraco stain. Borderline tuberculoid leprosy showed 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 granulo matous dermatoses in this study, 2(1.67%) cases were diagnosed as lupus vulgaris were found to be negative on Ziehl Neelsen stain. Bal et al [10] 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 al [13] found 56.7% cases in Pakistan. In this study 2 cases was reported as cutaneous sarcoidosis based on epithelioid cell granuloma without caseastion and presence of inflammatory cells or Langhans giant cells. In this study there was 2 (1.67%) case of sarcoidosis somewhat similar to reported by Gautam et al 7 1.88%. In the present study 3(2.5%) 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%. [1,10, 13,16–18]

Conclusion

Etiology of granulomatous dermatoses varies greatly according to geographic distribution. Infectious forms of granulomatous dermatoses are important causes with leprosy as the commonest

etiology. Clinically granulomatous skin lesions have overlapping presentations. Histopathology plays a pivtol 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 which will be beneficial for management and implicating the health programmes.

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