

Original research article**A clinico-histopathological and etiological assessment of different cutaneous granulomatous lesions****¹Dr. Rubiya Khatoon, ²Dr. Venu Somanapally, ³Dr. Naushaba Tazeen**^{1,2}Assistant Professor, Department of Pathology, Mamata Academy of Medical Sciences, Bachupally, Hyderabad, Telangana, India³Assistant Professor, Department of Pathology, Deccan College of Medical Sciences, Hyderabad, Telangana, India**Corresponding Author:**Dr. Naushaba Tazeen (tazeen247@gmail.com)**Abstract**

Aim: 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.

Materials and Methods: The present cross-sectional observational was conducted in the Department of Pathology, Mamata Academy of Medical Sciences, Hyderabad for the period of 1 year. This study enrolled 100 cases of skin biopsies after histopathological confirmation of granulomatous lesions.

Results: 100 cases were studied in which male predominance was noted in 64 (64%) cases and females constituted 36 (36%) cases. Most of the patients were noted in age group of 21 to 31 years i.e 36 (36%) cases followed by 20 (20%) cases in 31 to 41years. 86% of cases were seen below 50 years of age in our study. Leprosy remained the significant causative reason for infectious granulomatous dermatoses succeeded by tuberculosis of skin. Borderline tuberculoid leprosy was found to be predominant, constituting 24 (24%) cases followed by indeterminate type 22 (22%) cases and lepromatous leprosy 21 (21%) cases, tuberculoid leprosy 18 (18%) cases and 8 (8%) cases of borderline lepromatous leprosy. Lupus vulgaris constituted 2 cases (2%) and only 2 (2%) case of sarcoidosis was found.

Conclusion: Leprosy was the most common cause of cutaneous granuloma followed by Tuberculosis, fungal infection and foreign body reaction. Among the cases of leprosy, borderline tuberculoid leprosy and tuberculoid leprosy were the commonest subtype.

Keywords: Granuloma, histopathology, skin biopsy

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 histiocytes, 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].

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]. They often lead to diagnostic confusion among Dermatologist & Pathologist due to variable morphology. A granulomatous inflammation is a chronic inflammatory response with a distinctive tissue reaction pattern defined by focal clusters of epithelioid histiocytes, multinucleated giant cells, and mononuclear leukocytes. This is a type IV or delayed hypersensitivity reaction induced by infection, reactions to autoimmunity, toxins, allergies, drugs, and neoplasms. ⁷ Granulomatous lesions can be classified into six types based on the type of participating inflammatory cells, and associated changes i.e.

1. Tuberculoid
2. Sarcoid
3. Necrobiotic
4. Suppurative
5. Foreign body

6. Histoid

There is a high prevalence of cutaneous granulomatous lesions in a developing country like India with leprosy and tuberculosis being the most common causes. However, the frequency of these infections across different regions is variable^[8]. Tuberculosis is the prototype of granulomatous inflammation and should always be ruled out as a cause, whenever granulomas are identified. Granulomatous inflammations are a common and intriguing problem. The arrival at a proper diagnosis is mandatory, so that the appropriate treatment can be meted out^[9]. Good clinical history, a close histological examination and a clinicopathological correlation is essential in making a final diagnosis.

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 cross-sectional study was conducted in the Department of Pathology, Mamata Academy of Medical Sciences, Hyderabad, for the period of 1 year. This study enrolled 100 cases of skin biopsies after histopathological confirmation of granulomatous lesions after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the patient or the relatives if the patient was not in good condition. The technique, risks, benefits, results and associated complications of the procedure were discussed with all patients. Total 100 cutaneous lesion biopsies showing granuloma formation were included in the study. 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 on histopathology 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=100	Percentage
Male	64	64
Female	36	36

Among 100 cases were studied in which male predominance was noted with 64 (64%) cases and females constituted 36 (36%)cases .

Table 2: Distribution according to age group

Age distribution	Number of cases	Percentage
Below 10	3	3
11-20	11	11
21 -30	36	36
31-40	20	20
41-50	16	16
51-60	8	8
61-70	4	4
Above 70	2	2

Most of the patients were noted in age group of 21 to 31 years i.e 36 (36%) cases followed by 20 (20%) cases in 31 to 41years. 86% 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	22	22
Tuberculoid Leprosy	18	18
Borderline Tuberculoid	24	24
Borderline Lepromatous	8	8
Lepromatous Leprosy	21	21
Fungal granuloma	3	3
Lupus Vulgaris	2	2
Sarcoidosis	2	2

Leprosy remained the significant causative reason for infectious granulomatous dermatoses succeeded by

tuberculosis of skin. Borderline tuberculoid leprosy was found to be predominant, constituting 24 (24%) cases followed by indeterminate 22 (22%) cases and lepromatous leprosy had 21 (21%) cases, tuberculoid leprosy 18 (18%) cases and 8 (8%) cases of borderline lepromatous leprosy. Lupus vulgaris constituted 2 cases (2%) and only 2 (2%) case of sarcoidosis was found.

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^[10]. Among 100 cases were studied in which male predominance was noted with 64 (64%) cases and females constituted 36 (36%) cases. Most of the patients were noted in age group of 21 to 31 years i.e. 36 (36%) cases followed by 20 (20%) cases in 31 to 41 years. 86% of cases were seen below 50 years of age in our study. The distribution of granulomatous dermatoses varies widely according to geographic location. This study was comparable to Gautam *et al.*,^[8] 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.*^[11].

Leprosy remained the significant causative reason for infectious granulomatous dermatoses succeeded by tuberculosis of skin. Borderline tuberculoid leprosy was found to be predominant, constituting 24 (24%) cases followed by indeterminate 22 (22%) cases and lepromatous leprosy had 21 (21%) cases, tuberculoid leprosy 18 (18%) cases and 8 (8%) cases of borderline lepromatous leprosy. Lupus vulgaris constituted 2 cases (2%) and only 2 (2%) case of sarcoidosis was found. Commonest site of the skin lesions was upper extremity which is comparable with the study done by Gautam *et al.*^[8] but not with Zafar *et al.*^[12] in which most lesion were found in head and neck region. Present study shows Tuberculoid Leprosy as the commonest etiological diagnosis in 21(17.5%) cases. Mh El-Khalwary *et al.*^[10] concluded 40.8% cases showing cutaneous tuberculosis followed by 31.7% case of leprosy. Rubina Qureshi *et al.*^[12] concluded cutaneous leishmaniasis 56.7% as the leading cause of granulomatous dermatoses followed by 13.5% case of lupus vulgaris. Bal *et al.*^[11] and Potekar *et al.*^[14] 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.*^[11] and Potekar *et al.*^[14] done in India. In our study the commonest subtype of leprosy was found to be borderline tuberculoid 25 (25%) cases which were comparable with the findings of Gautam *et al.*^[8] 46.7% cases, Bal *et al.*^[11] 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 granulomatous dermatoses in this study, 2(2%) cases were diagnosed as lupus vulgaris were found to be negative on Ziehl Neelsen stain. Bal *et al.*^[11] 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.*^[12] found 56.7% cases in Pakistan. In the present study 3(2.5%) cases of fungal granuloma were noted similar to Potekar *et al.*^[14] Different studies reported fungal cutaneous granuloma in range of 2.7% to 3.3%^[15-17].

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 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 which will be beneficial for management and implicating the health programmes.

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