



HISTOPATHOLOGICAL STUDY OF GRANULOMATOUS LESIONS OF SKIN IN A TERTIARY CARE HOSPITAL, HYDERABAD

Pathology

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ABSTRACT

Granulomatous skin lesions often present as a diagnostic challenge to pathologists and clinicians due to various modes of presentation and identical histological picture. Arrival at a proper diagnosis is mandatory so that appropriate treatment can be meted out. Histopathology remains a gold standard for diagnosis as well as further subtyping of granulomatous inflammatory disorders of skin. The aim of this study will be to determine the relative frequency of granulomatous lesions of the skin and to study the morphology of different dermal granulomas. It is a hospital based retrospective study. Out of 430 skin biopsies received; granulomatous skin lesions constituted 42 cases. Out of them 20 were females (47.6%), males were 22 (52.3%). Male to female ratio is 1.12:1. Age of the patients ranged from 13 years to 74 years with majority of them were in 2nd to 5th decade. Among the 42 granulomatous skin lesions 35 (83.33%) cases were of infectious etiology and 07 (16.67%) cases were non-infectious lesions. In the present study of 42 cases of dermal granulomas, 30 (71.42%) cases were of leprosy, 4 (9.52%) of cutaneous tuberculosis, followed by 4 cases of Granuloma annulare, 2 cases of foreign body granulomas, 1 case of sarcoidosis and 1 case of Chromoblastomycosis. Incidence of leprosy was highest among all cases. Morphological examination of skin biopsies with routine H&E staining as well as use of special stains where ever needed plays an important role in classification of cutaneous granulomatous lesions and directing the clinician in providing suitable treatment to the patient.

KEYWORDS

Granuloma, histopathology, leprosy, tuberculosis

INTRODUCTION :

Granulomatous lesions of skin frequently pose a diagnostic challenge. An identical histologic pattern is seen in certain conditions and a single condition may have several histologic patterns.¹ The granulomatous reaction is defined as a distinctive inflammatory pattern characterized by the presence of granulomas.

Granulomas are relatively discrete collections of histiocytes or epithelioid histiocytes with variable numbers of admixed multinucleated giant cells and inflammatory cells.²

A single etiology can produce varied histological features and conversely many granulomatous skin lesion with almost similar histological features can have different etiologies.³

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.⁴

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

AIMS AND OBJECTIVES :

1. The aim of this study is to determine the relative frequency of granulomatous lesions of the skin.
2. To study the morphology of different granulomatous lesions of the skin.
3. To determine the clinicopathologic concordance.

MATERIALS AND METHODS:

Study Design: Hospital based retrospective study

Study Duration: 2 year study from September 2019 to September 2021

Study Setting: Mamata Academy of Medical Sciences, Bachupally, Hyderabad

Sample Size: All the cases during the study period which meet the inclusion criteria were included. Sample size is calculated using the formula, sample size = Z^2pq/e^2 . Sample size is 42 cases.

Inclusion criteria : All the cases with a histopathological diagnosis of granulomatous lesion of skin are included.

Exclusion criteria :

All other skin lesions were excluded.

METHOD:

Skin biopsies which were received at the Department of Pathology, Mamatha Academy of Medical Sciences, Bachupally are subjected to tissue processing, embedded in paraffin wax and blocks were made. The tissue sectioning of the paraffin blocks was done at 3-4 microns thickness. Routine Hematoxylin and Eosin stains were used. Special stains like PAS, AFB (with 20% and 5% H₂SO₄) were used wherever necessary.

Statistical Analysis Plan:

Descriptive analysis with numbers and percentages are used for presentation of the results with the SPSS software.(version 1.0.0.1406)

RESULTS :

Out of 430 skin biopsies received; granulomatous skin lesions constituted 42 cases. Out of them 20 were females (47.6%), males were 22 (52.3%). Male to female ratio is 1.12:1. Age of the patients ranged from 13 years to 74 years with majority of them were in 2nd to 5th decade.

Table 1 : Distribution of cases among different age groups

AGE (in years)	NO. OF INDIVIDUALS
11-25	10 (23.80%)
26-40	12(28.57%)
41-55	12(28.57%)
56-70	06(14.28%)
71-85	02(04.76%)

Among the 42 granulomatous skin lesions 35 (83.33%) cases were of infectious etiology and 07 (16.67%) cases were non-infectious lesions.

Table 2 : Distribution of cases according to the causative etiology

Type of lesion	No. Of cases(%)
Leprosy - 30 (71.42 %)	
Tuberculoid leprosy	05 (11.90 %)
Boderline tuberculoid	10 (23.80 %)
Indeterminate	01 (2.38 %)
Boderline lepromatous	08 (19.04 %)
Lepromatous leprosy	04 (9.52 %)
Type 1 lepra reaction	01 (2.38 %)
Type 2 lepra reaction (Erythema Nodosum leprosum)	01 (2.38 %)

Cutaneous tuberculosis - 04(9.52 %)	Lupus vulgaris	02 (4.76 %)
	Scrofuloderma	01 (2.38 %)
	Verrucosa cutis	01 (2.38 %)
Granuloma annulare		04 (9.52 %)
Foreign body granulomas		02 (4.76 %)
Sarcoidosis		01 (2.38 %)
Chromoblastomycosis		01 (2.38 %)

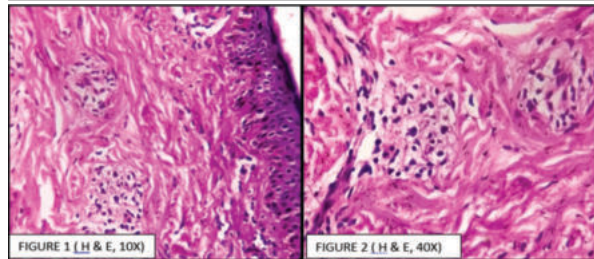


Figure 1 and 2 : Microscopic pictures of Lepromatous leprosy with collections of foamy macrophages in dermis

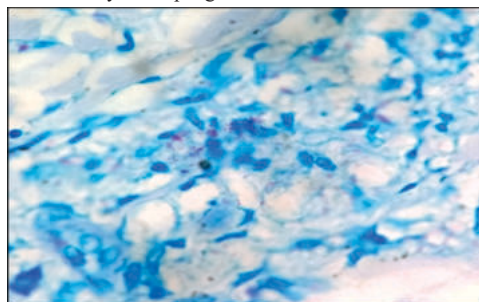


Figure 3: Microscopic picture of Lepromatous leprosy showing positive Fite-Faraco stain for lepra bacilli with bacterial index 4+ (Fite-Faraco stain 100X)

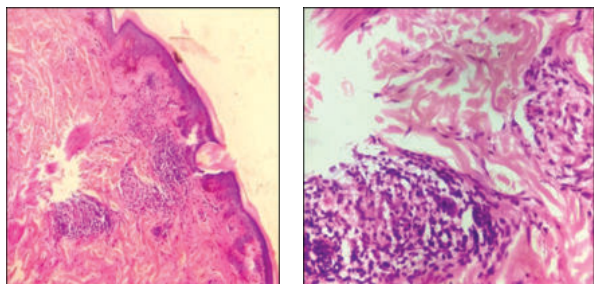


Figure 4 and 5 : Microscopic pictures of borderline tuberculoid leprosy with discrete epithelioid granulomas in the dermis

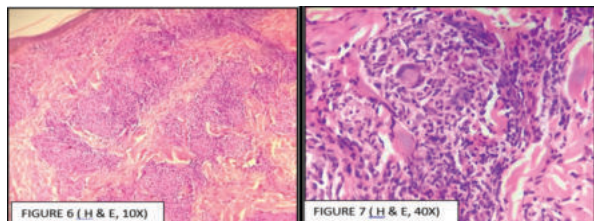


Figure 6 and 7: Microscopic picture of cutaneous tuberculosis showing many granulomas composed of epithelioid cells, giant cells and lymphoplasmacytic infiltrates.

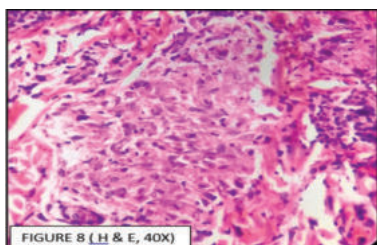


Figure 8 : Microscopic picture of cutaneous lesion in sarcoidosis showing epithelioid granuloma devoid of lymphoplasmacytic infiltrates.

DISCUSSION :

Cutaneous granulomatous lesions 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. Histopathology remains a time-tested tool for establishing a correct diagnosis like in many other diseases pertaining to various organ systems of the body.⁵ Proper diagnosis helps in correct treatment.

In the present study 52.3% were males and 47.6% were females which is almost comparable to the Ahmad et al.⁶ study in which males were (57%), female (43%) with M:F ratio of 1.3:1 and also with other studies like Pawale J et al.⁷ Where as in M Naved Uz Zafar et al.⁸ study 52 (42.7%) were males and 71 (57.3%) were females.

In study conducted by M Naved Uz Zafar et al.⁸ out of 2682 skin biopsies received, 123 were diagnosed as having granulomatous reaction pattern. This accounts to around 4.6%.

In the present study 430 skin biopsies were received over a period of 2 years of which 42 case were having granulomatous reaction. This accounts for around 9.8% which is more than double the study conducted by M Naved Uz Zafar et al. In Gautam K et al.⁹ study it is 6.67%.

Among the granulomatous skin lesions infectious type were common in the present study which is comparable to that of study done by Rashmi Rani Bharti et al.¹⁰ and Bal et al.¹¹ In the present study of 42 cases of dermal granulomas, 30 (71.42 %) cases were of leprosy, 4 (9.52 %) of cutaneous tuberculosis, followed by others. Incidence of leprosy was highest among all cases.

This is in accordance with the study conducted by Faiyaz Ahmad et al.¹². In their study leprosy came as the commonest etiological diagnosis 67 (95.71%) cases followed by cutaneous tuberculosis 2 (2.86%) cases. Also in study conducted by Srabani Chakrabarti et al.¹⁵, leprosy came to be the common type of diagnosis on histopathological examination and etiological typing of lesions constituting to 107 cases, 57.52%.

Cutaneous tuberculosis was the second commonest granulomatous dermatoses in this study i.e., there were 4 cases (9.52 %) of cutaneous tuberculosis in the present study. Similar finding seen in study conducted by Dr. Rajiv Kumar¹³. Whereas it was reported 40.8% cases of cutaneous tuberculosis followed by leprosy (31.7%) in study conducted by Mohammed EL K et al.¹⁴.

In present study cutaneous tuberculosis cases showed multiple granulomas with necrosis and involving the entire dermis. ZN staining was done with 20% acid and acid fast bacilli were found in 1 case of tuberculosis verrucosa cutis.

On histopathological examination in present study among the leprosy cases i.e., 30 cases, borderline tuberculoid came to be most common subtype (10 cases, 23.80 %) which is in accordance with the study conducted by Srabani Chakrabarti et al.¹⁵ in which out of 107 leprosy cases borderline tuberculoid constituted to 57.94% (62 cases) . Also in study conducted by Venus Khanna et al.¹⁶ most common type was Tuberculoid type (62/175 cases, 35.43%).

In present study tuberculoid type of leprosy showed granulomas around the nerve bundles which confirmed the clinical diagnosis. On Fite Faraco staining with 5% acid for lepra bacilli strong positivity seen in lepromatous leprosy cases.

One case of fungal granuloma was diagnosed which showed granuloma along with copper penny bodies confirming the diagnosis of Chromoblastomycosis. Similar finding was found in the study conducted by Khanna V et al.¹⁶ In the present study 1 case (2.38 %) of sarcoidosis was diagnosed. Clinical differential diagnosis of that case was tuberculosis / sarcoidosis. On histopathological examination it was confirmed as sarcoidosis as there were naked granulomas characterized by accumulation of epithelioid macrophages without a significant surrounding inflammatory infiltrate. Also in study conducted by Faiyaz Ahmad et al.¹² there was 1 (1.43%) case of sarcoidosis.

CONCLUSION :

Clinician may be in dilemma in finding the exact cause of cutaneous

granulomatous lesions. Histopathological examination along with clinical differential diagnosis helps in correct approach of finding the etiology causing the cutaneous granulomas.

Thus morphological examination of skin biopsies with routine H&E staining as well as use of special stains where ever needed plays an important role in classification of cutaneous granulomatous lesions and directing the clinician in providing suitable treatment to the patient.

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