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Original research article

Histopathological patterns of different cutaneous granulomatous lesions: cross sectional observational study

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Abstract

Aim: Histopathological patterns of different cutaneous granulomatous lesions

Materials and Methods: The present cross-sectional observational study was conducted in the Department of Pathology for 10 months This cross sectional study enrolled 100 cases of skin biopsies after histopathological confirmation of granulomatous lesions.

Results: Among 100 cases were studied in which male predominance was noted with 70(60.84%) cases and females constituted 30(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.

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: cutaneous lesions, leprosy, tuberculosis

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

Introduction

Granulomas are focal chronic inflammatory response characterized by a collection of activated histiocytes and multinucleate giant cells that may or may not have a cuff of surrounding lymphocytes or show necrosis. Granulomas occurring in the skin have numerous etiologies and accordingly variable clinico-pathological presentations. The etiologies range from infections like tuberculosis, leprosy, fungal infections to other causes like foreign body, sarcoidosis, necrobiosis and drug reactions. Thus, an etiological classification is unsatisfactory.

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 agent 1 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.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

Material and Methods : The present cross-sectional Observational was conducted in the Department of Pathology, Shree Narayan Medical Institute and Hospital, Saharsa , Bihar, India for 10 months

Methodology

Total 100 cutaneous lesion biopsies showing granuloma formation include 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 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

Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages and means.

Results

Table 1 Gender base distribution

Gender	N=100	Percentage
Male	70	60.84
Female	30	39.16

Table 2: Distribution according to age group

Age distribution	Number of cases	Percentage
Below 10	2	2.5
10-20	10	10.83
20 -30	45	37.5

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

30-40	20	19.17
40-50	10	15
50-60	4	7.5
60-70	6	5
Above 70	3	2.5

Table 3: Distribution according to etiology of granulomatous skin lesion

Disease	Number of cases	Percentage
Indeterminate	20	21.67
Tuberculoid Leprosy	20	17.5
Borderline Tuberculoid	28	25
Borderline Lepromatous	5	8.33
Lepromatous Leprosy	20	21.67
Fungal granuloma	3	2.5
Lupus Vulgaris	2	1.67
Sarcoidosis	2	1.67

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.[9]

Histopathology plays a pivotal role for confirmatory diagnosis like in several diseases of other system of the body.[6] The distribution of granulomatous dematoses varies widely according to geographic location. Very less number of studies done on the infectious granulomatous

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

dermatoses, showing broad statistical variation for several lesions. This study is comparable to Gautam et al.[7] Pawale et al.[10] 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.[12,13] Commonest site of the skin lesions was upper extremity which is comparable with the study done by Gautam et al.[7] 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.[12] and Potekar et al.[15] 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 al.[12] 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 is comparable with the findings of Gautam et al.[7] 46.7% cases, Bal et al 12 55.2% cases and Chakrabarti et al.[16] 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. Strong positivity noted in all cases for lepromatous leprosy on Fite Faraco stain. Borderline tuberculoid leprosy shows 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.[12] found 5% positivity Z-N staining in cases of Lupus vulgaris. Z-N staining is specific for acid fast bacilli, still its

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

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%.[6,7,13,16-18] .

Conclusion

Etiology of granulomatous dermatoses varies greatly according to geographic distribution. Infectious form of granulomatous dermatoses is 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 of India, which will be beneficial for management and implicating the health programmes.

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ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

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ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 09, 2023

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