

Original Article

Histopathological study of dermal granuloma

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ABSTRACT

Introduction: The objectives of this study were to confirm the diagnosis of clinically suspected dermal granulomatous diseases by histopathological examination and by routine and special stains as well as to study the incidence of various types of dermal granulomas.

Materials And Methods: This study was conducted at the Department of Pathology in collaboration with Department of Skin and Venereal disease. A total of 90 cases from outdoor patient department of skin and venereal disease, which were clinically diagnosed as suspected dermal granulomatous diseases, were taken as the study population.

Results: In our study, we found that leprosy had the highest incidence (50%), followed by cutaneous tuberculosis (30%) among all dermal granulomatous diseases like syphilis, fungal, granuloma annulare, foreign body, actinomycosis, and sarcoidosis. Dermal granulomas were most common in middle age between 21 and 40 years of age.

Conclusion: Histopathology played an important role in the final diagnosis of dermal granulomatous lesions. Most common dermal granulomatous disease was leprosy, followed by cutaneous tuberculosis.

Keywords: Cutaneous tuberculosis, Dermal granulomatous diseases, Leprosy

INTRODUCTION

The granulomatous reaction pattern is defined as a distinctive inflammatory pattern characterized by the granulomas.^[1] It is difficult to present a completely satisfactory classification of granulomatous reaction.^[2] Granulomatous lesions of skin and subcutaneous tissue are known as “Dermal Granulomas,” which are of four types; immunogenic, infectious, foreign body, and granulomas associated with tissue injury.^[3] Skin biopsies and microscopic study with routine hematoxylin and eosin as well as by special stains are must to identify the type and etiologic agent of the granuloma. In present study, following types of dermal granulomas were included—leprosy, cutaneous tuberculosis, syphilis, fungal, actinomycosis, foreign body granuloma, granuloma annulare, and sarcoidosis.

MATERIALS AND METHODS

A total of 90 cases of clinically diagnosed and suspected dermal granulomas were studied. The specimens were collected from patients attending outdoor patient department of skin and venereal disease. Complete history of the patient was taken including type and site of lesion, duration

of illness, physical examination, family history, and previous investigations.

Specimens were collected from suspected site after cleaning the lesion with spirit. For histopathological diagnosis, all skin biopsies were taken by punch measuring 3–4-mm in diameter after injecting 1% lignocaine. In all specimens, subcutaneous fat were taken to see the extent of disease.

All punch biopsies were fixed in 10% formalin for 24 h. After processing, all slides were stained by hematoxylin and eosin stain (Harris hematoxylin). Few special stains were also used for confirmation of the particular diagnosis such as Fite–Faraco, Ziehl–Neelsen, and periodic acid–Schiff stains.

OBSERVATION AND DISCUSSION

Total 90 cases were clinically diagnosed as various types of dermal granulomas, of which 10 cases were diagnosed histologically as non-granulomatous lesions. Thus, the actual study number of histologically proved cases of dermal granulomas was 80 of the total 90 cases.

In present study of 80 cases of dermal granulomas, 50% cases were of leprosy, 30% of cutaneous tuberculosis, 6.25% of syphilis, followed by others [Table 1]. Incidence of leprosy was highest among all cases in spite of the various leprosy eradication programs that are being enforced in our country.

Dermal granulomas were most common in the middle age between 21 and 40 years of age (73.75%) [Table 2]. A similar study by Naved Uz Zafar *et al.*^[4] showed that dermal granulomas were common in 11–20 years of age. Maximum cases of leprosy were reported between 31 and 40 years (55%) of age [Table 3]. Productive population of the community most commonly affected in our study, which was contrary to that reported in Junaid *et al.*,^[5] showed maximum cases of leprosy to be between 41 and 60 years of age.

Out of 80 cases of dermal granulomas, 50 were males (62.50%) and 30 were females (37.5%) [Table 4]. These results were compared to that reported by Dhar,^[6] in which males (54.55%) were slightly more affected than females (45.46%).

As the lepromatous leprosy [Figures 1 and 2] has the highest infectivity, highest incidence of lepromatous leprosy (57.5%) was noted among all cases of leprosy, followed by tuberculoid leprosy (27.5%). All 6 cases of borderline leprosy were off borderline lepromatous leprosy type [Table 5]. But in Tiwari and Tutakne's study,^[7] maximum cases were of tuberculoid leprosy as they had carried out their study in Indian Armed Forces, where regular medical examination at unit level of all soldiers greatly helped in early detection of leprosy cases.

Incidence of lupus vulgaris (45.83%) [Figures 3 and 4] was the highest among all cases of cutaneous tuberculosis, followed by tuberculosis verrucosa cutis (33.34%). These results were compared with that by Naved Uz Zafar *et al.*,^[4] which also showed the highest incidence of lupus vulgaris (38.3%) followed by tuberculosis verrucosa cutis (19.1%) [Table 6]. Similar to leprosy, cases of cutaneous tuberculosis were also reported between the age group of 21–30 years (54.17%), which is the productive age group of the community [Table 7].

All diagnosed cases of syphilis were of secondary syphilis. As nowadays syphilis is diagnosed clinically and confirmed by serological test like Venereal Disease Research Laboratory (VDRL) and Treponema Pallidum Hemagglutination (TPHA), very few cases were biopsied. As syphilis is a sexually transmitted disease, mostly young to adult population were affected. Our study showed that all incidences occurred between 11 and 30 years and these results were compared with that by Anandam^[8] [Table 8].

All 3 cases of fungal granulomas [Figures 5 and 6] were of mycetoma foot. All patients were reported between the age group of 21–35 years. Both the cases of foreign body

Table 1: Incidence of various types of dermal granuloma.

Types of dermal granuloma	Cases	Percentage (%)
Leprosy	40	50
Cutaneous tuberculosis	24	30
Syphilis	5	6.25
Fungal	3	3.8
Foreign body	2	2.5
Actinomycosis	2	2.5
Granuloma annulare	3	3.75
Sarcoidosis	1	1.2
Total	80	100

Table 2: Comparative study of age incidence of dermal granuloma.

Age in years	Present study		Naved Uz Zafar <i>et al.</i> ^[4]	
	Cases	Percentage (%)	Cases	Percentage (%)
1–10	4	5	3	2.4
11–20	7	8.75	47	38.2
21–30	30	37.5	26	21.1
31–40	29	36.25	17	13.8
41–50	10	12.5	13	10.6
50–60	–	–	11	8.9
>60	–	–	6	4.8
Total	80	100	123	100

Table 3: Comparative study of age incidence in leprosy.

Age in years	Present study		Junaid <i>et al.</i> ^[5]	
	Cases	Percentage (%)	Cases	Percentage (%)
1–20	4	10	3	3
20–40	28	70	28	28
41–60	54	20	54	54
>60	–	–	15	15
Total	40	100	100	100

Table 4: Comparative study of sex predilection in dermal granuloma.

Gender	Present study		Dhar ^[6]	
	Cases	Percentage (%)	Cases	Percentage (%)
Male	50	62.50	12	54.55
Female	30	37.50	10	45.46
Total	80	100	22	100

Table 5: Comparative study of incidence of various types of leprosy.

Types of leprosy	Present study		Tiwari and Tutakne ^[7]	
	Cases	Percentage (%)	Cases	Percentage (%)
Lepromatous leprosy	23	57.5	498	26.06
Borderline leprosy	6	15	223	11.67
Tuberculoid leprosy	11	27.5	1023	53.53
Indeterminate leprosy	–	–	167	8.74
Total	40	100	1911	100

Table 6: Comparative study of incidence of cutaneous tuberculosis.

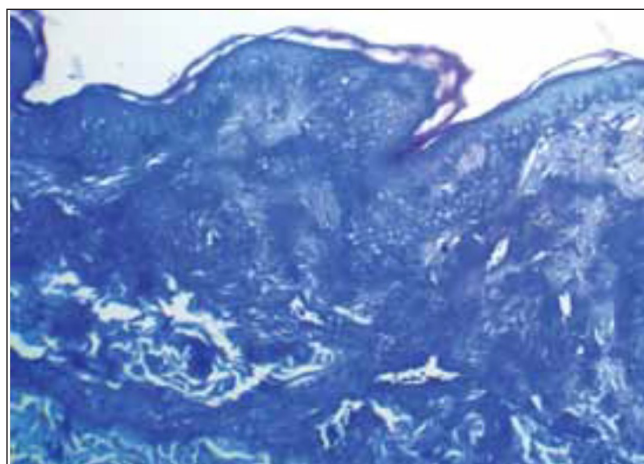
Types of tuberculosis	Present study		Naved Uz Zafar <i>et al.</i> ^[4]	
	Cases	Percentage (%)	Cases	Percentage (%)
Tuberculosis verrucosa cutis	8	33.34	9	19.1
Lupus vulgaris	11	45.83	18	38.3
Tuberculosis cutis orificialis	–	–	7	14.9
Tuberculous gumma	–	–	6	12.8
Scrofuloderma	3	12.5	7	14.9
Primary tuberculosis	2	8.33	–	–
Total	24	100	47	100

Table 7: Age incidence in cutaneous tuberculosis.

Age in years	Cases	Percentage (%)
1–10	4	16.67
11–20	3	12.5
21–30	13	54.17
31–40	2	8.33
41–50	2	8.33
Total	24	100

Table 8: Comparative study of age incidence in secondary syphilis.

Age in years	Present study		Anandam ^[8]	
	Cases	Percentage (%)	Cases	Percentage (%)
1–10	–	–	3	0.5
11–20	1	20	196	28.4
21–30	4	80	329	47.7
31–40	–	–	124	17.9
41–50	–	–	38	5.5
Total	5	100	690	100

**Figure 1:** 10 × showing globi of lepra bacilli with fite faraco stain – Lepromatous leprosy.

granuloma were females. Cases were reported between the age group of 21 and 50 years. Catgut and Sebum were the foreign material that had initiated formation of foreign body granuloma. Both cases of actinomycosis were young male with the lesions over their jaw. Total 3 patients were presented with lesions of granuloma annulare. One 38-year-old male patient was presented with sarcoid granuloma, which was diagnosed by exclusion of all other possibilities of epithelioid cell granulomas and with clinical correlation.

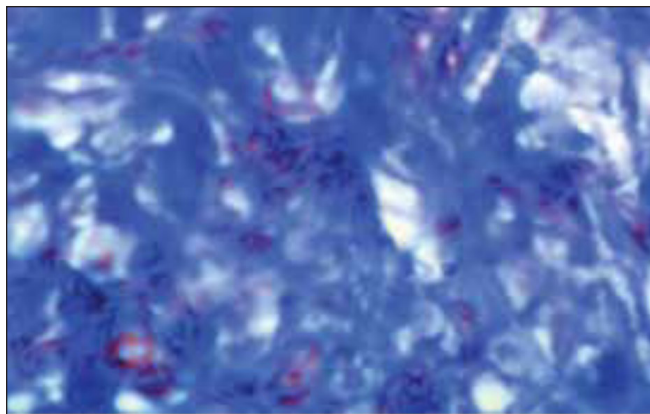


Figure 2: 40 × showing globi of lepra bacilli with fite faraco stain – Lepromatous leprosy.

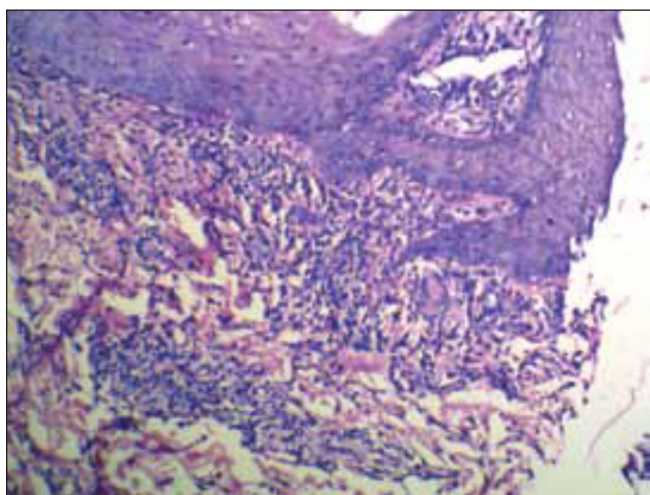


Figure 3: 10 × showing granuloma formation in dermis – Lupus vulgaris.

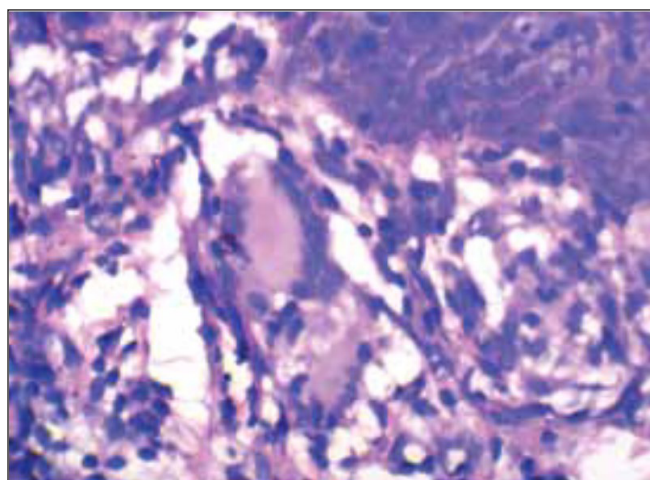


Figure 4: 40 × showing langhan's type of giant cell in dermis – Lupus vulgaris.

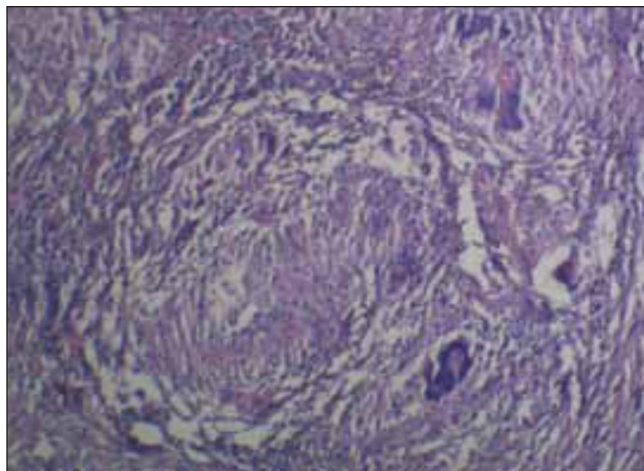


Figure 5: 10 × showing fungal granuloma.

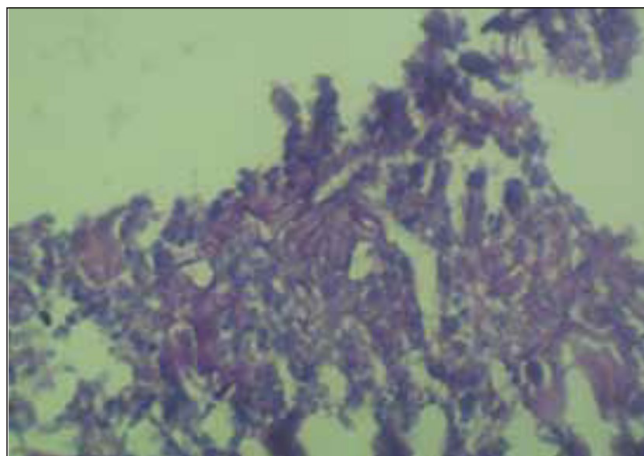


Figure 6: 40 × showing hyphae of fungi – Fungal granuloma.

CONCLUSION

In our study, most common dermal granulomatous disease was leprosy, followed by cutaneous tuberculosis. Histopathology played an important role in the final diagnosis of dermal granulomatous lesions. Dermal granulomatous lesions have varied clinical picture and are often difficult to classify. It is also impossible to treat the patients without histopathological confirmation of the diagnosis.

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Conflict of Interest

There are no conflicts of interest.

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