

## Original Research

### Evaluation of histopathological pattern of granulomatous skin lesions

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#### ABSTRACT:

**Background:** Granulomas are nodular collections of immune cells, typically consisting of macrophages, lymphocytes, and occasionally other cell types. These granulomas can form in response to a variety of stimuli, including infectious agents, foreign bodies, or autoimmune processes. The present study was conducted to evaluate histopathological pattern of granulomatous skin lesions. **Materials & Methods:** 58 tissue specimen of granulomatous skin lesions were obtained in general pathology department. Punch biopsies of the lesions along with normal tissue received were fixed in 10% neutral buffered formalin, grossed and processed, with the standard methods followed by staining with hematoxylin and eosin stain. All the biopsies were examined under the microscope. Special stains like modified Ziehl-Neelson (ZN), Fite Faraco (FF) were used wherever required to show the acid- fast bacilli. **Results:** Out of 58 patients, males were 32 and females were 26. The age group <20 years had 8, 21-40 years had 28 and 41-60 years had 22 patients. The difference was significant ( $P < 0.05$ ). infectious lesions comprised of tuberculosis in 26 and leprosy in 20 cases. Non-infectious were granuloma annulare in 3 and annular elastolytic giant cell granuloma in 5 cases. 4 cases were miscellaneous. The difference was significant ( $P < 0.05$ ). **Conclusion:** Maximum cases were of tuberculosis and leprosy. Classifying and subtyping different granulomatous skin disorders is aided by histopathology. A definitive diagnosis can be made with the aid of appropriate clinical information and thorough evaluation of skin sample sections.

**Keywords:** Cutaneous granulomatosis, lymphocytes, hematoxylin

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#### INTRODUCTION

Cutaneous granulomatosis refers to a group of skin conditions characterized by the formation of granulomas in the skin.<sup>1</sup> Granulomas are nodular collections of immune cells, typically consisting of macrophages, lymphocytes, and occasionally other cell types. These granulomas can form in response to a variety of stimuli, including infectious agents, foreign bodies, or autoimmune processes.<sup>2</sup>

The formation of granulomas in cutaneous granulomatosis is thought to involve dysregulated immune responses. In some cases, an inciting trigger, such as an infection or foreign material, may stimulate the immune system to produce granulomas. In others, there may be an underlying autoimmune or inflammatory process.<sup>3</sup> The clinical presentation of cutaneous granulomatosis can vary depending on the underlying cause and specific condition. Common features include skin-colored or red-brown papules,

plaques, or nodules that may be asymptomatic or associated with itching, tenderness, or other symptoms.<sup>4</sup>

Geographical location has a significant impact on the spread of granulomatous inflammation, which is also influenced by a number of other variables, including socioeconomic position, education, cultural differences, and the accessibility of healthcare facilities.<sup>5</sup> Skin samples are essential for assessing cutaneous granulomatosis, and the diagnosis can be approached with the use of certain stains and association with clinical symptoms. In dermatology clinics, cutaneous granulomas are frequently seen and present a significant diagnostic challenge to both the dermatologist and the histopathologist.<sup>6</sup> The present study was conducted to evaluate histopathological pattern of granulomatous skin lesions.

**MATERIALS & METHODS**

The present study was conducted on 58 tissue specimen of granulomatous skin lesions. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Punch biopsies of the lesions along with normal tissue received were fixed in 10% neutral buffered formalin,

grossed and processed, with the standard methods followed by staining with hematoxylin and eosin stain. All the biopsies were examined under the microscope. Special stains like modified Ziehl-Neelson (ZN), Fite Faraco (FF) were used wherever required to show the acid- fast bacilli. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 58		
Gender	Males	Females
Number	32	26

Table I shows that out of 58 patients, males were 32 and females were 26.

**Table II Age wise distribution**

Age group (years)	Number	P value
<20	8	0.76
21-40	28	
41-60	22	

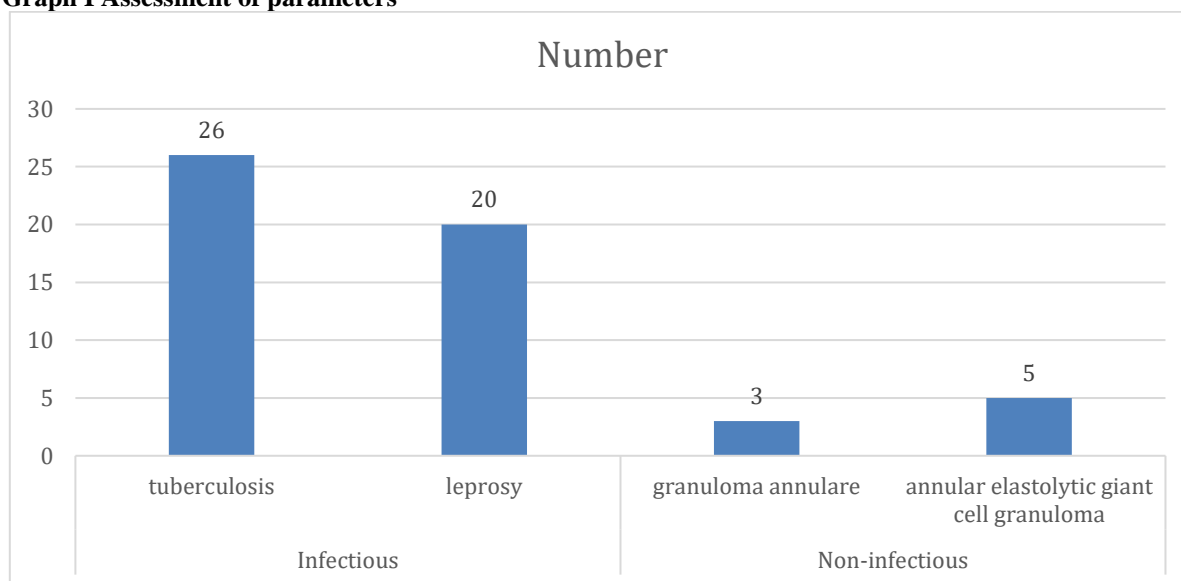
Table II shows that age group <20 years had 8, 21-40 years had 28 and 41-60 years had 22 patients. The difference was significant (P< 0.05).

**Table III Assessment of parameters**

Diagnosis	Variables	Number	P value
Infectious	tuberculosis	26	0.04
	leprosy	20	
Non-infectious	granuloma annulare	3	
	annular elastolytic giant cell granuloma	5	
Miscellaneous		4	

Table III, graph I shows that infectious lesions comprised of tuberculosis in 26 and leprosy in 20 cases. Non-infectious were granuloma annulare in 3 and annular elastolytic giant cell granuloma in 5 cases. 4 cases were miscellaneous. The difference was significant (P< 0.05).

**Graph I Assessment of parameters**



**DISCUSSION**

Cutaneous granulomatosis encompasses several different conditions. Granuloma annulare is characterized by ring-shaped or arcuate plaques on the

skin, often found on the hands, feet, or elbows. The cause is unknown, but it is believed to involve a delayed hypersensitivity reaction. Necrobiosis lipoidica typically affects the shins and presents as

red-brown plaques with a shiny, atrophic appearance. It is associated with diabetes mellitus in some cases.<sup>7</sup> Foreign body granulomas result from the presence of foreign material, such as sutures, tattoos, or injected substances, in the skin.<sup>8</sup> Cutaneous sarcoidosis is a manifestation of systemic sarcoidosis characterized by non-caseating granulomas in the skin. It can present with various skin lesions, including papules, plaques, nodules, and scars. The diagnosis of cutaneous granulomatosis is usually made using skin biopsy specimens and clinical examination and histological analysis.<sup>9</sup> It may be necessary to do imaging scans, laboratory testing, and other investigations to check for underlying systemic disease or related diseases. The underlying cause and particular form of cutaneous granulomatosis determine how it should be treated. If the lesions are not irritating visually and are asymptomatic, then surveillance might be beneficial in certain circumstances.<sup>10</sup> Corticosteroids, antimalarial drugs, immunosuppressants, and other topical or systemic drugs can be used to lower inflammation and manage symptoms. For isolated lesions such as foreign body granulomas, surgical excision may be required.<sup>11</sup> The present study was conducted to evaluate histopathological pattern of granulomatous skin lesions.

We found that out of 58 patients, males were 32 and females were 26. The age group <20 years had 8, 21-40 years had 28 and 41-60 years had 22 patients. Joshi et al<sup>12</sup> studied the spectrum, prevalence and frequency of various types of granulomatous skin diseases according to the age and sex of the patient. Punch biopsies received were fixed, grossed and processed, with the standard methods and were stained with hematoxylin and Eosin stain. All these biopsies were examined under the microscope and the slides in which granulomatous skin lesions were seen were selected for the study. Out of total 138 cases maximum number of patients belong to the age group of 21-40 years, with male preponderance. Infectious causes were the most common pathology leading to granulomatous skin lesions, with leprosy as the most common etiology.

We observed that infectious lesions comprised of tuberculosis in 26 and leprosy in 20 cases. Non-infectious were granuloma annulare in 3 and annular elastolytic giant cell granuloma in 5 cases. 4 cases were miscellaneous. Ahmad et al<sup>13</sup> performed a retrospective study of skin lesion biopsies. The study includes 70 cases. A predominance of male was found with M:F ratio of 1.3:1. 21 to 30 years of age group was the commonest for granulomatous lesions with 34.3% of cases. Infectious granulomatous dermatoses were far high than non-infectious ones. Leprosy remained the major etiology followed by tuberculosis of skin. Leprosy contributed the major cause of granulomatous dermatoses. Histopathology is gold standard for diagnosis and subclassification of cutaneous granulomatous lesion with a proper history and clinical details.

Kumbar et al<sup>14</sup> studied the histomorphology of various granulomatous lesions of skin and classify them, accordingly into different categories. The skin biopsies diagnosed histopathologically as granulomatous dermatitis on H & E- stained sections were selected. Complete clinical and relevant history were recorded. Special stains were employed whenever required. A total of 137 cases exhibited granulomatous reaction pattern. Among the granulomatous lesions of skin, tuberculoid granulomas were seen in 109 cases (79.56%), foreign body type in 12 cases (8.75%), suppurative and necrobiotic granulomas each in 7 cases (5.1%) and histiocytic and mixed inflammatory type each in one case (0.7%). Leprosy was the most common granulomatous lesion in 66.4% of the cases (91/137). The shortcoming of the study is small sample size.

## CONCLUSION

Authors found that maximum cases were of tuberculosis and leprosy. Classifying and subtyping different granulomatous skin disorders is aided by histopathology. A definitive diagnosis can be made with the aid of appropriate clinical information and thorough evaluation of skin sample sections.

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