

Spectrum of Granulomatous Lesion of Skin Among Skin Punch Biopsies

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ABSTRACT

Introduction- The granulomatous reaction pattern 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

Material & methods -This prospective observational study was conducted in dept of pathology at a tertiary level health care centre in rajasthan . 500 consecutive skin punch from 1ST Aug 2019 onwards reviewed . Clinical information and clinical diagnosis were noted .Sections stained with hematoxylin and eosin along with other necessary special stains were studied. The granulomas were subclassified into sarcoidal, tuberculoid, necrobiotic, suppurative, foreign body and miscellaneous granulomas.

Results- In consecutive 500 skin punch biopsies, 60 cases (12.00%) were diagnosed as granulomatous lesion. Granulomatous lesion was more common in male , 3rd decade of life and Upper extremities was commonly involved site in granulomatous lesions. Tuberculoid was most common type of granuloma . Infectious etiology was commonest in this spectrum , leprosy followed by tuberculosis. In leprosy tuberculoid leprosy was commonest followed by borderline leprosy . Among cutaneous lupus vulgaris was commonest . In suppurative type , mycetoma was predominant.

Conclusion - Increased incidence of granulomatous lesions needs a good clinical history, a close histological examination and a clinico-pathological correlation in making a final diagnosis. Optimum communication between pathologists and clinician is utmost important with strict adherence to clinical criteria while deciding site and depth of biopsy.

Keywords

Granulomatous; punchbiopsy; tuberculoid ; necrobiotic ; Granuloma

Introduction

The granulomatous reaction pattern 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. (1) According to Dorland, the term “granulomatous” was expressed initially by Virchow to describe a tumor-like mass or nodule of granulation tissue. (2) Granulomatous skin lesions often present as a diagnostic challenge to dermatopathologist due to various modes of presentation and identical histological picture. (3,4) The occurrence of different types of granulomatous lesions of the skin varies according to the geographical location (5). The aim of this study was to determine the relative frequency of granulomatous lesions of the skin, the level of clinico pathologic concordance.

Methodology

This prospective observational study was conducted in dept of pathology at a tertiary level health care centre in Rajasthan. 500 consecutive skin punch from 1ST Aug 2019 onwards reviewed. Clinical information and clinical diagnosis were noted. Sections stained with hematoxylin and eosin along with other necessary special stains were studied. The granulomas were subclassified into sarcoidal, tuberculoid, necrobiotic, suppurative, foreign body and miscellaneous granulomas. 1

Results

Among 500 skin punch biopsies received, 60 (12%) cases were diagnosed as granulomatous lesions on HPE. Among these 60 cases males (37/60) were commonly affected, 3rd decade of life with mean age of 34.6 and Upper extremity was predominantly involved in these granulomatous lesions.

Figure 1:- Frequency of various histopathological diagnosis of granulomatous lesion.

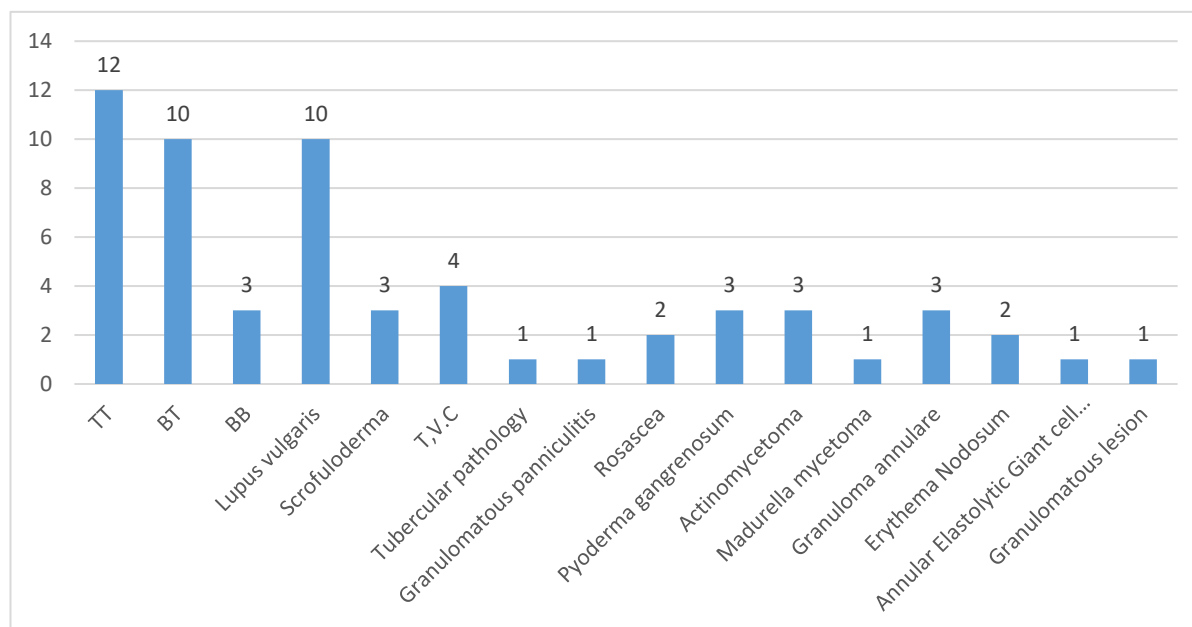
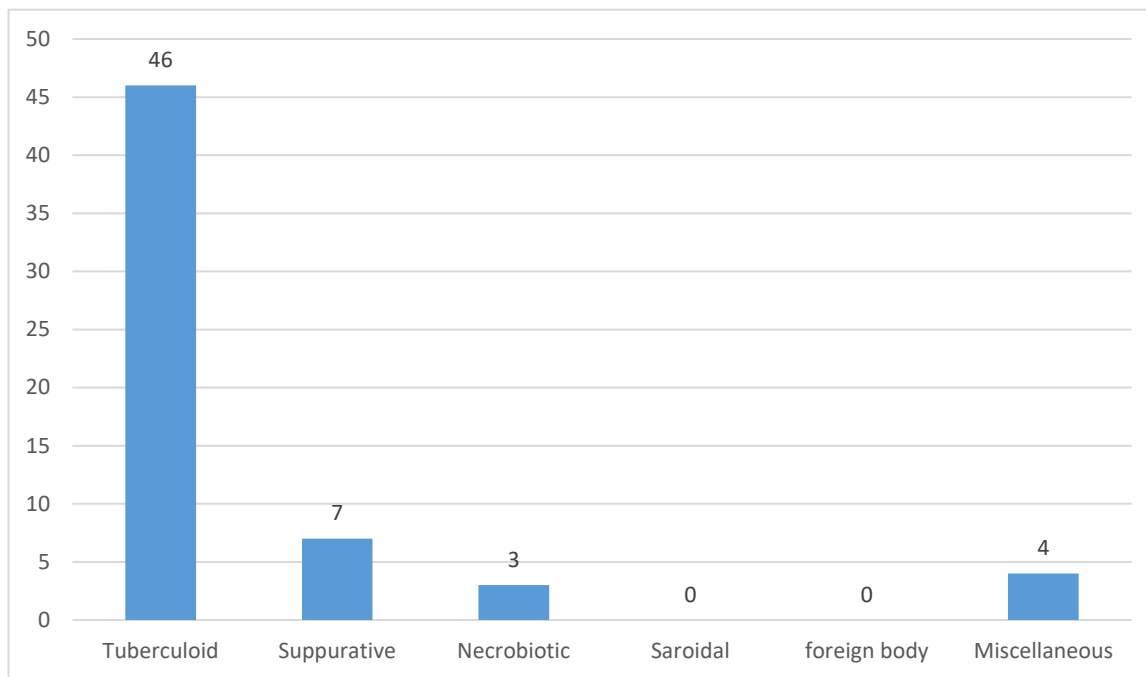


Figure 2:- Frequency of various type of Granulomas



We observed in our study that majority of cases among granulomatous lesions were tuberculoid granuloma 46 /60(76.67%), 7 were suppurative granuloma, 3 were necrobiotic granuloma and 4 were miscellaneous granuloma. In this study majority cases categorized as infectious granulomatous lesions with predominance of leprosy 25 (41.66%) followed by tuberculosis 19 (31.66%) among 46 cases of tuberculoid granulomas majority of the cases were leprosy (33 cases, 50%) followed by tuberculosis (18 cases, 27.27%). Among leprosy largest subgroup is Tuberculoid leprosy (11 cases, 16.67%) followed by Borderline leprosy (9 cases, 13.675). Among cutaneous tuberculosis largest subgroup is Lupus vulgaris (9 cases, 13.64 %) .In suppurative granuloma group Mycetoma (4) was predominant diagnosis comprising 3 Actinomycetes and 1 Madurella mycetoma.

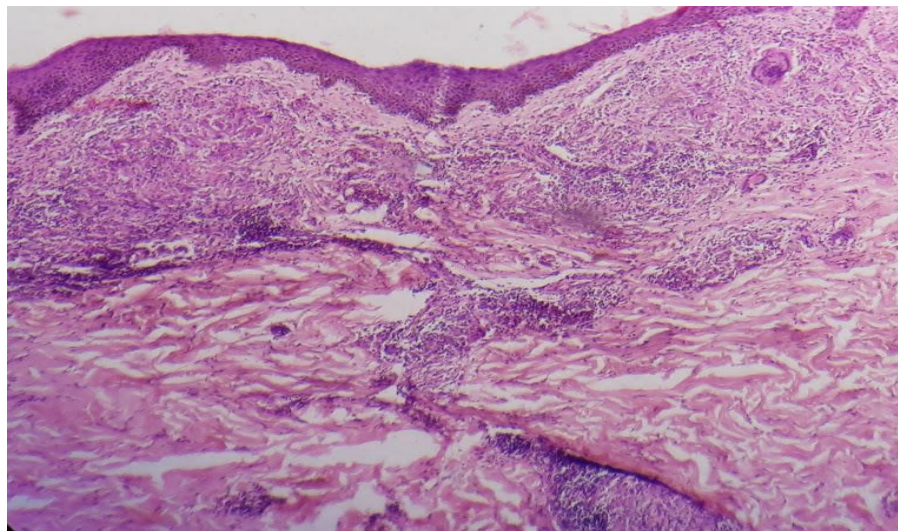


Figure 3:- Microscopy showing epithelioid cell granulomas with lymphocytes showing encroachment of epidermis in Tuberculoid leprosy (H & E 100X).

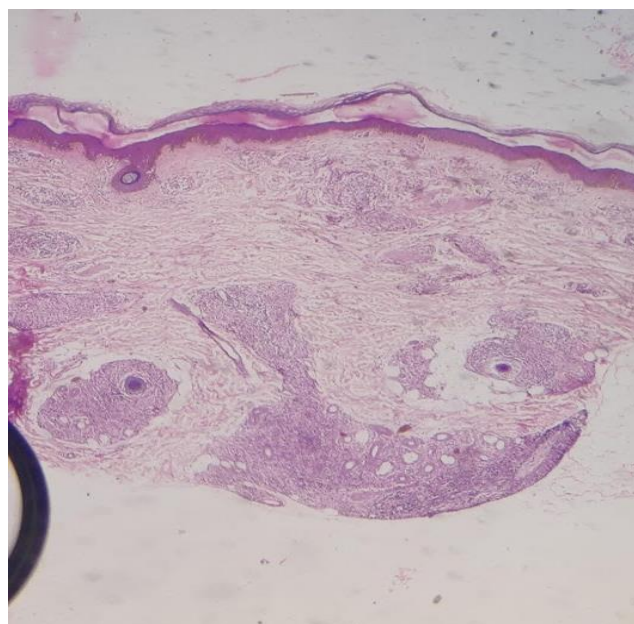


Figure 4:- Microscopy showing epithelioid cell granulomas with lymphocytes in the dermis with intact epidermis in Borderline tuberculoid leprosy (H & E 100 X).

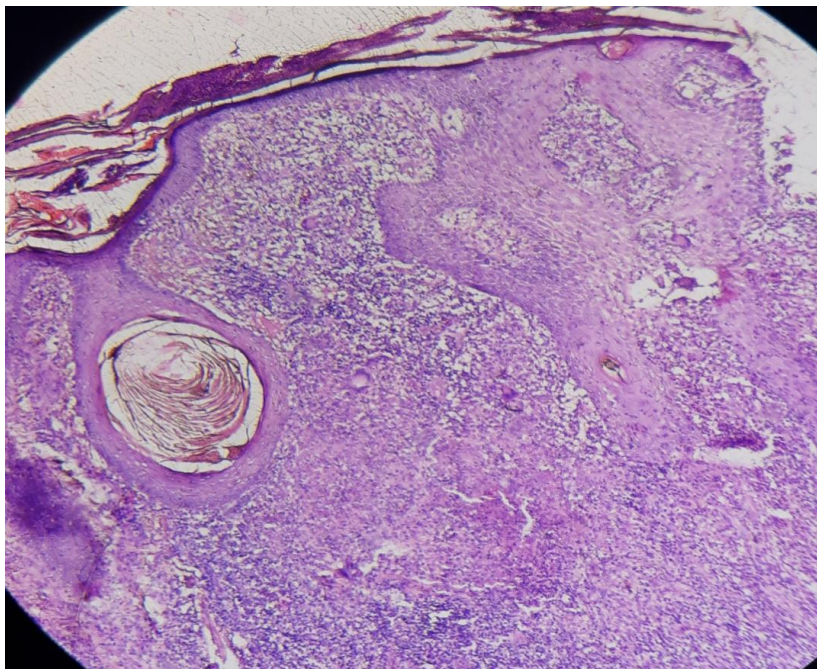


Figure 5:- Microscopy showing epithelioid cell granulomas having dense lymphoplasmacytic infiltration in Lupus vulgaris (H & E 100 X).

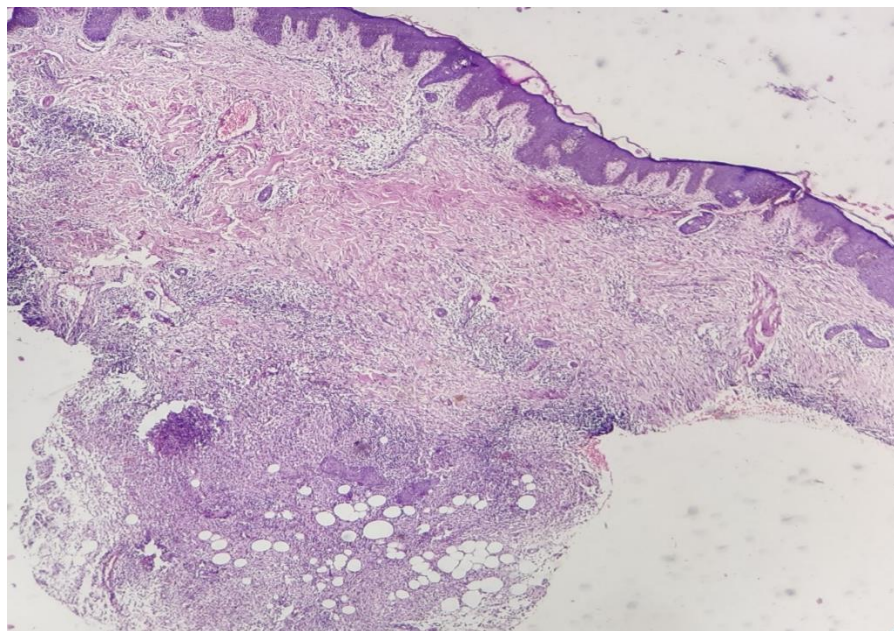


Figure 6:- Microscopy showing epithelioid cells with giant cells and caseous necrosis at places in dermis and subcutis in Granulomatous panniculitis.

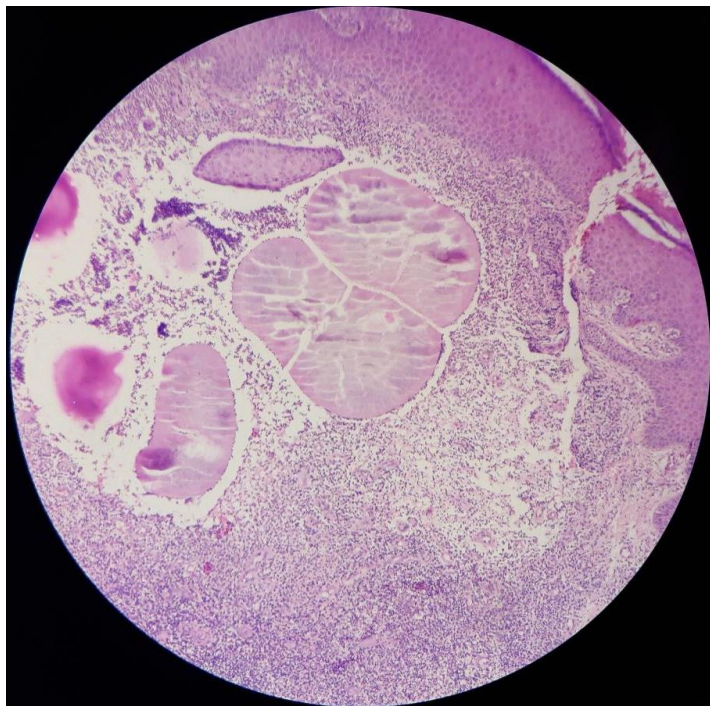


Figure 7:- Microscopy showing Actinomycotic colonies surrounded by dense inflammatory infiltrate consist of lymphocytes, neutrophils and giant cells in Actinomycosis. (H & E 100X).

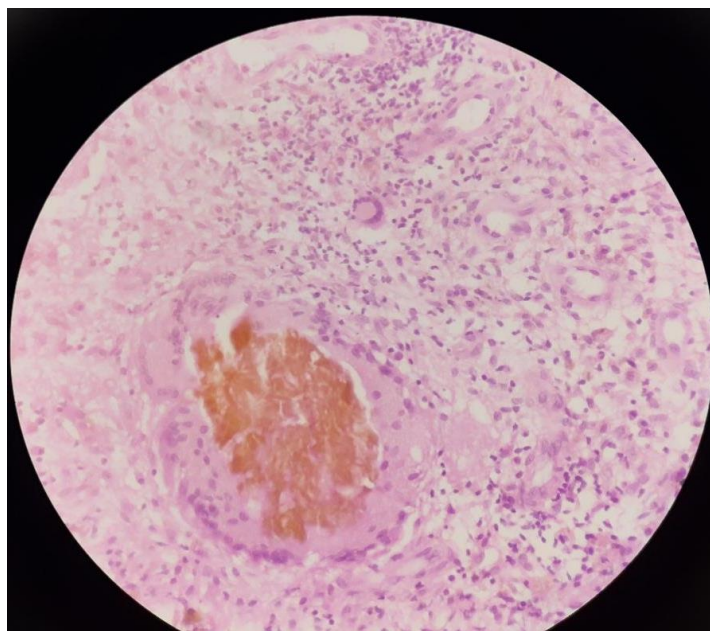


Figure 8:- Microscopy showing Madurella mycetomatis colonies surrounded by granulomatous reaction.

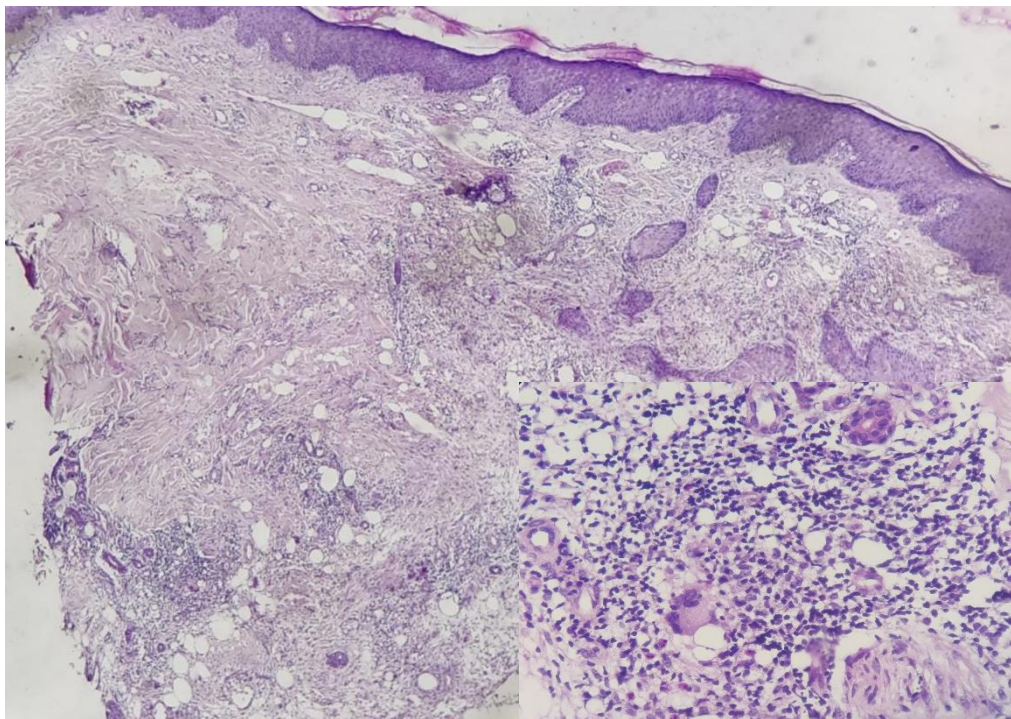


Figure 9:- Microscopy showing mixed inflammatory infiltrate and multinucleated giant cells in dermis in Erythema Nodosum (H & E 40 X). Inset (H & E 400 X).

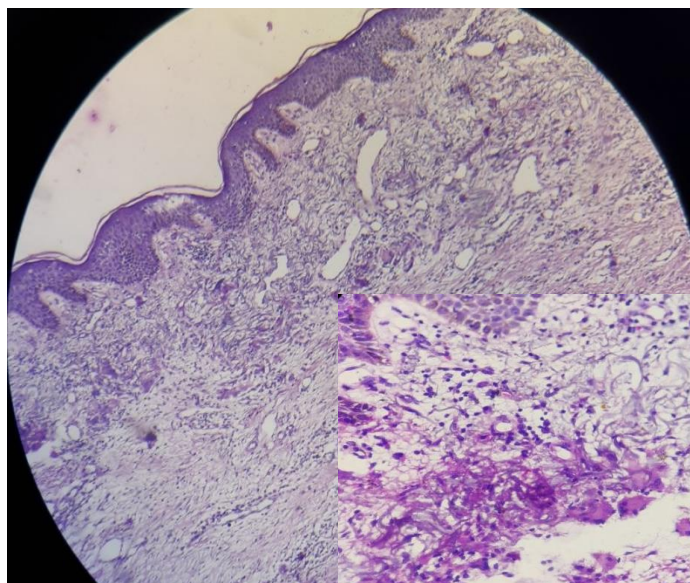


Figure 10:- Microscopy showing granulomatous infiltrate of foreign body giant cells

engulfing elastotic fibers in upper dermis in Annular elastolytic giant cell granuloma. (H & E 100X) Inset (H & E 400 X).

Discussions

Proportion and types of granulomatous lesions of skin vary according to geographical locations. This is a comparative study to evaluate histopathological spectrum of granulomatous lesions of the skin at tertiary care hospital in our geographical location.

In our study 60/500 (12.00%) cases were diagnosed as granulomatous lesions, which is comparable to Sarabani⁽⁶⁾ (14.53%), Sumit K Grover⁽⁷⁾(12.76%) et al , While Gautam K⁽¹⁾(6.67%) & Zafar⁽⁸⁾(4.58%) has slightly lesser proportion .

In the present study male predominance observed with male to female ratio 1.6:1, which is comparable with Dhar et al⁽⁹⁾, Amanjeet Bal et al⁽¹⁰⁾ and Srabani Chakrabarti et al⁽⁶⁾ . Male to female ratio is 1.2:1 in Dhar⁽⁹⁾ study, 1.5:1 in Amanjeet Bal⁽¹⁰⁾ and 1.24:1 in Srabani Chakrabarti⁽⁶⁾ study. While Zafar⁽⁸⁾ study shows female predominance with male to female ratio 1:1.36.

3rd decade of life with mean age of 34.6 was commonly affected age group in our study which is in accordance with Dhar⁽⁹⁾ and Srabani Chakrabarti⁽⁶⁾ study. Mean age was 31.18 year in Dhar⁽⁹⁾ study and 30.45 year in Srabani Chakrabarti⁽⁶⁾ study.

In the present study upper extremity (16 cases, 26.67%) which is in accordance with Gautam K⁽¹⁾ study; Gautam K⁽¹⁾ also found maximum no. of cases in upper extremity (22.43%). While in Zafar⁽⁸⁾ study most common site was head and neck region (23.57%).

Majority of cases categorized as infectious granulomatous lesions with predominance of leprosy 25 cases (41.66%) followed by tuberculosis 19 cases (31.66%) in the present study , that is in accordance with Dhar⁽⁸⁾ study.

Distribution of cases according to histopathological types of granuloma in various studies.

Out of total 60 cases of granulomatous lesions in the present study, 46 (76.67%) were tuberculoid granuloma, 7(11.67%) were suppurative granuloma, 3(5.00%) were necrobiotic granuloma and 4(6.67%) were miscellaneous granuloma. Tuberculoid granulomas was the most common type of granulomas in the present study which is in accordance with all other five studies.

Out of 46 cases of tuberculoid granulomas in this study, majority of the cases were leprosy (25 cases, 41.66%) which is in accordance with Bal's⁽¹⁰⁾ study and Srabani⁽⁶⁾ study .

In Bal's⁽¹⁰⁾ study out of total 515 cases of infectious granulomas 373(72.4%) were leprosy cases. Similarly in Srabani⁽⁶⁾ study out of total 186 cases of granulomatous lesion 107 cases (57.52%) were leprosy cases.

According to current concept of granuloma , which define granuloma as a focal chronic inflammatory response to injury characterized by a collection of histiocytes, epithelioid cells and multinucleated giant cells that may or may not rimmed by lymphocytes and may or may not show central necrosis. So in the present study we not include Lepromatous leprosy in which there is diffuse infiltrate of lymphocytes in dermis as done by Bal et al⁽¹⁰⁾ and Gautam K et al⁽¹⁾. So in the present study we included cases of Tuberculoid leprosy, Borderline Tuberculoid leprosy and Mid Borderline leprosy.

Out of 25 cases of leprosy in this study 12 cases were of tuberculoid leprosy, 10 were Borderline Tuberculoid and 3 Mid borderline leprosy. Among the leprosy cases tuberculoid leprosy was most common type in present study while in Srabani⁽⁶⁾ study Borderline Tuberculoid leprosy was the most common type.

Second largest subgroup among tuberculoid granuloma was tuberculosis (19, 31.66%). Among tuberculosis, Lupus Vulgaris was most common type (10 cases, 16.67%) which is similar to Zafar's⁽⁸⁾ (14.63%), Srabani⁽⁶⁾ study(15.59%), Kumar B⁽¹¹⁾ and Puri N⁽¹²⁾. While in some studies Scrofuloderma was commonest type of lesion , particularly in childhood^(13,14). Lupus vulgaris mainly affects head and neck region in the present study, although in south east Asia it appears to be more common on the extremities and buttocks⁽¹¹⁾. Second most common was Tuberculosis verrucosa cutis (TVC) (4 cases, 6.67%) , while in Srabani⁽⁶⁾ and Sumit Grover⁽⁷⁾ study Scrofuloderma was second common type among tuberculosis. Present study compromised 3 cases of Scrofuloderma (5.00%), which is comparable to Zafar⁽⁸⁾ study 7 cases (5.60%) in incidence but lower as compare to Bal et al⁽¹⁰⁾ study 46 cases (38.6%).Rosacea compromised 2 cases (3.33%) out of all the cases in the present study which is rare entity and seen in 1 case in Bansal et al⁽²¹⁾ study.

Suppurative Granuloma

Suppurative granuloma was second most common type of granuloma with total 7 cases. Among these 3 were Pyoderma gangrenosum, 3 were Actinomycetoma and 1 Madurella mycetoma. 2 Pyoderma gangrenosum presented as painful ulcer on upper extremity while one as ulcerative lesion over vulvovaginal and perianal area

All 3 Actinomycetoma cases presented as discharging sinus on foot. One case of Madurella mycetoma also seen in this study which also present as discharging sinus on foot of male. Which show foot is most common site for mycetoma with male predominance.

Necrobiotic granuloma

In the present study Granuloma annulare include in Necrobiotic type of granuloma. Granuloma annulare compromised 3 cases (5%) out of 60 cases of granulomatous lesion which is in accordance with Bal⁽¹⁰⁾ and Zafar⁽⁸⁾ studies.

Miscellaneous Granuloma

Miscellaneous Granuloma means, granulomas not fit neatly into one of the classified categories .total 4 cases observed in our study , which include two cases of Erythema nodosum, one case of annular elastolytic giant cell granuloma and one case of granulomatous lesion.

Conclusion

In consecutive 500 skin punch biopsies, 60 cases (12.00%) were diagnosed as granulomatous lesion. Granulomatous lesion was more common in male , 3rd decade of life and Upper extremities was commonly involved site in granulomatous lesions. Majority of cases were categorised as infectious lesion with predominance of leprosy (25 cases, 41.66%) followed by tuberculosis (19 cases, 31.66%). Tuberculoid granulomas was most common type in this study followed by suppurative granulomas.

Increased incidence of granulomatous lesions needs a good clinical history, a close histological examination and a clinico-pathological correlation in making a final diagnosis. Optimum communication between pathologists and clinician is utmost important with strict adherence to clinical criteria while deciding site and depth of biopsy. Appropriate sections and utilizations of

special stains will also help in reaching more accurate diagnosis. Histopathology is gold standard for diagnosis and sub categorization of granulomatous lesions of skin

Limitations and Future Studies

Our study was prospective study , in future we need more studies with larger size of cohort for more clear spectrum of granulomatous disease .

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