

Histopathological Evaluation of Inflammatory Dermatoses

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Received: 15-04-2022 / Revised: 20-05-2022 / Accepted: 05-06-2022

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Conflict of interest: Nil

Abstract

Background: Skin diseases have low mortality, and thus get less attention than more serious diseases, but their contribution to overall morbidity causes or significant burden to the community, placing a strain on health care services, finances and personnel. Inflammatory skin diseases are the commonest reason for patients to visit a dermatology clinic. Since many of these diseases have varied clinical presentations with clinical overlaps, they remain challenging for the dermatologist. Very few studies had been carried out in Southern Odisha regarding the various histopathological patterns seen in skin biopsies. Hence, the present study was carried out in Department of Pathology, M.K.C.G. Medical College, Berhampur, from 2018 to 2020 to assess the frequency of different inflammatory dermatoses and correlate with respective clinical diagnosis.

Methods: We undertook a histopathological examination of skin biopsies in patients presenting to the dermatology department with inflammatory skin lesions as a prospective observational study. The period of study was for 2 years between 2018 to 2020.

Results: Analysis of the skin biopsies from the study population (51 cases) shows a wide histopathological spectrum, with Psoriasis being the most common lesion accounting for about 15.6% followed by Hansens disease & Morphea. The other histologic diagnosis given were bullous disorders, Lichen planus, Psoriasiform dermatitis, Lichenoid dermatitis, Neutrophilic dermatoses Lupus erythematosus, Tattoo granuloma, Allergic contact dermatitis, Irritant contact dermatitis, and Panniculitis. Maximum number of patients with inflammatory skin lesions was in their third decade. Male preponderance was noted, with 52.9% of the individuals with inflammatory skin lesions being males and 47.1% females.

Conclusion: High percentage (66.6%) of clinico-histopathological correlation was noted in this study, with incompatibility observed in only 33.3% of the cases studied.

Keywords: Skin biopsies, dermatoses, allergic contact dermatitis.

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Background

Skin is a complex and the largest organ of the human body, forming the outer covering of body and providing protection against a wide variety of external threats. Inflammatory skin diseases are the commonest reason for patients to visit a dermatology clinic [1].

The pattern of skin diseases varies from country to country and various region within the same country [2]. Skin diseases are also imbalanced by various factors such as environment, economy, literacy, racial and social customs [3]. It is more so in our country with a tropical climate, with a wide difference in socio-economic status, diverse religions, and customs in different parts of the country. Skin diseases are especially prevalent in the developing countries; in fact, skin conditions are among the most common health problem in India. There are at least 2000 different skin diseases in dermatology which cuts across all age groups [4]. Non-neoplastic skin lesions form most of the morbidity from skin diseases.

Though the spectrum of histopathology of skin disorders are varied, the clinical presentation is restricted to only a few changes, such as hyperpigmentation, hypopigmentation, macules, papules, nodules and a few others. Each clinical presentation is common to different histopathological pictures and thus definitely requires histopathology for their confirmation. Separation of each of these becomes important because the treatment and prognosis tend to be disease specific. Skin punch biopsy is an essential investigation in dermatology and histopathological findings help clinicians to determine the disease pattern and in curing the patient with specific therapy [5].

The purpose of the present study was to assess the frequency of different inflammatory dermatoses and to correlate with respective clinical diagnosis in

M.K.C.G. Medical College, which is a referral institute for patients of Sothern Odisha. Hence, this study analysis the histopathological spectrum of clinically diagnosed inflammatory dermatosis in our institution.

Method

The present study is a hospital based prospective observational study conducted in the Department of Pathology (Histopathology Section) at M.K.C.G. Medical College and Hospital, Berhampur during the period from September, 2018 to August, 2020.

Study Population: The skin biopsy of patients clinically diagnosed as inflammatory dermatoses.

Inclusion criteria: Patients having inflammatory skin diseases.

Exclusion criteria: Patients having neoplastic skin conditions.

Punch biopsy is the standard procedure for obtaining samples of inflammatory dermatoses. Specimen got with a 4 mm biopsy punch is adequate for histologic study. Immediately after removal, they should place it in fixative in 10% formalin, to prevent autolysis and sent to the department of pathology.

On receipt the skin specimens were given a proper gross description which included tissue size, presence or absence of epidermis, colour, presence and absence of hair and alterations to the epidermal surface. Thin slices of 2 mm thickness were processed and embedded in paraffin blocks, after which sections were cut and affixed on glass slides. We then subjected the tissue sections to haematoxylin and eosin staining, followed by mounting and proper labelling of the slides. The slides are then subjected to meticulous microscopic examination by the reporting pathologist. Ziehl Neelsen stain (ZN stain) was done in the required cases.

Table 1: Age & sex distribution of the patients

Age in years	Male	Female	Total
0-10	0 (0%)	1 (4.1%)	1
11-20	5 (18.5%)	3 (12.5%)	8
21-30	12 (44.5%)	9 (37.5%)	21
31-40	3 (11.1%)	4 (16.8%)	7
41-50	3 (11.1%)	2 (8.3%)	5
51-60	3 (11.1%)	5 (20.8%)	8
61-70	1 (3.7%)	0 (0%)	1
Total	27 (100%)	24 (100%)	51

Table 2: Presenting symptoms of the patients

Symptoms	Male	Female	Total
Hyperpigmented plaque with vesicles	2(7.4%)	1(4.1%)	3(5.8%)
Erythematous vesicles	2(7.4%)	1(4.1%)	3(5.8%)
Violaceous plaque and papules	2(7.4%)	2(8.3%)	4(7.8%)
Scaly erythematous plaque	6(22.2%)	5(20.8%)	11(21.8%)
Vesiculobullous lesion with itching	0(0%)	2(8.3%)	2(3.9%)
Erythematous plaque	5(18.5%)	7(29.1%)	12(23.7%)
White patch	1(3.7%)	1(4.1%)	2(3.9%)
Hypopigmented patch	4(14.8%)	1(4.1%)	5(9.8%)
Nodular infiltration of skin	0(0%)	1(4.1%)	1(1.9%)
Erythematous lesion	0(0%)	2(8.3%)	2(3.9%)
Erythematous nodule	1(3.7%)	1(4.1%)	2(3.9%)
Verrucous plaque	2(7.4%)	0(0%)	2(3.9%)
Hyperpigmented plaque	2(7.4%)	0(0%)	2(3.9%)
Total	27(100%)	24(100%)	51(100%)

Results

In the present study, 51 biopsies taken from the patients were studied in the Department of Pathology, M.K.C.G. Medical College Berhampur Odisha, between 2018 to 2020. The aim of the study was to diagnose the cases histologically and their correlation with clinical diagnosis; We tabulate these findings in the following tables. The table shows that, out of the 51 patients maximum number of cases (44.5%) were males of the third decade (21-30 years) and the minimum number of cases (3.7%) were in males of 61 to 70 years of age. Out of 51 patients studied, 12 (23.7%) patients

presented with Erythematous plaque lesions, and 11 (21.8%) patients presented with scaly erythematous plaque lesions. 7 patients who presented with erythematous plaque lesions were females (29.1%). 6 patients who presented with scaly erythematous plaque lesions were males (22.2%). In this study, out of 51 patients, the maximum number of clinically diagnosed cases were psoriasis and lichen planus cases and we saw these in 21-30 years of age group and the frequency of occurrence was 71.4% & 42.8% respectively.

Table 3: Histological diagnosis of according to clinical diagnosis

Irritantcontactdermatitis	Lichenoiddermatitis	Psoriasisiformdermatitis	Lichenplanus	Pemphigusvulgari	Histopathological Diagnosis
0	0	0	0	1 (100%)	Pemphigus vegetans
0	0	1 (14.2%)	3 (42.8%)	0	Lichen Planus
0	1 (100%)	0	0	0	Tuberculous verrucosa cutis
1 (20%)	0	0	0	0	Bullous pemphigoid
0	0	1 (100%)	0	0	Pustular psoriasis
0	0	0	0	0	Morphea
0	0	1 (14.2%)	0	0	Psoriasis vulgaris
0	0	0	0	0	Lichen sclerosus
0	0	0	0	0	Lupus vulgaris
0	0	0	0	0	Grover' s disease
0	0	0	0	0	Panniculitis
0	0	0	0	0	Lupus erythematosus
0	0	0	0	0	Sweet syndrome
0	0	0	0	0	Tattoo granuloma
0	0	0	0	0	Darier' s disease
0	0	0	0	0	Leprosy
0	0	0	0	0	Chronic plaque psoriasis
0	0	0	0	0	Parapsoriasis
0	0	0	0	2 (100%)	Pemphigus vulgaris
1	1	3	3	3	Total

Lupuserythematosus	Hansen's disease	Bullous pemphigoid	Lichensclerosus	Morphea	Psoriasis vulgaris	Neutrophilic dermatoses
0	0	0	0	0	0	0
0	0	0	0	0	1 (14.2%)	0
0	0	0	0	0	0	0
0	0	3 (60%)	0	0	0	1 (20%)
0	0	0	0	0	0	0
0	0	0	0	4 (100%)	0	0
0	0	0	0	0	6 (85.7%)	0
0	0	0	2 (100%)	0	0	0
0	0	0	0	0	0	1 (50%)
0	0	0	0	1 (100%)	0	0
0	1 (33.3%)	0	0	1 (33.3%)	0	0
2 (100%)	0	0	0	0	0	0
0	0	0	0	0	0	4 (100%)
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	4 (100%)	0	0	0	0	0
0	0	0	0	0	1 (100%)	0
0	1 (100%)	0	0	0	0	0
0	0	0	0	0	0	0
2	6	3	2	6	8	6

Total	Panniculitis	Allergiccontactdermatitis	Darier'sdisease	Tattoogranuloma
1 (100%)	0	0	0	0
7 (100%)	1 (14.2%)	1 (14.2%)	0	0
1 (100%)	0	0	0	0
5 (100%)	0	0	0	0
1 (100%)	0	0	0	0
4 (100%)	0	0	0	0
7 (100%)	0	0	0	0
2 (100%)	0	0	0	0
2 (100%)	0	0	0	1 (50%)
1 (100%)	0	0	0	0
3 (100%)	1 (33.3%)	0	0	0
2 (100%)	0	0	0	0
4 (100%)	0	0	0	0
1 (100%)	0	0	0	1 (100%)
2 (100%)	0	0	2 (100%)	0
4 (100%)	0	0	0	0
1 (100%)	0	0	0	0
1 (100%)	0	0	0	0
2 (100%)	0	0	0	0
51 (100%)	2	1	2	2

Table 4: Histopathological correlation with clinical diagnosis

Histopathological Diagnosis	Clinical Diagnosis
Correlated	34(66.6%)
Not correlated	17(33.4%)
Total	51(100%)

Out of 51 patients, histopathological diagnosis of 34 patients (66.60%) correlated with the clinical diagnosis, whereas others did not.

Table 5: The histopathological spectrum of inflammatory dermatoses in various studies

	Present Study	Sandhya <i>et al</i>	Yalla <i>et al</i>	Kumar <i>et al</i>
Total cases	51	125	150	232
Period	2 years	1 year	2 years	1 year
Most common age	21-30	21-30	31-40	< 40 years
Male/Female	3:2.6	3:2	3:2	3:2
Psoriasis	15.6%	9.6%	3.3%	3%
Hansen's Disease	11.7%	2.4%	33.3%	30.6%
Bullous Disorder	9.8%	4.8%	8%	12.5%
Morphea	11.7%	9.6%	4.7%	2.1%
Lichen Planus	5.8%	5.6%	7.3%	8%

Table 6: Clinical & histopathological correlation in various studies

Study	Correlation
Grace <i>et al</i>	97.52%
Younas <i>et al</i>	76.30%
Sabir <i>et al</i>	90%
Gupta <i>et al</i>	70%
Present Study	66.6%

In the present study, Psoriasis (15.6%) was seen to be the most common histopathological diagnosis, followed by Hansen's disease and Morphea (11.7% each).

Psoriasis and Morphea were the most common diseases accounting for 9.6% each in the study by Sandhya *et al*, followed by lichen planus (5.6%) & bullous disorders (4.8%).

However, Yalla *et al* & Kumar *et al* found Hansen's disease (33.3% & 30.6%) to be the most prevalent condition followed by bullous disorders (8% & 12.5% respectively).

In this study, 66.6% clinico-histopathological compatibility was noted. Histopathological diagnosis of pemphigus vulgaris, morphea, lichen sclerosus, lupus erythematosus, sweet's syndrome, Darrier's disease, tattoo granuloma, leprosy completely correlated with the clinical diagnosis (100%). while there was an observed clinico-histopathological incompatibility in 17 cases which include pemphigus vegetans, lichen planus, tuberculous verrucosa cutis, bullous pemphigoid, psoriasis vulgaris, lupus vulgaris, Grover's disease, and parapsoriasis.

Study by Younas *et al* showed 76.30% compatibility and the clinical diagnosis was 97.52% compatible with that of the histopathological diagnosis according to the study by Grace *et al*.

Histopathological assessment of inflammatory skin biopsies yields the greatest accuracy when a concise and pertinent clinical history including a

description of the cutaneous lesion (i.e. morphology of the lesion, distribution, duration and symptomatology), history of medication and other medical comorbidities are included on the pathology requisition. With the clinical information, we can make a definitive histopathologic diagnosis, thus reducing the number of cases signed out using descriptive terms. The potential need for ancillary studies (such as immunostaining) and re-biopsy decreased because of clinicopathological correlation.

Conclusion

Histopathological spectrum of skin lesions is highly variable, but the clinical presentation shows very few changes. Clinically majority of inflammatory dermatoses and the biopsy specimens are to be collected in only a small percentage of cases. The present study shows that histopathological study of skin biopsies helps to make an early and accurate clinically useful diagnosis. However, it is important to perform the skin biopsy at the phase of the disease, from the proper site and of proper thickness to make the most accurate diagnosis. The evaluation of histological changes is best made by taking a punch biopsy of clinically normal skin nearby, which represents the best possible control.

We achieved a high but not complete correlation between clinical and histopathologic diagnoses. This shows that providing sufficient clinical descriptive knowledge increases the probability of an accurate diagnosis. However, since the sample size was small, a more elaborate study involving a much larger number of

cases is required to assess the frequency of various dermatoses in this part of the state.

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