The histopathological spectrum of skin diseases with emphasis on clinicopathological correlation: A prospective study

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Abstract

The spectrum of skin disease varies greatly according to the age, gender and other factors. Skin biopsies are needed in challenging clinical cases. This study was done with aim of analyzing the spectrum of skin diseases in and around Meerut and to study the correlation between clinical and final histopathological diagnosis.

This is a prospective study in which 282 skin biopsies received in Histopathology Department of LLRM Medical College Meerut, during December 2016 to December 2017. Among them 29 biopsies were inadequate and hence were not included. Remaining 253 biopsies were analyzed. The slides were stained with H & E stain.

Definite histopathological diagnosis was possible in 240 cases (94.9%). A broad spectrum of diseases were seen comprising of infectious disorders (34.6%), eczematous disorders (10.8%), papulosquamous disorders (18.3%), vesicobullous lesions (2.9%), inflammatory disorders (5.8%), pigment disorders (3.8%), degenerative diseases (1.7%), benign tumors (17.5%) and malignant tumors (4.6%).

The diversity of clinical manifestations of various skin diseases makes histopathological examination necessary for appropriate diagnosis and treatment. Histopathology also plays an important role in confirming an established clinical diagnosis. In this study, histopathology confirmed clinical diagnosis in 217 cases (85.8%), gave diagnosis different from clinical diagnosis in 23 cases (9.1%) and was noncontributory in only 13 cases (5.1%). This emphasizes that histopathological examination of skin lesions is an important tool for confirming skin diagnosis.

Keywords: Histopathological diagnosis, Infectious disorders, Papulosquamous disorders.

Introduction

Skin being the largest organ of the human body presents with diversity of diseases. Majority of the skin diseases can be diagnosed by history, clinical presentation and biochemical investigation without need of histopathology. However histopathological examination still remains gold standard for helping the dermatologist in overcoming diagnostic dilemma.[1]

Interpretation of skin biopsy requires clinicopathological correlation. There is great variation in the pattern of skin diseases. Developing countries have reported higher prevalence of skin diseases and the spectrum of these diseases is highly variable.[2]

This study has been undertaken to analyze the spectrum of skin diseases in and around Meerut and to study the correlation between clinical and final histopathological diagnosis.

Materials and Methods

This prospective study was conducted in the Department of Pathology, during the time period of 1 year between December 2016 and December 2017. During this period, 282 skin biopsies were received in histopathology department. Among them, 29 biopsies were excluded from study; rest 253 biopsies were studied and analyzed.

Formalin fixed and Paraffin embedded sections were stained routinely with H & E Stain. Special stains like Fite Faraco were applied in relevant cases. All the necessary clinical details provided by dermatologist and clinical diagnosis were studied. Final histopathological diagnosis was made and correlation between clinical diagnosis and final histopathological diagnosis was analyzed.

Inclusion and Exclusion Criteria: All those cases with complete demographic data and clinical details were included in the study while those cases with incomplete clinical history and lacking presumptive clinical diagnosis were not included.

Results

A total of 282 skin biopsies out of 2428 cases were received in histopathology department during December 2016 to December 2017. 29 biopsies among these did not fill the adequacy criteria and hence were not included in the study. Out of total 253 biopsies studied 155 were males and 98 were females. There was a wide age distribution ranging from 1.5 years to 78 years (Table 1). Mean age of the patient was 38.5 years. Definite histopathological diagnosis was possible in 240 cases (94.9%). Histopathology was noncontributory in only 13 cases (5.1%). A broad spectrum of histopathological diagnosis was seen comprising of Infectious disorders (34.6%), eczematous disorders (10.8%), papulosquamous disorders (18.3%), vesicobullous lesions (2.9%), inflammatory disorders (5.8%), Pigment disorders (3.8%), degenerative

diseases (1.7%), benign tumors (17.5%) and malignant tumors (4.6%). (Table 2)

Among the histopathological diagnosis, Infectious disorders were the most common ones (34.6%) followed by papulosquamous disorders (18.3%) and benign tumors (17.5%). Considering individual diseases, leprosy was the most commonly encountered lesion followed by Psoriasis and Lichen Planus. An insight into correlation between clinical examination and histopathological diagnosis showed that histopathology confirmed the clinical diagnosis in 217 cases (85.8%) it gave the diagnosis different from the clinical diagnosis in 23 cases (9.1%) and was noncontributory in 13 cases (5.1%). (Fig. 1) These 13 cases were those in which no specific pattern was seen and hence no definite diagnosis could be made.

23 cases which showed clinicohistopathological discrepancies are enumerated in Table 3. Among them a case clinically diagnosed as Milia proved out to be molluscum contagiosum on histopathological examination (Fig. 2), similarly a case with clinical diagnosis of tuberculosis verrucosa cutis proved out to be palmoplantar wart in histopathology (Fig. 3).

Though many skin diseases can be diagnosed by clinical examination alone, skin biopsy still remains a simple and inexpensive investigation for dermatologist in arriving at a particular diagnosis and proper management of the disease.[3]

Table 1: Distribution of skin diseases according to the age group

Age group (years)	Total no of cases	Males	Females
0-10	11	9	2
11-20	27	19	8
21-30	66	35	31
31 -40	72	40	32
41-50	62	35	27
51-60	29	23	6
>60	15	8	7
Total	282	169 (59.9%)	113 (40.1%)

Table 2: Categorization of skin diseases diagnosed histopathologically and its distribution in males and females

Broad category		Subcategory	Number of cases	Males	Females
Infectious	Bacterial	Leprosy	36	25	11
		TBVC*	11	3	8
		Lupus vulgaris	17	12	5
	Viral	Molluscum contagiosum	5	3	2
		Verruca vulgaris	7	5	2
		Palmoplantar warts	6	3	3
	Fungal	Aspergillosis	1	1	-
Eczematous		Chronic dermatitis	18	13	5
		Prurigo nodularis	3	1	2
		Lichen simplex chronicus	5	2	3
Noninfectious papulosquamous disorder		Lichen planus	19	7	12
		Psoriasis	24	15	9
		Pityriasis rubra pilaris	1	-	1
Vesicobullous disorders		Pemphighus vulgaris	3	1	2
		Bullous pemphigoid	2	2	-
		Epidermolysis bullosa	1	1	-
		Darier disease	1	1	-
		Panniculitis	7	2	5
		Erythema nodosum	4	1	3
		Erythema induratum	1	1	-
		Discoid lupus erythematosus	2	-	2
Pigment disorder		Ashy dermatosis	2	2	-
		Nevus	7	5	2
Degenerative disorders		Morphea	3	3	-
		Lichen sclerosis	1	-	1

Benign tumors	Eccrine hidrocystoma	1	1	-
	Chondroid syringoma	2	2	-
	Xanthoma	1	-	1
	Pyogenic granuloma	8	3	5
	Seborrheic keratosis	3	3	-
	Lipoma	11	8	3
	Sebaceous cyst	9	6	3
	Ganglion	1	-	1
	Trichilemmal cyst	3	2	1
	Glomus tumor	2	2	-
	Nodular hidradenoma	1	1	-
Malignant tumors	Basal cell carcinoma (BCC)	3	3	-
	Keratotic BCC	2	1	1
	Malignant melanoma	1	1	-
	Mycosis fungoides	1	-	1
	Squamous cell carcinoma	4	3	1
Total		240	145 (60.4%)	95 (39.6%)

*Tuberculosis Verrucosa Cutis

Table 3: Cases depicting variation between clinical and final histopathological diagnosis

Diseases	Histopathological diagnosis	Clinical agreement	Clinical disagreement	Proposed clinical diagnosis
Leprosy	36	34	2	Lichen simplex atrophicus
				Vasculitis
TBVC	11	8	3	Warts
Lupus vulgaris	17	15	2	Sarcoidosis
				Psoriasis
Molluscum contagiosum	5	4	1	Milia
Verruca vulgaris	7	6	1	TBVC
Palmoplantar wart	6	5	1	TBVC
Chronic dermatitis	18	13	5	Psoriasis (3)
				Lichen planus (1)
				PMLE† (1)
Lichen Planus	19	16	3	Warts
Psoriasis	24	21	3	Mycosis fungoides
				Vasculitis
				Chronic Dermatitis
Eccrine hidrocystoma	1	-	1	Mole
Nodular hidradenoma	1	-	1	Dermatofibrosarcoma protruberans
Total	145	122	23	

†Polymorphic light eruption

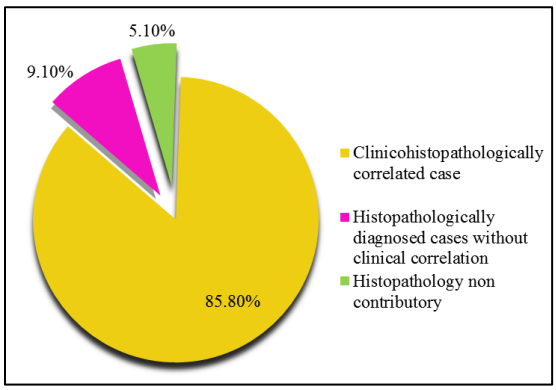

Fig. 1: Clinicopathological correlation

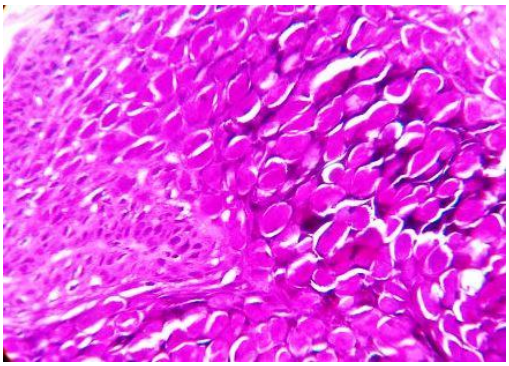

Fig. 2: Photomicrograph of a case of molluscum contagiosum showing large intracytoplasmic inclusions or molluscum bodies (H&E, 40X).

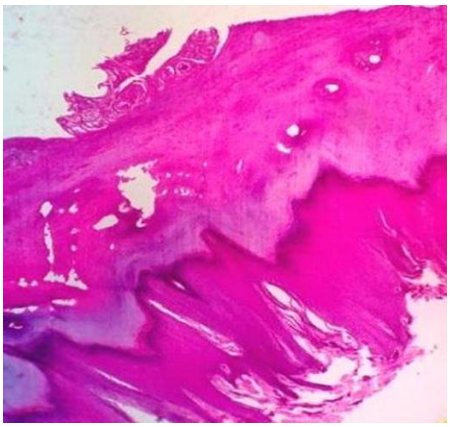

Fig. 3: Photomicrograph of a case of palmoplantar wart showing marked hyperkeratosis and papillomatosis (H&E, 10X).

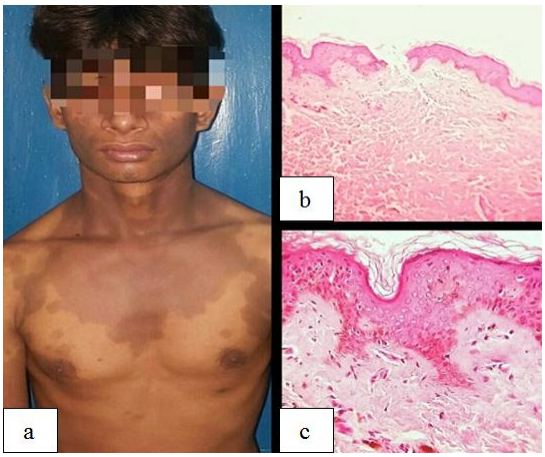

Fig. 4: (A) Photograph of Ashy Dermatosis, showing hyperpigmented patches involving cheeks, neck, chest and upper extremities. (B) Photomicrograph showing pigment incontinence (H & E,10X). (C) Basket weave cornified layer and accumulation of melanophages in papillary dermis (H & E, 40X).

Discussion

In our study of 253 skin biopsies, male patients outnumbered females. The most common age group was between 31-40 years and the least affected was between 0-10 yrs. In a study of 200 cases by Reddy et al on noninfectious papulosquamous lesions, males were more affected and the most common age group was between 31-40 years.[4]

In this study skin biopsies were categorized into 9 major groups. Among these Infectious disorders were the most common (34.58%) with maximum cases of Leprosy. Goyal et al conducted a similar study on Non neoplastic skin diseases and found that infectious dermatoses constituted the largest group (53.6%). Among infectious dermatosis, bacterial dermatoses was the most common lesion, Leprosy being the commonest (75.7%) among bacterial dermatoses.[5] Similar reports were seen in literature.[6, 7]

The spectrum of dermatological diseases diagnosed histopathologically in our study is different from the pattern of dermatological diseases diagnosed on clinical basis in OPD. Das et al studied the spectrum of skin diseases diagnosed clinically at OPD level and found infective dermatoses to be the commonest (36.41%), followed by allergic disorders of the skin. The most common disease in infectious category was dermatophytes followed by Scabies and Leprosy.[8] This difference is attributed to the fact that dermatological diseases requiring histopathological examination are of different spectrum in contrast to the dermatological diseases diagnosed clinically.

Among the papulosquamous disorders, the next common category of disease, Psoriasis accounted for the highest percentage of the cases (54.5%).These findings are similar to the study by Reddy et al on Noninfectious erythematous papulosquamous lesions, in which maximum cases were of Psoriasis (42.5%).[4]

Histopathological correlation with clinical diagnosis was seen in 85.8% cases (217/253), discordance between clinical and histopathological diagnosis was seen in 9.1% cases (23/253), while histopathology was noncontributory in 5.1 % (13/253). Our findings are almost similar to the study done by Sa DK et al, in which clinicopathological correlation was seen in 86.5%.[9]

Aslan et al found clinicopathological correlation in 76.8% and inconsistency in 23.2%.[10]

According to D'costa et al, histopathology confirmed the diagnosis in 92.55% cases gave the diagnosis in only 4.97% and was not contributory in 2.48% cases.[11] Bin Yap et al found clinicopathological correlation in 92% cases and attributed such a strong correlation to be a result of good cooperation between Dermatologist and Pathologist.[3]

In our study, 5.1 % of the cases comprised of those in which no specific pattern of disease was seen and hence had to be signed out as descriptive, without any definite diagnosis. This was more than those reported by D' costa et al (2.48 %).[11]

Conclusion and References

The diversity of clinical presentation of skin diseases makes histopathological examination necessary. It is also important in confirming an established clinical diagnosis. In this study, histopathology confirmed clinical diagnosis in 85.8 % cases and was noncontributory in only 5.1% cases. It gave the diagnosis different from clinical diagnosis in 9.1% cases hence emphasizing its vital role in establishing a definite diagnosis for proper management and treatment. Our study is unique because it highlights clinicopathological discrepancies which arose due to overlapping clinical features of various diseases, hence emphasizing the vital role of histopathology for proper diagnosis, management and treatment of the patient.

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