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Clinicopathological profile of hyperpigmented skin lesions- A prospective study

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ABSTRACT

Introduction: Hyperpigmentation is one of the most common reaction to inflammatory, benign and malignant lesions of the skin. These disorders comprise heterogeneous group of diseases of epidermal and dermal hyperpigmentation divided into various types according to etiology and pathology. Correct diagnosis of these hyperpigmented lesions is linked to histopathologic examination of skin biopsies with clinical correlation.

Aim: To study the spectrum of hyperpigmented skin lesions with reference to age and sex distribution.

Materials and Methods: This prospective cohort study was conducted at Department of Pathology, at Alluri Sitaramaraju Academy of Medical Sciences, Eluru, Andhra Pradesh, India, which included 80 patients who were clinically diagnosed with hyperpigmented skin lesions in all age groups from July 2014 to August 2016. Frequency and percentage statistics was used to present the results.

Results: Out of 80 cases, 34 cases of inflammatory lesions, 23 cases of benign lesions and 23 cases of malignant lesions were reported. Among the post inflammatory lesions the majority were classical Lichen planus. **Conclusion:** Most common lesion was lichen planus and its variants with highest incidence in females and age group greater than 60 years. Histopathological diagnosis with clinical correlation aids in effective management of the patients.

KEYWORDS: Hyperpigmentation, Lichen planus, Becker's nevus, Spindle cell Nevus of Reed, Spitz nevus.

INTRODUCTION

Pigmented skin lesions are one of the most frequent problem encountered by the dermatologist, ranging from hypopigmentation to hyperpigmentation. Most of them are benign, a small percentage of cases are malignancies [1]. Disorders of pigmentation can result from migration abnormalities of melanocytes from neural crest to the skin during embryogenesis, improper transfer of melanosomes to keratinocytes and variation in melanin synthesis [2].

Hyperpigmentation is one of the most common reaction to inflammatory, benign and malignant lesions of the skin. These disorders comprise heterogeneous group of diseases of epidermal and dermal hyperpigmentation divided into various types according to aetiology and pathology [3]. Correct diagnosis of these hyperpigmented lesions is often linked to histopathologic examination of skin biopsies with clinical correlation, as there is evolution of skin lesions into different stages in disease progression [3]. The significance of precise diagnosis is emphasized in hyperpigmentary skin lesions as the underlying diseases have varying aetiologies for the purpose of treatment [2].

The present study was conducted to understand the spectrum of hyperpigmented skin lesions with reference to age, sex and to describe the utility of histology in aid with clinical correlation for targeted and more effective therapy.

MATERIALS AND METHODS

The present study is a two year prospective study from July 2014 to August 2016, included 80 patients who were

clinically diagnosed with hyperpigmented skin lesions in all age groups from department of Dermatology, Surgery and Plastic surgery at Alluri Sita Ramaraju Academy of Medical Sciences, Eluru.

Pertinent clinical details like age, duration of the lesion, site of the lesion, significant medical history were taken and entered in the proforma. The lesions were biopsied after taking consent from the patient. Punch biopsy of 4 mm was done for smaller lesions while larger lesions were excised and sent in 10% formaldehyde solution. Tissue was processed and stained with routine Haematoxylin and Eosin stain for histopathological examination. Special stains like Masson Fontana and Melanin bleach were performed whenever required.The results were analyzed using descriptive studies.

The inclusion criteria were Non-neoplastic and neoplastic pigmented skin lesions in various age groups, received in the department of pathology were included in the study. The exclusion criteria were all hypo pigmented skin lesions , inadequate biopsies, post chemotherapy and post radiotherapy lesions and unsuitable lesions for biopsy due to ulceration or infection.

RESULTS

The period of present study was of 2 years duration from July 2014 to August 2016. Total number of biopsies included were 80. These biopsies after histopathological evaluation were categorized under inflammatory, benign, and malignant lesions. The present study includes 34 cases(42.5%) of inflammatory lesions, 23 cases (28.75%)of benign lesions and 23 cases (28.75%) of malignant lesions. Among the post inflammatory lesions the highest incidence were classical Lichen panus, which were 15 cases out of 34 cases i.e. 44.12% (Table1).

In the present study 23 cases of benign lesions were noted, 14 were diagnosed as Nevus(60.8%) followed by 9 cases of Seborrheic keratosis (39.13%)(Table 1). 23 malignant lesions were included, majority were Basal cell carcinoma (16 cases 69.56%), out of which four were diagnosed as Pigmented variant of BCC, followed by 7 cases of malignant melanoma(30.4%)Table 1 .Overall the incidence of cases were in fifth decade followed by fourth and second accounting for 48.75%, 13.75% and 12.5% respectively. Male preponderance was seenTable 2 .In the present study, positive correlation was seen between clinical diagnosis and histopathological diagnosis in 90 % of cases. In 10% cases discordance was noted and final diagnosis was given based on histopathological findings Table 3 .

DISCUSSION:

In the present study of hyperpigmented skin lesions the post inflammatory hyperpigmentation is the most common sequelae among the inflammatory dermatosis. It is an acquired hypermelanosis occurring after cutaneous

Type of lesion	Number of cases
Inflammatory lesions	**34(100%)**
Classical Lichen planus	15 (44.12%)
Lichenoid reactions	7(20.5%)
Lichen simplex chronicus	3(8.8%)
Prurigonodularis	2(5.8%)
Pruritic papular eruption	2(5.8%)
Morphea	2(5.8%)
Fixed drug eruption	1(2.9%)
Urticaria pigmentosa	1(2.9%)
Incontinentia pigmenti	1(2.9%)
Benign lesions	**24(100%)**
Seborrheic keratosis	9(39.13%)
Compound Nevus	3(13.04%)
Junctional melanocytic Nevus	2(8.7%)
Beckers Nevus	2(8.7%)
Congenital melanocytic Nevus	2(8.7%)
Nevus sebaceous	2(8.7%)
Epidermal Nevus	2(8.7%)
Spindle cell Nevus of Reed	1(4.35%)
Spitz Nevus	1(4.35%)
Malignant lesions	**23(100%)**
Basal cell carcinoma	16(69.56%)
Malignant melanoma	7(30.4%)

Table 1: Distribution of skin lesions

Age in years	Male	Female	Total	Percentage
Birth - 10	0	3	3	3.75%
11-20	5	3	8	10%
21-30	6	4	10	12.50%
31-40	4	5	9	11.25%
41-50	8	3	11	13.75%
>50	19	20	39	48.75%
Total	41	39	80	100%

Table 2: Age & sex distribution of hyperpigmented skin lesions

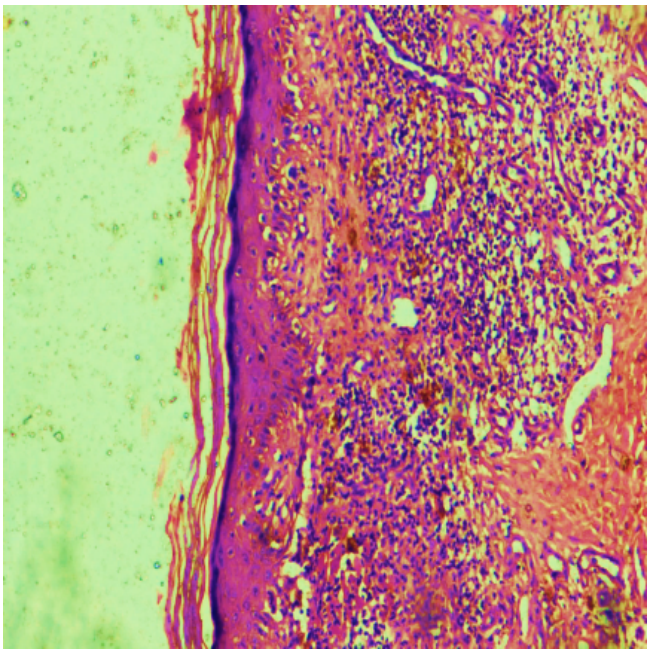

Figure 1: Lichen planus - Show structure of epidermis with hyperkeratosis and hypergranulosis with collection of band like lymphocytes within the dermis.

Figure 2: Becker's Nevus - Pigmented irregular warty growth with hypertrichosis

Clinical diagnosis	Histopathological diagnosis
Fixed drug eruption	Pruritic papular eruption
Eczema	Urticariapigmentosa
Pellagra	Incontinentia pigment
Prurigo simplex	Post inflammatory hyper pigmentation
Discoid lupus erythematosus	Pruritic papular eruption
Malignant melanoma	Seborrheic keratosis

Table 3: **Cases diagnosed on histopathology with variation to clinical diagnosis**

Table 3:

inflammation or injury that can arise in all skin types [4]. This study analyzed the spectrum of hyperpigmented skin lesion and ascertain the significance of histopathological diagnosis for its accurate characterization. Most common age group involved in post inflammatory cases was sixth decade followed by third and fifth accounting for 44.12%, 17.65% and 14.70% of cases respectively. Females were more commonly affected than males. As per Daniel L. Stulberg et al. [5]post inflammatory hyperpigmentation can occur at any age with increase in incidence between 15-60 years affecting both males and females in an equal proportion affecting the extremities and face . Female preponderance was noted in the studies done by Sontheimer RD et al [6].

Majority of cases in the present study were classical lichen planus and its variants with equal sex distribution and age group >50 years were most commonly affected which correlated with the results of Mrutyunjayappaetal [3] and sneha et al [2].

In the present study clinically lichen planus and its variants presented as hyperpigmented, pruritic, flat, papules and plaques affecting all over the body and on histopathological examination showed hyperkeratosis, acanthosis, hypergranulosis, basal cell degeneration, saw toothing of rete ridges , band like lymphohistiocytic infiltrates at dermoepidermal junctionFigure 1 which correlated with the histological features in the studies of Ellis FA et al [7], Sontheimer RD et al [6]and Sehgal VN et al [8].

In the present study 3 cases of lichen simplex chronicus were reported which presented as multiple itchy plaques over back, upper limb and lower limb. Histopathological examination revealed hyperkeratosis, parakeratosis, acanthosis, irregular elongation of rete ridges, wedge shaped hypergranulosis, broadening of dermal papillae, superficial perivascular infiltrate. Similar findings were noted in the study of Lotti T et al [9]and Rajasekhar N etal [10].

In the present study two cases of Prurigonodularis were reported involving the extremities as multiple hyperpig-

mented papules and plaques. Histologically lesion showed pronounced hyperkeratosis, irregular acanthosis, papillomatosis, irregular downward proliferation of epidermis, and lymphocytic infiltrate in dermis, vertically oriented collagen bundles correlated with the features of Lee RM et al [11], Taefehnorooz H et al [12]and Thadeus J [13].

2 cases of morphea were diagnosed which presented as hyperpigmented multiple papules over extremities and abdomen. On histopathological examination showed mild lymphocytic infiltrate and thickened collagen bundles in reticular dermis. Jaworsky C et al [14] and Dhar S etal [15] also found similar results to our study.

Among the benign lesions Seborrheic keratosis is the most common lesion which develops from the proliferation of keratinocytes of the epidermis. In the present study we got 9 cases of seborrheic keratosis out of which 7 were pigmented, 2 cases were reported on the breast, left side of the mandible, each one case in the lumbar region, lower lip, scalp , forehead and thigh. Males were more commonly affected with most common age group involved was sixth decade.

As per study conducted by Arthur K Balin et al [16] an Tindall et al. [17]seborrheic keratosis is the most common benign tumor in older individuals. Pigmented seborrheic keratosis is easily mistaken for malignant melanoma and in the present study provisional clinical diagnosis in one case was kept as melanoma. Based on histological picture seborrheic keratosis was diagnosed.

In the present study 2 cases of Becker's Nevi were reported and both were males and had the lesion since birth on forearm which gradually grew and was associated with hypertrichosis after puberty Figure 2 . No other anomalies such as hypoplasia of underlying structures were noted in the present study.

In the present study a single case of Spindle cell nevus of Reed was reported in an 18-year-old female who presented with uniformly pigmented plaque over the legs. Histopathological examination revealed monomorphic spindled epithelioid melanocytes arranged in nests within the epidermis and papillary dermis with occasional upward interepidermal progression of melanocytes . The findings in our study correlated with the study conducted by K.K. Boneti et al. [18].

In the present study two cases of Nevus sebaceous presented as a circumscribed lesion in a 19 year old male and 47 years female over the neck and infrascapular region. The commonest benign and malignant tumour arising in nevus sebaceous is Syringocystadenoma papilliferum and Basal cell carcinoma respectively.

A single case of Spitz nevus was reported in a 12-year-old male who presented with hyperpigmented lesion over the hand. According to Wettengel G.V et al. [19] Spitz nevus is a proliferation of melanocytes can be diagnosed wrongly as malignant melanoma and vice versa. Clinically in our study the lesion was diagnosed accurately as Nevus. In our case histopathology did not show any neoplastic changes.

Among the 23 malignant lesions, Basal cell carcinoma(BCC) accounted for 16 cases accounting for 69.56% cases. Out of 16 cases, 4 were pigmented variant of BCC. Majority of cases in the present study were seen in the 6^{th} decade with female preponderance which correlated with the results of Saraswathy Sreeram et al. [20].

In the present study 7 cases of Malignant Melanoma were reported accounting for 30.43% of all malignant lesions. The maximum number of cases were seen in the 6^{th} decade with female preponderance which correlated with features of Waneboet al [21] in the diagnosis of hyperpigmentary skin lesions morphology, distribution, pattern and extent of lesions are helpful to make an accurate provisional clinical diagnosis and study of skin biopsy gives a confirmatory diagnosis. In the present study, positive correlation was seen between clinical diagnosis and histopathological diagnosis in only 90 % of cases thus emphasizing the importance and utility of histopathology in arriving at a conclusive diagnosis.

LIMITATION

The limitation of the study was size of the sample was small and there was no follow up of the cases.

CONCLUSION

Lichen planus and its variants were the most common hyperpigmented skin lesions encountered in this study. As there is a significant overlap in clinical presentation, specific diagnosis of hyperpigmented lesions were based on histopathologic findings and its clinical correlation for definite treatment. Histopathological diagnosis with clinical correlation aids in the effective management of patients.

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