Clinico-Pathological Study of Pigmented Skin Lesions

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ABSTRACT

BACKGROUND

Pigmentary problems are one of the most frequent causes for dermatologic consultation. Skin colour is highly individual and the variations are controlled by numerous genes. Correct diagnosis of skin disorders including pigmented lesions depends on histopathologic examination of skin biopsies and clinicopathologic correlation.

METHODS

This is a hospital based observational study done for a period of 2 years from July 2017 to June 2019 with a sample size of 88 cases in the Department of Pathology, Andhra Medical College, Visakhapatnam. Specimens were formalin fixed and the tissue was adequately processed for histopathological examination. The sections were stained routinely with haematoxylin and eosin and examined under light microscopy.

RESULTS

Out of the 88 cases, 30 cases were inflammatory lesions which include 14 cases of classic lichen planus, 6 cases of lichen planus hypertrophicus, 9 cases of lichen planus pigmentosus and 1 case of lichenoid keratosis. 35 cases were benign lesions comprising 21 cases of benign melanocytic nevi and 14 cases of seborrheic keratosis. 23 malignant lesions include 16 cases of basal cell carcinoma and 7 cases of melanoma. Most common affected age group was 51-60 yrs. Most common site involved in malignant lesions was face (34.33%). There is slight female preponderance. Most common pigmented lesion under malignant category was basal cell carcinoma about 16 cases. 75 cases (85%) were correlated clinically.

CONCLUSIONS

Classic Lichen planus is the most common lesion seen under inflammatory category. The diagnosis of seborrheic keratosis is mainly based on the histopathological examination in order to differentiate from other pigmented skin lesions, hence a careful histopathological diagnosis is important.

KEYWORDS

Pigmented Lesion, Benign Melanocytic Nevi, Melanoma

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DOI: 10.18410/jebmh/2020/72

Financial or Other Competing Interests: None.

How to Cite This Article:
Rajendra Prasad J, Suryakala C, Arfathunnisa M, et al. Clinico-pathological study of pigmented skin lesions. J. Evid. Based Med. Healthc. 2020; 7(7), 337-341. DOI: 10.18410/jebmh/2020/72

Submission 23-01-2020,
Peer Review 29-01-2020,
Acceptance 07-02-2020,
Published 17-02-2020.

BACKGROUND

Human skin color is highly individual, and several genes control those variations. In India, they are a significant concern with a tremendous psychological impact on the quality of life.[1] Pigmented skin lesions can be defined as altered pigmentation of the skin and mucous membranes that have a flat or raised growth, which is blue, brown, black, or grey coloured. It depends on many factors like age, sex, genetics, and environment. Most of them are benign and are called Nevus, while a majority of them have malignant transformation and are called as melanoma.[2] The microscopic examination of skin tissue is probably the single most important diagnostic ancillary technique in the management of patients with skin disorders. Hence, a careful histopathological interpretation by the pathologist is needed in the diagnosis and management of these lesions. The present study has been focused on pigmented skin lesions clinically diagnosed and correlated with the histopathological examination. The clinicopathological correlation has been done in subjects with a broad spectrum of age groups who reported to King George hospital/ Andhra Medical College.

METHODS

It was an observational study carried out in the department of Pathology in Andhra medical college (tertiary care centre) over a period of 2years from July 2017 to June 2019 who fit the inclusion criteria were included. A total of 88 cases of pigmented skin lesions were included in the study. Materials for this study included patients who were clinically diagnosed with pigmented skin lesions in all age groups from the department of dermatology, surgery and plastic surgery at King George hospital / Andhra Medical College, Visakhapatnam from July 2017 to June 2019. Clinical history like age, duration of the lesion, site of the lesion, significant medical history were taken and entered in the proforma. Punch biopsies, excision biopsies were sent to the pathology department for HPE from the department of Dermatology, Surgery, and Plastic surgery. All specimen submitted to histologic diagnosis was sent in formalin solution and were accompanied by detailed clinical information mentioned in the request form. Gross examination of the skin biopsy, with the three- dimensional size and shape of the skin biopsy, is assessed and noted. The entire skin biopsy is submitted for routine processing and embedded in paraffin wax. 3-5 mm thick paraffin sections of the skin biopsy are stained with H & E.

Inclusion Criteria

Non-neoplastic and neoplastic pigmented skin lesions in various age groups that we received in the department of pathology were included in the study.

Exclusion Criteria

1. All hypopigmented cutaneous lesions, inadequate biopsies.
2. Vascular lesions, cutaneous infections, vitamin and mineral deficiencies.
3. Post chemotherapy, post-radiotherapy, and post-inflammatory pigmentation.

RESULTS

The period of our study was of 2 years duration from July 2017 to June 2019. The total number of cases we received was 88. These cases after being processed and reported were further categorized as under inflammatory, benign and malignant lesions. Our study includes 30 cases of inflammatory lesions, 35 cases of benign lesions and 23 cases of malignant lesions. Among 30 inflammatory lesions in our study, classic lichen planus is the most common lesion accounting about 14 cases (47%).

Type of Lesion	No. of Cases	%
LP- Classic	14	47%
LP-hypertrophicus	6	20%
LP- Pigmentosus	9	30%
Lichenoid like keratosis	1	3%
Total	30	100%

Table 1. Distribution of Inflammatory Lesions (n=30)

Benign Lesions	No. of Cases	%
Epidermal nevus	1	3%
Intradermal nevus	15	43%
Compound nevus	2	5%
Junctional nevus	1	3%
Congenital melanocytic nevus	2	6%
Seborrheic keratosis	14	40%
Total	35	100%

Table 2. Distribution of Benign Lesions (n=35)

Among 35 cases of benign lesions, the maximum cases are that of benign melanocytic nevi constituting about 21 cases. Among them intradermal nevus is most common constituting about 15 cases, (43%) followed by 14 cases (40%) seborrheic keratosis. Among 23 malignant lesions, the most common lesion was basal cell carcinoma accounting for 16 cases (70%) followed by melanoma accounting for 7 cases (30%).

Age in Yrs.	Male	Female	Total	%
Birth- 10 yrs.	1	2	3	3.41%
11-20 yrs.	3	3	6	6.82%
21-30 yrs.	7	9	16	18.18%
31-40 yrs.	4	13	17	19.32%
41-50 yrs.	8	6	14	15.9%
51-60 yrs.	6	11	17	19.32%
61-70 yrs.	8	4	12	13.64%
>70 yrs.	2	1	3	3.41%
Total	39	49	88	100%

Table 3. Age and Sex Distribution of Pigmented Skin Lesions

Site of the Lesion	Classic Lichen Planus n=14	LP-Hypertro-phicus n=6	LP-Pigmentosus n =9	Lichenoid Keratosis n=1	Total	%
Abdomen	1	-	1	1	3	10%
Upper Extremities	3	2	2	-	7	23.33%
Lower extremities	10	4	6	-	20	66.67%
Total	14	6	9	1	30	100%

Table 4. Site Wise Distribution of Inflammatory Lesions

Out of total 88 pigmented skin lesions in the present study, the most common age group affected is 31-40 yrs. and 51-60 yrs. age group, constituting about 17 cases in each group and females are most commonly affected constituting about 49 cases (55.68%). Among 30 inflammatory lesions in our study, the most common site involved was lower extremities constituting 20 cases (66.67%).

Site of the lesion		Epidermal Nevus (n=1)	Intradermal nevus (n=15)	Compound nevus (n=2)	Junctional nevus (n=1)	Congenital Melanocytic nevi n=2	Seborrheic keratosis (n=14)	Total	%
Face	Eyelids		1					1	2.86%
	Nose	1	3					4	11.43%
	Cheeks		11	2		1	2	16	45.71%
	Forehead						1	1	2.86%
Total face								22	62.86%
Scalp							2	2	5.71%
Chest					1		3	4	11.43%
Abdomen						1	6	7	20%
Total		1	15	2	1	2	14	35	100%

Table 5. Site Wise Distribution of Benign Lesions

Out of total 35 benign lesions in the present study, face is most commonly affected site constituting about 22 cases (63%) followed by abdomen constituting about 7 cases (20%). Among face, cheek is the most common affected site constituting about 16 cases (45.71%).

Site of the Lesion		BCC	Melanoma	Total	%
Face	Nose	6	-	6	26.08%
	Cheek	2	-	2	8.7%
	Preauricular region	2	-	2	8.7%
	Lip	1	-	1	4.35%
	Eye lid	2	-	2	8.69%
	Medial canthus of eye	1	-	1	4.35%
	Forehead	1	-	1	4.35%
	Temple region	1	-	1	4.35%
Total face			-	16	69.57%
Lower extremity			7	7	30.43%
Total		16	7	23	100%

Table 6. Site Wise Distribution of Malignant Lesions

Sl. No.	Types of Pigmented Skin Lesions	No. of Cases	Histopathological Diagnosis	
			Concordance With Clinical Diagnosis	Non Concordance with Clinical Diagnosis
1.	Lichen planus and its variants including lichenoid keratosis	30	30(100%)	NIL
2.	Benign melanocytic nevi	21	19 (90.48%)	Papilloma, (2) (9.52%)
3.	Seborrheic keratosis	14	3 (21.4%)	Nevus (6) (42.8%); Melanoma (4) (28.5%), Nevus sebaceous (1) (7.14%)
4.	Basal cell carcinoma	16	16(100%)	NIL
5.	Malignant melanoma	7	7(100%)	NIL
	Total	88	75 (85%)	13(15%)

Table 7. Clinical and Histopathological Correlation of Pigmented Skin Lesions

Among 23 malignant lesions, most common site involved was face constituting about 16 cases (69.57%). In the present study, 85% of the cases showed clinico histopathological correlation. In the present study, out of 21 benign melanocytic nevi, 19 cases (90.48%) showed clinical correlation. Only 2 cases (9.52%) are not consistent because they are clinically diagnosed as pigmented papilloma. Out of 14 cases of total seborrheic keratosis, 11 cases are not consistent as they are clinically diagnosed as nervus (6), melanoma (4), and 1 case as nevus sebaceous.

DISCUSSION

In a diagnostic evaluation of pigmented skin lesions, further characterization of morphology, pattern, extent, and distribution of the lesion are needed to make an accurate clinical diagnosis and to confirm the diagnosis, a skin biopsy is required.

Clinical and Histopathological Correlation

In this study, an analysis of the clinical diagnosis with the histopathological diagnosis was done. Out of the total 88 cases we studied, in (85%) cases, there is a clinical correlation. This highlights the importance of histopathology in arriving at a conclusive diagnosis. In the present study, Haematoxylin and eosin staining followed by melanin bleach for melanin pigment with oxalic acid and potassium permanganate is done in a few cases.

Inflammatory Lesions

Among 30 inflammatory lesions, classic lichen planus has the highest incidence, which is 14 cases out of 30 cases i.e. 47% (Table 1). Under classic lichen planus, 31-40 yrs. age group is most affected, which accounted for 6 out of 14 cases, with a percentage of 42.85% followed by 2nd decade with 4 out of 14 cases, i.e. 28.57% and males most commonly affected with lower extremities is the most common site (Table 4).

Lichen Planus and Its Variants

Classic lichen planus is more common than lichen planus pigmentosus in our study. Our finding is correlated with Jayker SS et al.[3] and Priyadarshini D et al,[4] who also reported classic lichen planus is the most common lesion in their studies. Clinically lichen planus presented as polygonal, flat topped, violaceous papules and plaques (Figure 1a) and on histology epidermis shows hyperkeratosis and parakeratosis with collection of bands like lymphocytes with dermis showing Civatte bodies (Figure 1b). In a study conducted by ELLIS FA et al.[5] on lichen planus on 100 cases showed male predominance with age group ranging 30-45 years affecting the upper extremities, trunk, back, and genitalia, and it is correlated with our study.

Benign Lesions

In our study of the 35 cases of benign lesions, the maximum cases are that of intradermal nevus (Figure 2) constitutes about 15 cases, which accounts for about 43% followed by

seborrheic keratosis (Figure 3a) with 14 cases, accounting 40% (Table 2). Our results are comparable to Laishram RS et al (2013) 183 cases and Parvathi M[6] et al (2017) 44 cases. Females are most commonly affected with 11 cases out of total 15 intradermal nevi, accounting 73.33%. Other cases included under benign lesions category are 1 case of epidermal nevus (3%), 2 cases of compound nevus (5%), 1 case of junctional nevus (3%), 2 cases of congenital melanocytic nevus (6%), 14 cases of seborrheic keratosis (40%). In our study as per age distribution in the overall benign lesion category, the most affected age group were seen in the 5th decade, which is about 7 cases accounting a percentage of 20% followed by 6 cases in the 2nd decade with 17.1%. 5 cases in the 1st decade, 4th decade and 6th decade with 14.3%. Clinically intradermal nevus may present as pigmented lesion or pigmented papilloma. On histology intradermal nevus shows thin epidermis with dermis showing islands of nevus cells and melanin pigment (Figure 2) which is comparable to Laishram RS et al (2013)183 cases and Parvathi M[6] et al (2017) 44 cases. In our study, paediatric cases accounted for 3 out of 35 cases with a percentage of 8.6%. Among them, 2 cases were of congenital melanocytic nevus (one was 7yrs male child, and the other was 3 yrs. female child) and 1 case of seborrheic keratosis in 9 yrs. old female child. Overall Benign lesions are most common in females, accounting for 24 cases out of 35, with 69% and most common site involved was face (62.86%) (Table 5) which is comparable to Laishram RS et al (2013)183 cases and Parvathi M[6] et al (2017) 44 cases.

Seborrheic Keratosis

Seborrheic keratosis is a benign skin lesion. It develops from the proliferation of keratinocytes of the epidermis. Seborrheic keratosis (Figure 3b) is easily mistaken for malignant melanoma, and most common locations are the face, trunk, back, abdomen, scalp, and upper extremities. Unusual sites are conjunctiva, nipple, and areola.[7] On histology seborrheic keratosis show hyperplastic stratified squamous epithelium with multiple horn cysts and melanin pigment (Figure 3a). We received 14 cases of Seborrheic keratosis, females most commonly affected with most common people affected in the 5th decade. 6 cases over the abdomen, 3 cases over the chest (Figure 3a), 2 cases over the cheek, 1 over the forehead, 2 Out of 14 cases of total seborrheic keratosis, 11 cases are not consistent as they are clinically diagnosed as nevus (6), melanoma (4), and 1 case as nevus sebaceous (Table 7). In our study, the most common age group reported was in the 5th decade.

Congenital Melanocytic Nevi

In a study done by Walton et al,[8] congenital melanocytic nevi are benign proliferations of cutaneous melanocytes. They clinically present at birth or within the first postnatal weeks. At least 2.5% of white infants at birth have some pigmented lesion, but only 1% show nevocellular nevi. In our study, we got only 2 cases of congenital melanocytic nevus who presented it since birth. The male child had it over the cheek, and the female child had it over the right upper limb.

Malignant Lesions

In our study under the category of malignant lesions, total cases were 23. The highest cases are that of basal cell carcinoma which is 16 cases out of 23 cases with a percentage of 70%. Among 23 malignant lesions, most common site involved was face constituting about 16 cases (69.57%) (Table 6). As per sex distribution in our study on BCC, females are predominant with 10 cases (63%) in comparison to males with 6 cases (37%). As per site distribution in our study on BCC, most common site was nose (6) followed by cheek (2), preauricular region (2), near eyelid (2) and each case on lip, medial canthus of eye, forehead and temple region. In our study of BCC as per age of distribution the maximum age affected are seen in the 5th decade with 7 cases out of 16 cases. In our study on malignant melanoma, total cases are 7 out of 23 cases (30%) under the category of malignant lesions. The maximum age affected is seen in the 6th decade with a total of 3 cases out of 7, which accounted for about 42.8%, followed by 2 cases in more than 70 yrs. age group (28.6%), 1 case each in 2nd and 5th decade (14.3%). As per sex distribution in our study on Malignant melanoma, males are predominant with 5 cases (71.4%) in comparison to females with 2 cases (28.6%). On histology melanoma shows round to polygonal cells arranged in sheets and nodular pattern (Figure 5) Individual cell showing pleomorphic vesicular nucleus with prominent eosinophilic nucleoli with cytoplasm showing melanin pigment.

Basal Cell Carcinoma

The most common site of bcc in the present study was nose with age range of 31-80 years and most common histological pattern was nodular pattern. .our results are comparable to Malhotra[9] (2011) et al, Kumar[10] et al and Saldhana[11] (2015) et al.

Malignant Melanoma

In the present study the most common site affected of malignant melanoma was lower extremity (table 6) with female preponderance and the common histological variant being superficial spreading type. Our results are comparable to Laishram RS et al (2013), Suvernakar S[12] et al and Parvathi M[6] et al (2017) Overall in the present study 85% cases show positive correlation and it is well correlated with other studies Suvernakar S[12] et al (84.10%) and Parvathi M[6] et al (72%).

CONCLUSIONS

Classic Lichen planus is the most common lesion seen under inflammatory category. The diagnosis of seborrheic keratosis is mainly based on the histopathological examination in order to differentiate from other pigmented skin lesions, hence a careful histopathological diagnosis is important.

Figure 1a. Clinical Photograph Lichen Planus Presented with Multiple Purple, Pruritic, Papules on Right Leg

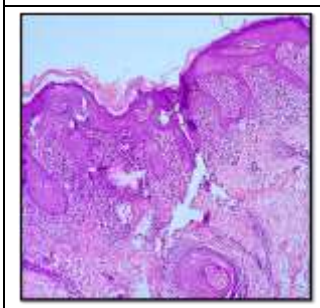

Figure 1b. Photomicrograph of Lichen Planus Showing Epidermis with Hyperkeratosis and Parakeratosis with a Collection of Band Like Lymphocytes Within the Dermis Along with Civatte Bodies Seen in the Papillary Dermis. 100x H&E

Case 1. Classic Lichen Planus

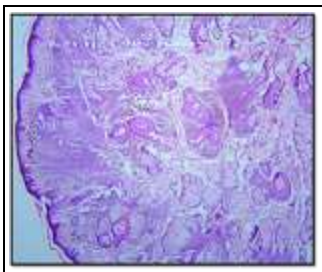

Figure 2. Case 2. Intradermal Nevus Photomicrograph of Intradermal Nevus Showing Thin Epidermis and The Dermis Showing Pilosebaceous Units with Islands of Nevus Cells and Melanin Pigment. 40x H&E.

Figure 3a. Clinical Photograph Showing a 45 yrs. Old Male Patient Presented with Blackish Nodule Measuring 2.5 x 2 cm on the Left Side of the Chest

Figure 3b. Photomicrograph of Seborrheic Keratosis Showing Hyperplastic Stratified Squamous Epithelium with Multiple Horn Cysts and Melanin Pigment. 100x, H&E

Case 3. Seborrheic Keratosis

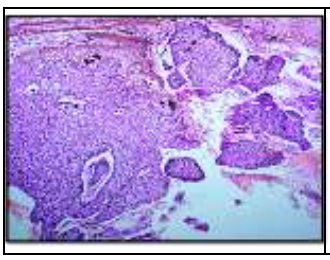

Figure 4. Case 4. Basal Cell Carcinoma- Photomicrograph of Basal Cell Carcinoma Showing Basaloid Cells Arranged in Nests Within the Dermis Showing Peripheral Palisading with Retraction Spaces and Brown Pigment. 40x, H & E.

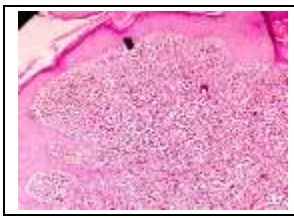

Figure 5. Case 5. Melanoma- Photomicrograph of Melanoma Showing Round to Polygonal Cells Arranged in Sheets and Nodular Pattern. 100X H & E

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