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Original research article

A Clinicopathological Study of Pigmented Cutaneous Lesions

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Abstract

Background: Black, brown, or blue skin lesions are referred to as pigmented skin lesions. Both melanocytic and non-melanocytic lesions are included in this group. Numerous pigmented lesions enhance the likelihood of melanoma and are challenging to categorize due to the wide range of histological findings. With this study, we aimed to compare the clinical and histological diagnoses while also evaluating the range of pigmented skin lesions in cases presenting to our hospital.

Methods: Based on the inclusion and exclusion criteria a total of n=36 cases were included in the study. Punch biopsy was taken for smaller lesions and excision was done for larger lesions. All the biopsies and resected specimens received in our department were properly labeled, numbered, and immediately fixed in 10% formalin for 24 hours. Tissue processing was done. Multiple sections were studied after staining with hematoxylin and eosin and were evaluated accordingly. The histopathological request forms were used to gather the clinical data and pertinent investigations for the patients during this time.

Results: In the present study of n=36 pigmented lesions n=24(66.67%) showed clinicopathological correlation and 12 (33.33%) were inconsistent with clinical diagnosis. Among the clinical cases inconsistent with the clinical diagnosis were benign melanocytic naevi 16.67% of cases. Pigmented seborrheic keratosis in 71.43% of cases and pigmented basal cell carcinoma in 75.0% of cases. The only case of pigmented actinic keratosis was also not found to be consistent with clinical diagnosis.

Conclusion: The most frequent non-melanocytic lesions are pigmented seborrheic keratoses, while benign melanocytic nevi are the most frequently encountered pigmented melanocytic lesions. Lesions with and without melanocytosis tend to occur more in females. Because pigmented seborrheic keratosis and pigmented basal cell carcinoma are the most frequent mimics of melanocytic lesions, rigorous pathological assessment is essential.

Keywords: Pigmented cutaneous lesions, Benign melanocytic nevi, Malignant melanoma, Seborrheic keratosis, Basal cell carcinoma

Introduction

A pigmented lesion is defined as a flat or raised growth that is brown, blue, grey, or black in color and depends on factors like age, sex, genetics, and environment. They are made up of one or more of the melanocytes, nevus cells, or melanoma cells, which can all be found in the dermis or the epidermis and are three closely related cell types. The majority of these lesions are benign and are called Melanocytic nevi, while a minority of them have malignant transformation which is referred to as malignant melanoma. [1] Malignant melanoma, which makes up just 1% of skin cancers but causes more than 60% of cancer-related fatalities, makes melanocytic lesions crucial. The World Health Organization reports that melanoma cases are rising more quickly than all other cancers globally. [2] Nevi and other benign pigmented lesions are significant because they mimic melanoma and may be precursors to melanoma, in addition to their cosmetic value. Melanocytic lesions can form as a result of altered melanin synthesis, poor melanosome transfer to keratinocytes, and aberrant migration of melanocytes from the neural crest to the skin during embryogenesis. [3] Melanocytic proliferations are composed of three cell types that are related to one another: melanocytes, nevus cells, or melanoma cells. Melanocytic proliferations can occur in the epidermis, dermis, or subcutis.

Keratinocytic, vascular, or reactive lesions can be found in non-melanocytic lesions. [4, 5] Among them are vasoformative lesions, lichen planus pigmentosus, dermatofibrosarcoma protuberans, actinic keratosis, seborrheic keratosis, basal cell carcinoma, and dermatofibrosarcoma protuberans. The diagnostic challenge for the pathologist is in differentiating melanocytic lesions from their mimics of non-melanocytic lesions. A careful histopathological evaluation helps in making the correct diagnosis of these lesions. Nevi lesions are important clinically as they might be melanoma or its precursor apart from cosmetic issues. since a variety of non-melanocytic lesions have pigmented variants that can mimic melanocytic lesions. [6] One must be aware that few congenital pigmented lesions reduce in size as age increases and all pigmented skin lesions should not be considered malignant lesions. The study was undertaken to know the distribution of these pigmented lesions with reference to age, sex, site, and histopathological diagnosis with clinicopathological correlation.

Material and Methods

This prospective study was conducted in the Departments of Dermatology and Pathology, Kakatiya Medical College, and MGM Hospital, Warangal from January 2020 to August 2022. Institutional Ethical committee permission was obtained for the study. Written consent was obtained from all the participants of the study after explaining the nature of the study in the local language.

Inclusion Criteria

1. All suspected pigmented skin lesions
2. All age groups
3. Males and females
4. Willing for a biopsy done

Exclusion Criteria:

1. Inflammatory lesions.
2. cutaneous infections
3. Neoplastic non-pigmented lesions

Based on the inclusion and exclusion criteria a total of n=36 cases were included in the study Punch biopsy was taken for smaller lesions and excision was done for larger lesions. All the biopsies and resected specimens received in our department were properly labeled, numbered,

and immediately fixed in 10% formalin for 24 hours. Tissue processing was done. Multiple sections were studied after staining with hematoxylin and eosin and were evaluated accordingly. The histopathological request forms were used to gather the clinical data and pertinent investigations for the patients during this time. The stained slides underwent a thorough microscopic examination, and the lesions were assigned a histological diagnosis.

Results

Out of the n=36 cases included in study n=12(32.8%) cases were males and n=24(67.2%) were females. In the study, 50% of cases were found to be benign melanocytic naevi and malignant melanoma was diagnosed in 11.11% of cases. In Non- melanocytic lesions the most common lesion was pigmented seborrheic keratosis in 19.44% followed by pigmented basal cell carcinoma in 11.11% of cases and naevus sebaceous and pigmented actinic keratosis was found in 5.56% and 2.78% cases each depicted in table 1.

Table 1: Distribution of pigmented melanocytic and non-melanocytic lesions.

Lesion	*Category*	*Frequency (%)*
Melanocytic lesions	Benign melanocytic naevi	18(50.0)
	Malignant melanoma	4(11.11)
Non-melanocytic lesions	Pigmented seborrheic keratosis	7(19.44)
	Pigmented basal cell carcinoma	4(11.11)
	Naevus sebaceous	2(5.56)
	Pigmented actinic keratosis	1(2.78)
Total		36(100)

The non-melanocytic lesions of pigmented seborrheic keratosis and pigmented basal cell carcinoma were found in 3/24 cases each and naevus sebaceous and pigmented actinic keratosis in 2/24 and 1/24 cases each. In males' benign melanocytic naevi was found in 6/12 cases and malignant melanoma in 1/12 cases. Pigmented seborrheic keratosis in 4/12 cases and pigmented basal cell carcinoma in 1/12 cases were diagnosed in detail depicted in table 2.

Table 2: Distribution of lesions among Males and Females

Lesion	*Category*	*Male (%)*	*Female (%)*
Melanocytic lesions	Benign melanocytic naevi	6 (16.67)	12 (33.33)
	Malignant melanoma	1 (2.78)	3 (8.33)
Non-Melanocytic Lesions	Pigmented seborrheic keratosis	4 (11.11)	3 (8.33)
	Pigmented basal cell carcinoma	1 (2.78)	3 (8.33)
	Naevus sebaceous	0 (0.0)	2 (5.56)
	Pigmented actinic keratosis	0 (0.0)	1 (2.78)
Total		12(32.8)	24(67.2)

The distribution of lesions found most common area involved was the face in 66.7% of the cases followed by extremities in 16.7% and the scalp in 13.9% of cases. 72.22% of benign melanocytic naevi were located on the face and 50% of cases of malignant melanoma were located on the face. The detailed distribution of cases and their distribution has been depicted in table 3.

Table 3: Distribution of melanocytic and non-melanocytic lesions at various sites

Site	*Face*	*Scalp*	*Trunk*	*Extremities*	*Total (%)*
Benign melanocytic naevi (n=18)	*13*	*1*	*0*	*4*	*18 (50.0)*
Malignant melanoma (n=4)	*2*	*0*	*0*	*2*	*4 (11.11)*
Pigmented seborrheic keratosis (n=7)	*5*	*1*	*1*	*0*	*7 (19.44)*
Pigmented basal cell carcinoma (n=4)	*3*	*1*	*0*	*0*	*4 (11.11)*
Naevus sebaceous (n=2)	*0*	*2*	*0*	*0*	*2 (5.56)*
Pigmented actinic keratosis (n=1)	*1*	*0*	*0*	*0*	*1 (2.78)*
Total (%)	*24(66.7)*	*5(13.9)*	*1(2.78)*	*6(16.7)*	*36(100)*

Based on the age distribution of cases the most common age group involved in the study was 31 – 40 years with 29.7% of cases followed by 51 – 60 years with 21.3% of all cases. The age group 41 – 50 years and > 70 years contributed 13.5% of cases each. 21 – 30 years recorded 8.1% of cases 61 – 70 years 5.4% of cases and < 21 years 2.7% of cases. The detailed distribution of lesions and age is depicted in figure 1.

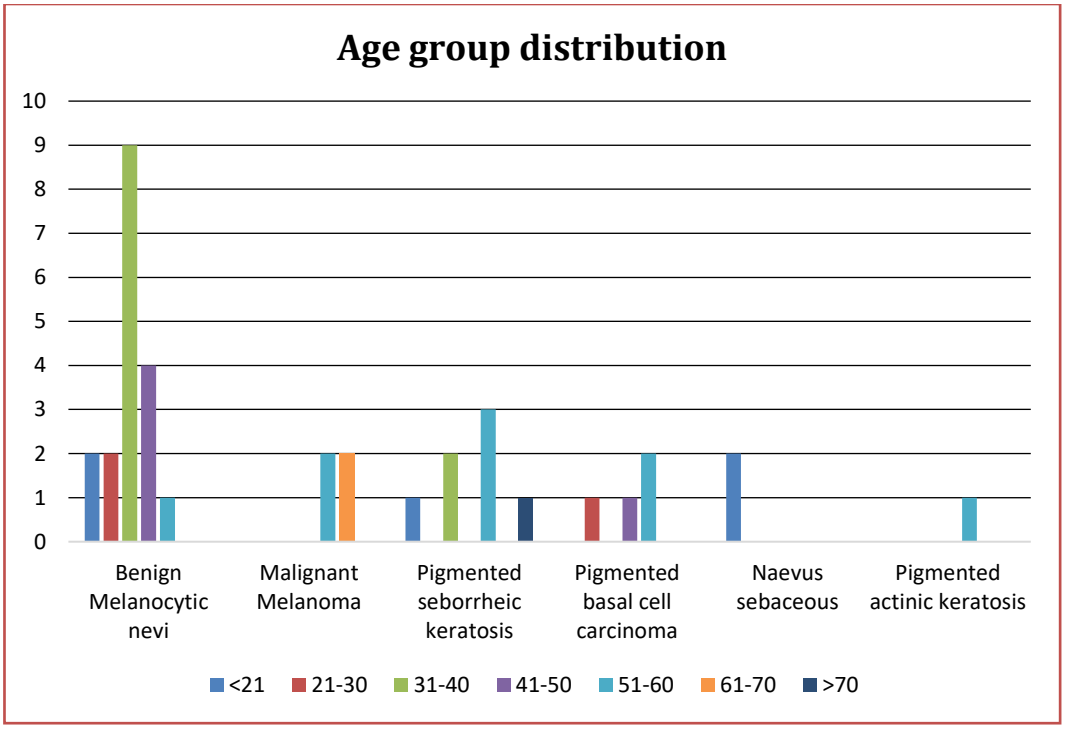

Figure 1: Distribution of lesions among different age groups

In the present study of n=36 pigmented lesions, n=24(66.67%) showed clinicopathological correlation and 12 (33.33%) were inconsistent with clinical diagnosis. Among the clinical cases inconsistent with the clinical diagnosis were benign melanocytic naevi 16.67% of cases. Pigmented seborrheic keratosis in 71.43% of cases and pigmented basal cell carcinoma in 75.0% of cases. The only cases of pigmented actinic keratosis were also not found to be consistent with clinical diagnosis. The details have been depicted in table 4.

Table 4: ***Clinical and Histopathological Correlation of Pigmented Skin Lesions***

Lesion		*Frequency*	*Consistent with Clinical Diagnosis*	*Inconsistent with Clinical Diagnosis*
Melanocytic Lesions	Benign melanocytic Naevi	18	15(83.33%)	3(16.67%)
	Malignant Melanoma	4	4(100.0)	0(0.00)
Non Melanocytic Lesions	Pigmented seborrheic keratosis	7	2(28.57%)	5(71.43%)
	pigmented basal cell carcinoma	4	1(25.0%)	3(75.0%)
	Naevus Sebaceous	2	2(100.0)	0(0.00)
	Pigmented actinic keratosis	1	0(0.00)	1(100.0)
Total		36	24(66.67%)	12(33.33%)

Discussion

In our study, a total number of n=36 pigmented cutaneous lesions were evaluated which included cutaneous melanocytic lesions n=22(61.11%) and cutaneous non-melanocytic lesions n=14(38.89%). In clinical practice, few non-melanocytic lesions mimic the melanocytic lesions, hence punch biopsy of these lesions with histopathological correlation is important to know the correct diagnosis. Few non-melanocytic lesions in clinical practice resemble melanocytic lesions; therefore, a punch biopsy of these lesions with histological correlation is crucial to determine the right diagnosis. 30% of the clinically diagnosed melanoma patients in research by Julian C et al., [7] were later determined by histology to not be melanoma. In our study most commonly involved were females with a male: female ratio of 1:2, most commonly involved age group is < 40 years. The results disagreed with those of Youl PH et al., [8] and MacKie RM et al., [9] but were similar to those of Rajesh SL et al., [10] The most common lesion was benign melanocytic nevi n=18(50%), followed by pigmented seborrheic keratosis n=7(19.44%). In the present study among females, the most common lesion was benign melanocytic nevi 12/18 (66.67%) which concurred with Schäfer T et al., [12] observations Nevi are benign melanocytic tumors that may act as antecedents or stimulants to melanoma and have cosmetic value. In males pigmented Non–melanocytic lesion was the most common lesion 7/12 (58.33%) which was similar to Rubegni et al., [13] and Rajesh SL et al., [10] Majority of these lesions are situated on sun-exposed areas. In our study of 18 benign melanocytic nevi, 15(84.2%) showed clinical correlation and 3(15.8%) were inconsistent as they were diagnosed histopathologically as papilloma. In the present study, it was observed that malignant melanoma was seen in n=4 cases and n=3 were females and n=1 male, which was comparable to other studies. Malignant melanoma is an aggressive tumor, its incidence in India is uncommon when compared to the west. According to a WHO study, when compared to other malignancies, the incidence of malignant melanoma is rising quickly. [13] The fact that both melanoma cases were found on the face supports the idea that sun-exposed areas of the body account for the majority of melanoma cases. However, a study from Japan revealed that melanoma in that country was typically found on the soles of lower limbs. [14] According to this case study's observations (figure 1), the fifth to sixth decade is when incidence peaks at its maximum rate. [15, 16]

Out of n=14 (38.89%) non-melanocytic lesions, the most common lesion was pigmented seborrheic keratosis n=7(50%), followed by pigmented basal cell carcinoma n=4

(28%), the least is naevus sebaceous n=2(15%) and pigmented actinic keratosis n=1(7%). These lesions are more commonly diagnosed clinically as melanoma. Pigmented seborrheic keratosis may present clinically as a brownish-black lesion occurring on sun-exposed parts so they mimic melanocytic lesions. in our study, out of n=7 cases of pigmented seborrheic keratosis, n=5 cases (71.42%) were not consistent with clinical diagnosis, as they were clinically diagnosed as PBCC. In our study, out of n=4 cases of PBCC, n=3 cases were clinically diagnosed as Naevus. In our study, both cases of naevus sebaceous occurred on the scalp, both occurring in the <20 years of age group. Naevus sebaceous usually appears congenitally or in adolescents where they show rapid growth. The most common site was the scalp similar to our observation. Naevus sebaceous is important clinically as it may lead to cosmetic deformity, alopecia, or malignant transformation. In our study, a case of pigmented actinic keratosis which was diagnosed on histology was also clinically diagnosed as naevus. [11] In the present study of n=36 pigmented lesions n=20(61.4%) showed clinicopathological correlation and n=16(38.6%) were inconsistent. these observations were similar to that of Suvernakar SV et al., [17] where in their study 63% showed a positive correlation and 37% were a negative correlation with the diagnosis. This discordance emphasizes the importance of histopathology for a complete diagnosis. In our study, we found that seborrheic keratosis and PBCC are the most common non-melanocytic mimickers of melanocytic lesions. These observations were similar to Julian C et al., [7] study also observed that the above two lesions were the common mimickers. the limitations of the study were the small size of the sample taken into the study and not all pigmented lesions presented to the out-patient department are sampled, only those with concern for the dermatologist suspicion of diagnosis were biopsied, therefore not a representative of all pigmented lesions.

Conclusion

Melanocytic and non-melanocytic lesions make up pigmented cutaneous lesions. The most frequent non-melanocytic lesions are pigmented seborrheic keratoses, while benign melanocytic nevi are the most frequently encountered pigmented melanocytic lesions. Lesions with and without melanocytosis tend to occur more in females. Because pigmented seborrheic keratosis and pigmented basal cell carcinoma are the most frequent mimics of melanocytic lesions, rigorous pathological assessment is essential.

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