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Original Article

Histopathological Spectrum of Benign Melanocytic Nevi and Melanoma: A Study in a Tertiary Care Centre in Coastal Karnataka

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Abstract

Introduction: Melanocytic lesions show great morphological diversity in their architecture and the cytomorphological appearance of their composite cells. Histological assessment of these lesions constitutes a substantial proportion of a dermatopathologist's daily workload. The aim of our study was to observe the histological spectrum and types of benign melanocytic nevi and metanoma and also to look for any atypical histological features in these nevi.

Material and Methods: A total of 70 cases of melanocytic lesions were studied retrospectively over a four year period. Skin biopsies with a primary clinical diagnosis of nevus / mole / ? melanoma were received in 10% buffered formalin, processed routinely for paraffin sections and stained by Haematorxylin and Eosin stain. The histological features were observed and relevant data was recorded and analysed by frequency, percentage and chi square test.

Results: The ratio of benign melenoytic nevi to melanoma was 4:1. The most common benign nevus was intradermal nerus (66%) and the most common type of melanoma was of acrallentiginous type (65%). Occurrence of these melanocytic lesions was not significantly related to gender as chi square=0.130, p=0.719>0.05 but was higlly associated with age in our study as Fisher's exact test was p=0.000<0.01.

Conclusion: Melanocytic lesions of the skin are of notorious challenge for the pathologist.It is important to excise any pigmented lesion as they may transform into malignancy. Optimal assessment of these lesions is important as the pathology report provides the clinician with information about the histogenic nature of the lesion as well as its potential for aggressive biological behavior which facilitates optimal management decisions.

Keywords: Melanocytic lesions; Benign nevi; Intradermal nevus; Melanoma.

Introduction

Melanocytic lesions are one amongst the most common skin lesions. They exhibit great morphological diversity in their architecture and cytomorphological appearance of their composite cells.[1,2] Histological assessment of these lesions constitutes a substantial proportion of a dermatopathologist's daily workload. Benign melanocytic nevi are extremely common and great majority are benign with little if any malignant potential.[3] Melanocytic nevi are important primarily because of their histogenic relation to cutaneous melanoma. Only a small proportion progresses to melanoma.[4] A history of clinically premalignant lesion at the site of primary melanoma may be elicited in 18-85% of patients.[5] Therefore it is important to distinguish melanocytic hyperplasia that have an increased risk of developing melanoma from the one which has little or no increased risk. The purpose of this study was to observe the histological spectrum of different types of nevi and melanoma and also to look for any atypical histological features in these benign nevi.

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Table 1: Shows the site of biopsy of nevi and melanoma

Sl. No	Site	No (%)	Benign/ Malignant
1.	Forearm	13 (23%)	Benign
2.	lower eyelid	12 (21%)	Benign
3.	cheek	9 (16%)	Benign
4.	Preauricular area, thigh	5 each (9%)	Benign
5.	Neck, Nose	3 each (6%)	Benign
6.	sacral Region, Scalp, Skin, upper lip, chin, perianal region	1 each (1.6%)	Benign
7.	Foot	14 cases (20%)	Malignant

Table 2: Distribution of lesions with relation to gender

Sl. No	lesion	No (%)	Male	Female
1.	Intradermal Nevus	37 (66%)	16	21
2.	Compound Nevus	12 (21%)	6	6
3.	Blue Nevus	4 (7%)	2	2
4.	Junctional Nevus	1 (2%)	0	1
5.	Spitz Nevus	2 (4%)	1	1
6	Malignant Melanoma	14 (20%)	7	7

Materials and Methods

This was a retrospective study conducted over a four year period from June 2008 to May 2012. A total of 70 cases of melanocytic lesions were studied. The skin biopsies were taken by the Dermotologist from the patients with a primary clinical diagnosis of nevus/mole/? melanoma. The cases reported as re-excisions were excluded from the study. Relevant data recorded included name, age, sex, site of biopsy, biopsy number, size, shape, surface, border of the lesion, change in size and color and any secondary changes. Skin biopsies were received in 10% buffered formalin, processed routinely for paraffin sections and stained by Haematoxytin and Eosin stain. Special stains such as Melanin bleach and Masson Fontana were done as and when required. Histological features of epidermis such as hyperkeratosis, parakeratosis, acanthosis, epidermo–dermal junctional activity and dermal features such as arrangement of tumor cells, tumor cell morphology etc. were assessed. Collected data was analysed by frequency, percentage and chi-square test.

Results

A total of 70 cases of benign melanocytic nevi and melanoma were studied with an age range from 6 to 82 years and a mean age of 44 years. The ratio of benign melanocytic nevi to melanoma was 4:1. Majority of the patients with nevi were in the fourth decade, (32%) and melanoma were in the seventh decade

Figure 1: Histopathology of blue nevus showing spindle shaped cells with melanin [H & E x 400X]

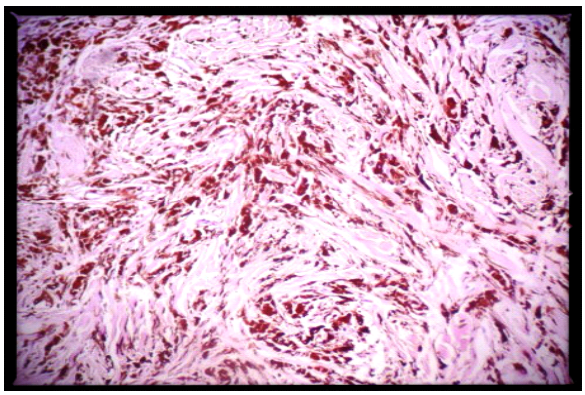
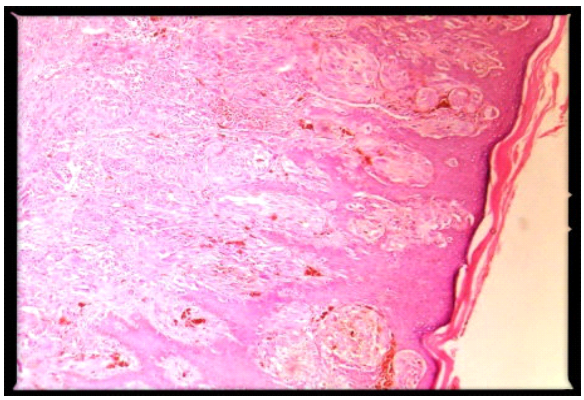


Figure 2: Histopathology of Spitz nevus with spindle cells [H & E x100X]



(57%). The male to female ratio was almost equal. Chi square = 0.130, P=0.719>0.05 (not significant). Occurrence of these lesions was not significantly related to gender. Fisher's exact test P=0.000<0.01 (highly significant) Malignancy is significantly higher in patients aged more than 50 years.

Majority of the benign nevi, 13 cases (23%) were removed from the forearm, lower eyclid 12 cases (21%) followed by cheek 9 cases (16%), preauricular area and thigh 5 cases each (9%), neck and nose 3 cases each (6%) and one case each from the sacral region, scalp, shin, chin, upper lip and perianal region. All 14 cases of malignant melanoma were from the foot (Table 1).

The most common melanocytic nevi was Intradermal Nevus , 37 cases (66%) ,followed by compound nevus 12 cases (21%) and blue nevus 4 cases (7%). There were two cases of spitz nevus (4%) and one case of junctional nevus (2%). Malignant melanoma comprised 14 cases (20%) of all the melanocytic lesions. (Table 2).

The histopathological features such as hyperkertosis, parakeratosis, acanthosis were observed in most of the cases of intradermal nevi. The cells were round in intradermal, compound and junctional nevi whereas they were spindled in blue (Figure 1) and spitz nevi (Figure 2) and in few of the cases of intradermal nevi. Mild nuclearatypia was noted in both the cases of spitz nevi. (Table 3)

The most common type of malignant melanoma was acrallentiginous type (65%) (Figure 3). The melanoma cells were spindle shaped and had typical prominent eosinophilic nucleoli (Figure 4). We had four cases of superficial spreading melanoma and one case of desmoplastic type of melanoma.Mitosis was observed in only two cases(14%). Half the number of cases (50%) belonged to Clark's grade II. Pigmentation was noted in all 14 cases of melanoma (Table 4).

Discussion

Melanocytic lesions comprise a wide spectrum of tumors ranging from small, macular lentiginoushyperplasias to congenital or acquired melanocytic nevi to malignant melanomas. Hence this spectrum is both complex and fascinating. An accurate histopathologicial diagnosis of these lesions is an important area in dermatopathology. Therefore, an understanding of the spectrum of benign proliferative patterns is necessary for recognizing the aberrant histologic and cytologic features of malignant melanoma and

Table 3: Distribution of Histopathological features of Benign Melanocytic Nevi

Sl.No	Histopathological features	Intradermal nevus	Compound nevus	Blue nevus	Junctional nevus	Spitz nevus
	Total	37 (100%)	12 (100%)	4 (100%)	1 (100%)	2 (100%)
1.	Hyperkeratosis	16 (43%)	-	-	-	2 (100%)
2.	Parakeratosis	16 (43%)	-	-	-	2 (100%)
3.	Acanthosis	20 (54%)	6 (50%)	-	-	2 (100%)
4.	Lentiginous Proliferation	20 (54%)	4 (33%)	-	-	-
5.	Junctional activity	-	-	-	1(100%)	2 (100%)
6.	Tumor cell arrangement in nests	37 (100%)	12 (100%)	-	1(100%)	2 (100%)
7.	in cords	10 (27%)	-	-	-	-
8.	in sheets	-	-	4 (100%)	-	-
9.	Cell morphology Round	37 (100%)	12 (100%)	-	1(100%)	-
10.	spindle	30 (81%)	-	4 (100%)	-	2 (100%)
11.	Mild nuclear atypia	-	-	-	-	2 (100%)
12.	secondary changes Multinucleated giant cells	4 (11%)	-	-	-	1 (50%)
13.	Fibrosis	-	-	2 (50%)	-	1 (50%)

Figure 3: Histopathology of Acrallentiginous melanoma [H & E x100X]

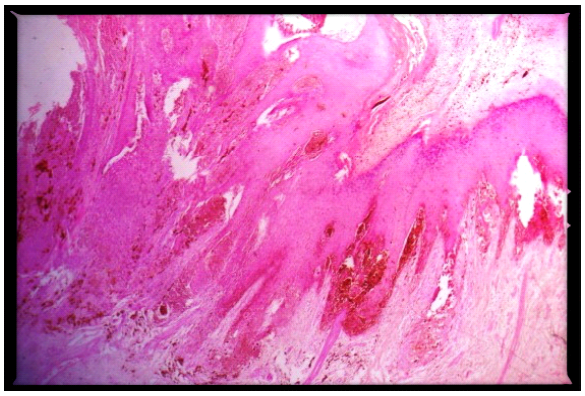


Figure 4: Melanoma cells with prominent eosinophilic nucleoli [H & E x 400X]

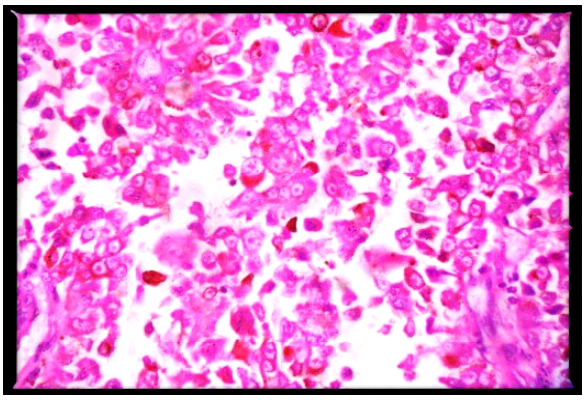


Table 4: Distribution of Histopathological features in cases with cutaneous melanoma

Case No.	Type	Cell type	Mitotic activity	Level of Invasion (Clark's system)	Dermal lymphocytic infiltration	Pigment
1.	AL	Mixed	-	II	+	+
2.	AL	Spindle	2/10 hpf	III	-	+
3.	SS	Spindle	-	I	+	+
4.	SS	Spindle	-	II	+	+
5.	SS	Mixed	-	I	+	+
6.	DM	Spindle	-	IV	+	scanty
7.	AL	Mixed	-	III	+	+
8.	SS	Spindle	-	II	-	+
9.	AL	Mixed	-	III	+	+
10	AL	Spindle	3/10 hpf	III	-	+
11.	AL	Mixed	-	III	+	+
12.	AL	Mixed	-	III	+	+
13.	AL	Mixed	-	III	+	+
14.	AL	Spindle	-	II	+	+

precursor lesions.[6-8]

The most common benign melanocytic nevus was intradermal nevus, 37 cases (66%) which was similar to a study conducted by Azam *et al*.[9] The average age incidence of melanocytic nevi was 44 years which was similar to that observed by Hussain *et al*[10] and the mean age of melanoma was 65 years.

Majority of the cases of nevi were biopsied from the forearm, 13(23%) which is in contrast to that of Azam *et al*[9], where the maximum number was from the face.

In the present study, both melanocytic nevi and melanoma were equally distributed amongst males and females (1:1) which is in contrast to that of Azam *et al*[9], Hussain *et al*[10] and Mukhopadhyay *et al*.[11]

Histological spectrum of melanocytic lesions showed significant variation. It was observed that there was higher frequency of acanthosis and lentiginous proliferation in the epidermis (54%) overlying the intradermal nevus which is similar to that of Azam *et al*.[9]

As noted by Klein and Barr[12] and Azam *et al*[9], mild atypia in the form of slight variation in the nuclear size and shape was observed in 4% of our cases (Spitz nerv). Four cases of blue nevi with distinctive features of dendritic melanocytes, numerous melanophages and slight fibrosis were noted.

Similar to studies done by Cohen *et al*[13] and Azam *et al*[9], most of our cases showed increased pigmentation and presence of melanophages in the upper dermis. Another histological feature noted in the present study was the presence of occasional multinucleated nevus cells. These are seen in well matured nevi and taken as evidence of benignity and

they differ significantly from the irregular and bizarre–shaped giant cells seen in spitz nevi and melanoma.

Acrallentiginous type of malignant melanoma was the most common melanoma in this series, 9 (65%) which is similar to that of Vayer *et al*[14] but is in contrast to that of Mukhopadhyay *et al*[11], where superficial spreading type was the commonest. Most of the cases, 12 (85%) showed dermal lymphocytic infiltrations, pigmentation, 14 cases (100%) and Clark's level invasion III (50%) similar to that of Mukhopadhyay *et al*.[11] However the site of occurrence of all the melanomas were foot in the present study and one case with inguinal lymphnode metastasis was noted which is in contrast to that of Mukhopadhyay *et al*.[11]

Conclusion

In the present study, benign melanocytic lesions outnumbered the malignant melanomas. The most common benign pigmented nevi was Intradermal Nevus (66%) followed by Compound Nevus (21%) Amongst the melanomas, acrallentiginous type (65 %) was the commonest. As a pigmented lesion can be neoplastic or non neoplastic and nonneoplastic lesions may transform into neoplastic, it is mandatory to excise a pigmented lesion or get it biopsied for histopathological confirmation. This can be achieved by a good co-ordination between the two sister departments of pathology and dermatology.

References

1. Sade S, Habeeb AA, Ghazarian D. Spindle cell melanocytic lesions: part II–an approach to intradermal proliferations and horizontally oriented lesions. *J ClinPathol.* 2010; 63: 391-409.
2. Elder D, Elenitas R. Benign pigmented lesions and malignant melanoma. In: Lever's Histopathology of the skin. 9thedn. Lippincott-Raven: 2004; 625-684.
3. Valinkeviciew S, Miseviciene I, Gollnick H. Prevalence of acquired melanocytic nevi and relationship with skin type. *Arch Dermatol.* 2005; 141: 579-86.
4. Dailvalle RP, Hester EJ, Stegner DL, Deas AM, Pacheco TR, Mokrohisky S *et al*. Is high mole count a marker more than melanoma risk? *Arch Dermatol.* 2004; 140(5) : 577-80.
5. Fitzpatrick T. Color atlas and synopsis of clinical Dermatology, common and serious diseases. 4thedn. New York: McGraw Hill; 2001, 160-172.
6. Weedon D. Lentigines, nevi and melanomas. In: Weedon's Skin pathology 3rdedn. Churchill Livingstone: 2006; 709-756.
7. Fletcher CDM. Melanocytic tumors. In: Diagnostic Histopathology of Tumors. Vol 2. 3rdedn. Churchill Living stone: Elsevier; 2007, 1466-1484.
8. Imber MJ, Mihm MC. Melanocytic lesions In: Sternberg's Diagnostic Surgical Pathology. 5thedn. Philadelphia: Lippincott Williams and Wilkins; 2010, 89-111.
9. Azam S, Mubarik A, Ahmad M. Histopathological study of benign melanocyti nevi. *Pakistan Armed Forces Med J.* 2008; 2: 108-110.
10. Hussein MR, Elsers DA, Fadel SA, Omar AE. Clinicopathological features of melanoytic skin lesions in Egypt. *Eur J Cancer Prev.* 2006; 15(1): 64-8.
11. Mukhopadhyay S, Ghosh S, Dutta S, Mitra PK. A clinicopathological study of malignant melanoma with special reference to atypical presentation. *Indian J Pathol Microbiol.* 2008; 51(4): 485-488.
12. Klein LJ, Barr RJ. Histological atypia in clinically benign nevus -a prospective study. *J Am Acad Dermatol.* 1990; 22: 275-282.
13. Cohen LM, Bennion BD, Johnson TW, Golitz LE. Hypermelanocytic nevus: clinical, histopathological and ultrastructural features in 316 cases. *Am J Dermatopathol.* 1997; 19: 23-30.
14. Vayer A, Lefor AT. Cutanous melanoma in African American. *South Med J.* 1993; 86: 181-182.