

A Retrospective Study of Melanocytic Naevi at the National Skin Centre

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Abstract

Introduction: A retrospective study of melanocytic naevi was undertaken to assess the degree of clinico-pathological correlation and incidence of histological atypia. **Materials and Methods:** The case records from January to March 1996 of all patients with histologically diagnosed melanocytic naevi at the National Skin Centre were analysed. **Results:** Of the 240 lesions removed from 167 patients, the majority being women (111/167 patients), it was found that 55% (132/240) were correctly diagnosed. Fourteen per cent were mistaken for non-melanocytic lesions, namely skin tag, neurofibroma, syringoma cylindroma, epidermal naevus, naevus sebaceous and basal cell carcinoma. Most of the lesions were located on the cheeks and eyelids. Junctional naevi, followed by compound naevi were often missed. Histological dysplasia were seen in 7 naevi; 6 compound and 1 congenital naevi. There was a lack of clinico-pathological concordance in dysplastic naevi. **Conclusions:** The clinico-pathological concordance of melanocytic naevi was high, with low incidence of atypia on histology.

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Introduction

Melanocytic naevi are benign proliferation of melanocytes of congenital and acquired types which usually appear during adolescence or early adult life.^{1,2} Naevi are of three common subtypes i.e. junctional, compound and intradermal melanocytic naevi, with characteristic clinical appearance that aids in clinical diagnosis.¹⁻⁶ Junctional naevi are uniformly brown to black macules, less than 1 cm in diameter. Compound naevi are usually slightly elevated brown to black papules, occasionally papillomatous. Most papillomatous lesions and nearly all dome-shaped and pedunculated lesions are intradermal naevi. Dysplastic naevi usually present with flat lesions or papules with flat periphery, are greater than 5 mm in diameter, and have irregular indefinite borders and pigment variation.

The incidence of malignant melanoma is rising worldwide, especially in the Caucasian population.^{4,7} Although still rare in Singapore (0.5 per 100,000), there appears to be an increasing incidence especially in females.⁸

Melanocytic naevi may be precursors of melanoma. Evidence of naevi, especially dysplastic naevi in histologic continuity with melanoma, have been found in about one-

third of melanoma.^{7,9-13} The incidence of clinically and histologically atypical melanocytic naevi is higher in patients with a history of melanoma.^{5,7,9,14} The early detection of melanoma can be life-saving. Accurate identification of the types of melanocytic naevi rules out melanoma, so that prompt reassurance can be given to the patient and unnecessary biopsies avoided.⁵

Ackerman felt that melanocytic naevi can be classified into 4 main types, namely Unna's, Miescher's, Spitz's and Clark's naevi, each of which has characteristic clinical and histological features.^{15,16} It is believed that most melanomas that arise from acquired melanocytic naevi arise from Clark's naevi, and rarely from the others.

Aims

The study aims:

1. To analyse the epidemiology of histologically confirmed melanocytic naevi in National Skin Centre.
2. To determine the concordance of clinical and histological diagnoses.
3. To determine the incidence of histological atypia in the various types of melanocytic naevi.

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4. By applying Ackerman's classification of melanocytic naevi, to find out the common pattern of each on the body, and in particular that of Clarke's naevi.

Materials And Methods

This is a retrospective study of 3 months' duration from January to March 1996. The records of all patients with histologically diagnosed melanocytic naevi (junctional, intradermal, compound and congenital) were reviewed. Excluded are naevi that on histology cannot be classified (e.g. in the presence of scar). Data analysed included personal/family history of melanocytic naevi/melanoma, age, sex, race, symptoms, duration of lesions, reasons for excision, sites, size, shape, predominant colour and clinical atypia.

The naevi were examined for architectural and cellular atypia based on the NIH criteria,¹⁷ as well as classified according to Ackerman's patterns.

Histological dysplasia can be due to architectural or/and cellular dysplasia.^{3,18} Features of architectural dysplasia include asymmetry, lentiginous extension, elongated rete ridges, bridging between ridges, shouldering and location near adnexa. Features of cellular dysplasia include hyperplasia of melanocytes with abundant cytoplasm and nuclear atypia with large, hyperchromatic, irregular shape.

According to Ackerman, Unna's, Miescher's, Spitz's and Clark's naevi each can be readily recognised both clinically and histopathologically. Unna's naevus presents as an exophytic papillomatous papule that resembles a skin tag. Histologically, melanocytes are located superficially in the papillary dermis. Miescher's naevus, which commonly occur on the face, presents as a dome-shaped papule. Histologically, it is endophytic in the shape of a wedge that extends far into the reticular dermis. Spitz's naevus is not included in the present study. Clark's naevus is the commonest melanocytic naevus. It is a slightly elevated papule with nest of melanocytes confined to the dermoepidermal junction and papillary dermis.

Results

Two hundred and forty lesions were excised from 167 patients. Of these, 129 patients had 1 naevus, 24 had 2 naevi, 9 had 3 naevi, 3 had 4 naevi, 1 had 5 naevi and 1 had 19 naevi excised. The last patient had her naevi excised on several occasions, all for cosmesis. There were 111 females and 56 males (female to male ratio was 2:1). The mean age was 32 years (range 8 to 89 years). The racial distribution was as follows: 145 Chinese, 3 Malays, 1 Indian, and 18 other races (e.g. Eurasian, Caucasian).

The types of naevi showed the majority (175/240) were intradermal melanocytic naevi, compound (37/240), junctional (14/240) and congenital (14/240) naevi. Of the

congenital naevi, there were 13 intradermal and 1 compound naevus. Congenital naevi were noted at birth in 3/14 patients (Table I).

The average diameter was 40.7 mm for congenital naevi which was the largest, followed by 7.6 mm for junctional, 7.5 mm for intradermal and 6.7 mm for compound naevi.

The morphology and colour of the naevi were recorded in less than 50% of the case records. Analyses showed that junctional naevi commonly presented as pigmented macules; intradermal and compound naevi were commonly hyperpigmented, brown or black papules; while congenital naevi were usually hyperpigmented macules or papules.

The locations of the various types of melanocytic naevi were on the face, trunk and upper limbs. The majority of naevi (50% to 78%) were intradermal. Naevi located on the legs were commonly intradermal (40%) or compound (40%). The majority of naevi removed were from the face, over the cheeks (30%), periorbital (19%), perioral (16%) and nasal (14%) regions (Tables II and III).

A number of these naevi were not recognised clinically. The overall clinicopathological concordance was 55%.

Correct diagnoses were made in 14% of junctional, 67% of intradermal, 24% of compound and 29% of congenital naevi. Incorrect diagnoses were made in 64% of junctional, 19% of intradermal, 44% of compound and 54% of congenital naevi. Junctional naevi were clinically diagnosed as intradermal naevi 64% of the time. Thirty-six per cent of congenital naevi were thought to be compound melanocytic naevi (Tables IV and V).

For the 3 cases that was diagnosed as melanoma, 2 were intradermal naevi (on the toe and back) and 1 compound naevus (on the sole).

TABLE I: TYPES OF MELANOCYTIC NAEVI EXCISED

Type	No.	%	Average diameter [range] (mm)	Average age [range] (years)
Junctional	14	5.8	7.6 [3-30]	27 [16-40]
Intradermal	175	72.9	7.5 [1-50]	34 [8-89]
Compound	37	15.4	6.7 [1-30]	29 [14-62]
Congenital	14	5.8	40.7 [15-110]	35 [16-81]

TABLE II: LOCATION OF VARIOUS TYPES OF MELANOCYTIC NAEVI

Type	Face/Neck % (No.)	Trunk % (No.)	Arms % (No.)	Legs % (No.)
Junctional	6 (9)	0 (0)	22 (4)	10 (1)
Intradermal	78 (126)	71 (36)	50 (9)	40 (4)
Compound	11 (17)	25 (13)	17 (3)	40 (4)
Congenital	6 (9)	4 (2)	14 (2)	10 (1)
Total	100 (161)	100 (51)	100 (18)	100 (10)

TABLE III: DISTRIBUTION OF FACIAL NAEVI

Type	Scalp	Forehead	Periorbital	Nose	Cheek	Perioral	Ear	Neck
Junctional	0	2	3	0	3	0	1	0
Intradermal	7	5	25	19	42	20	2	6
Compound	1	3	2	3	2	4	2	0
Congenital	2	2	1	1	2	1	0	0
Total	10	12	31	23	49	25	5	6

TABLE IV: CLINICOPATHOLOGICAL CONCORDANCE

Histology	Clinical diagnosis							
	mn % (No.)	jmn % (No.)	idmn % (No.)	cmn % (No.)	comn % (No.)	dmn % (No.)	melanoma % (No.)	others % (No.)
Junctional	21 (3)	14 (2)	64 (9)	-	-	-	-	-
Intradermal	14 (24)	3 (5)	67 (117)	8 (13)	2 (3)	2 (4)	1 (2)	4 (7)
Compound	22 (8)	3 (1)	27 (10)	24 (9)	5 (2)	11 (4)	3 (1)	5 (2)
Congenital	14 (2)	-	7 (1)	36 (5)	29 (4)	-	-	14 (2)

cmn: compound melanocytic naevi; comn: congenital melanocytic naevi; dmn: dysplastic melanocytic naevi; idmn: intradermal melanocytic naevi; jmn: junctional melanocytic naevi; mn: melanocytic naevi

TABLE V: CLINICOPATHOLOGICAL CONCORDANCE—OTHER DIAGNOSES

Naevi	jmn	idmn (No.)	cmn (No.)	comn (No.)
Other diagnoses	-	Skin tag (3) Neurofibroma (2) Cylindroma (1) Syringoma (1)	Epidermal naevus (1) Naevus sebaceous (1)	Naevus sebaceous (1) Basal cell carcinoma (1)

cmn: compound melanocytic naevi; comn: congenital melanocytic naevi; idmn: intradermal melanocytic naevi; jmn: junctional melanocytic naevi

Diagnoses other than melanocytic naevi or melanoma were made in 4% (7/175) of intradermal, 5% (2/37) of compound and 14% (2/14) of congenital naevi.

Intradermal naevi were mistakenly diagnosed in 7 patients who had skin tags, neurofibroma, syringoma and cylindroma. Those that were nodular or polypoidal tend to be misdiagnosed as skin tags or neurofibroma. The naevus thought to be a syringoma was a 2-mm pigmented lesion below the eyelid, while that misdiagnosed as cylindroma presented as a scalp nodule.

Compound naevi were diagnosed as epidermal naevi in 2 patients. The first patient was an 18-year-old patient who had a 4-mm brown papule on the right lower eyelid of 6 years' duration. Another patient who presented with a brown plaque on the left temple was diagnosed as naevus sebaceous.

Two congenital naevi were clinically diagnosed as naevus sebaceous and basal cell carcinoma. The naevus sebaceous was present in a 36-year-old woman with a 35-mm brown plaque on the scalp, present since infancy. Basal cell carcinoma was diagnosed in an 81-year-old woman who

had a pre-auricular nodule. She had a past history of basal cell carcinoma of the nose which was excised.

Cosmesis was the main reason for removal (161) (Table VI). This was followed by increase in size (49), malignancy worry (19), change in colour (6) or border (6) and others (4). Two intradermal naevi were removed because of bleeding while 1 because of irritation from clothing. One compound naevus showed signs of irritation by clothing.

Histological dysplasia were found in 7 naevi (Table VII); 6 compound and 1 congenital. Clinical dysplasia were noted in 4 of the naevi. There were 4 intradermal naevi clinically diagnosed as dysplastic but did not show the features histologically (Table VIII).

Six dysplastic compound naevi were present in 5 Caucasian patients, 1 of whom had 2 naevi excised. One had a past history of melanoma. None had any family history of melanoma. There were 4 females and 1 male, with an average age of 31 years (range 25 to 47 years). All the naevi were located on the trunk. Four were clinically dysplastic. Of the remaining 2, 1 had discoloration while the other had no morphological change. Architectural

TABLE VI: REASONS FOR MOLE REMOVAL

Naevi	Cosmesis (No.)	Malignancy worry (No.)	Increase in size (No.)	Colour change (No.)	Border change (No.)	Others (No.)
Junctional	10	4	—	—	—	—
Intradermal	121	5	35	6	3	3
Compound	16	7	10	—	3	1
Congenital	7	3	4	—	—	—

TABLE VII: ATYPIA IN MELANOCYTIC NAEVI

	Architectural (No.)	Cellular (No.)
Junctional	0	0
Intradermal	0	0
Compound	6	5
Congenital	1	0

TABLE VIII: CLINICOPATHOLOGICAL CONCORDANCE IN DYSPLASTIC NAEVI

	Clinically dmn	Clinically not dmn
Histologically dmn	4	3
Histologically not dmn	4	229

dmn: dysplastic melanocytic naevi

atypia (Figs. 1 and 2) were found in all 6 naevi, with asymmetry in 2, lentiginous extension in 4, elongated rete ridges in 1, bridging between ridges in 3, and shouldering in 2. Cellular dysplasia with irregular nuclei and abundant cytoplasm were seen in 2 naevi.

A dysplastic congenital naevus was seen in a 16-year-old Chinese girl with an enlarging 11 by 5 cm pigmented plaque on the right axilla. Histologically, there were lentiginous hyperplasia of melanocytes with irregular hyperplasia and focal invasion of adnexal epithelium.

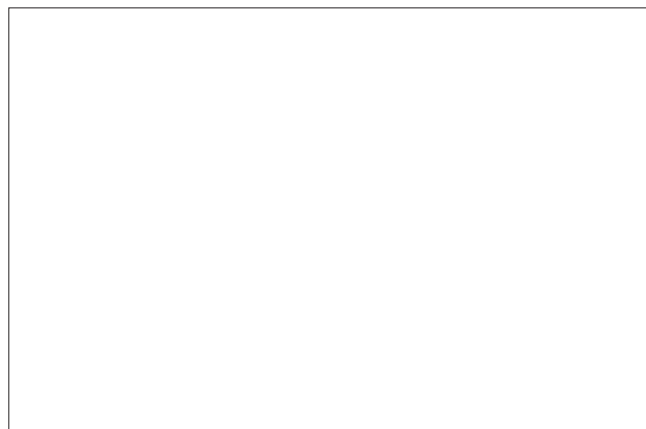


Fig. 1. Dysplastic compound naevus (H & E stain) (x10). There is a marked increase of melanocytes at the dermoepidermal junction showing lentiginous and nested patterns.

TABLE IX: CLASSIFICATION OF MELANOCYTIC NAEVI

	Clark's	Miescher's	Unna's	Congenital	Total
Face/neck	11	5	0	2	18
Arms	8	1	0	1	10
Trunk	31	17	1	2	51
Legs	42	109	2	8	161
Total	92	132	3	13	240

Following Ackerman's classification of melanocytic naevi (Table IX), Clark's naevi were mainly located on the legs (42/92) and trunk (31/92), Miescher's naevi were predominantly seen on the legs (109/132) while Unna's naevi were found on the legs (2/3) and trunk (1/3).

When analysed according to location, naevi on the face, arms and trunk were mainly Clark's, while those on the legs were commonly Miescher's.

Discussion

In this study, there were more melanocytic naevi removed from women (F:M = 2:1). Compared to the racial mix in Singapore, there was an over-representation of Chinese and other races. We think that the reason being women are more conscious of the appearance of their skin. The lighter skin tone of the Chinese and other races (Caucasians)

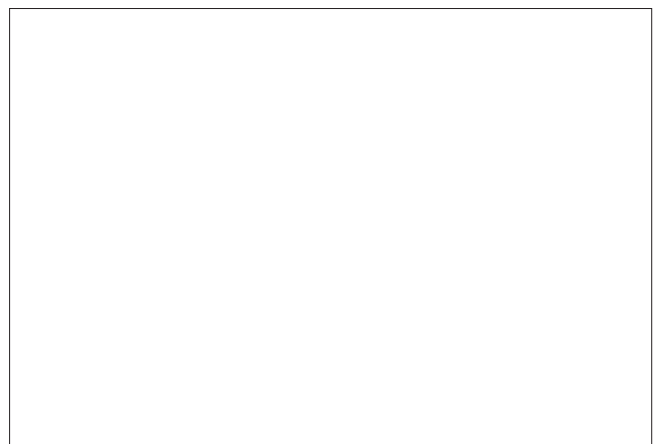


Fig. 2. High power view of dysplastic compound naevus (H & E stain) (x40). Besides irregular proliferation of melanocytes in the dermoepidermal junction, distortion and fusion of rete ridges are seen. In the dermis, mild fibrosis and chronic inflammation are present.

compared to the Malays and Indians makes their naevi more prominent and less cosmetically acceptable.

The majority of naevi were intradermal naevi. This is not unexpected given the average age of the patients was 32.1 years. It is generally accepted that the life cycle of a melanocytic naevus starts out as a junctional naevus in childhood, evolves to a compound naevus stage in adolescence and proceeding to the intradermal naevus stage in adult before involuting.⁶ Junctional naevi are found in almost all naevi in children, resolving to 50% in adults and less than 10% in persons above 50 years old. Intradermal naevi, on the other hand, appear after the first decade of life, but progressively increase with age.^{1,2}

The average diameter of congenital naevi (40.7 mm) was larger than acquired naevi (6.7 to 7.6). This correlated with the general view that congenital naevi are usually more than 15 mm and acquired naevi less than 10 mm in diameter.^{1,3,5}

Each type of naevi has certain characteristic morphological features. Junctional naevi commonly presented as pigmented macules while intradermal and compound naevi were commonly hyperpigmented, brown or black papules and do not differ from the typical morphology of melanocytic naevi.

With regards to the location, the majority of naevi, either congenital or acquired, were located on the face (161 out of 240), especially the cheeks, periorbital, perioral and nasal regions. Most of the naevi removed were for cosmetic reasons. These were on the prominent parts of the face.

The present study showed a clinicopathological concordance ranging from 14% to 65%, with an overall figure of 55%. Most of the intradermal naevi were correctly diagnosed. Junctional melanocytic naevi had the lowest concordance rate and were usually mistaken for intradermal naevi. One reason could be that the clinicians had difficulty distinguishing macular junctional naevi from papular intradermal naevi.

The incidence of histological atypia was low. There were 7 histologically dysplastic naevi, 4 of which were recognised clinically. Most of the naevi were seen in Caucasian patients and located on the trunk, except for the congenital melanocytic naevus. Four clinically dysplastic naevi did not show histological evidence. Taken together, in dysplastic naevi, histological dysplasia was found in 50%. On histologically dysplastic naevi, 57% looked dysplastic on clinical grounds. The percentages are lower than the comparative figures reported by Kelly et al¹⁸ of 75% and 73%.

Although Clark's naevi were seen in a high percentage (69% to 79%) of naevi with junctional melanocytes, they were also seen in a significant percentage of intradermal

naevi. The majority of melanocytic naevi on the face (61%), arms (80%) and trunk (61%) were of the Clark's variety where nests of melanocytes extend only to the superficial dermis. In contrast, those on the legs are mainly Miescher's type which extend into the reticular dermis. Superficial excision will generally not be sufficient to remove these naevi.

Conclusion

From the study, 240 melanocytic naevi were reviewed. A large number were on the face, and clinicopathological concordance was high, with low histology of atypia. It appears safe to remove them for cosmesis or leave alone. On excision, histology is still required. The diagnostic accuracy of melanocytic naevi can be further improved by histological examination of these lesions.

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