

Research

## Demographic, Clinical and Dermoscopic Characteristics of Congenital Melanocytic Nevi

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### Abstract

**Objectives:** Congenital melanocytic nevi (CMN) are the melanocytic nevi present at birth. Clinical and dermoscopic signs and findings of these nevi diverge from those of acquired nevi. While large CMN bear greater malignant transformation risk, macroscopically surface irregularities and very dark pigmentations reveal atypical appearance. Therefore , it is important to be familiar with characteristic macroscopic and dermoscopic features. Dermoscopic studies on CMN are relatively limited. The aim of the study is to document demographic features for CMN like age and sex along with clinical features such as localization, size, surface qualities, and also dermoscopic features of CMN, and finally, to assess the relation between dermoscopic, demographic and clinical data.

**Methods:** 46 patients (21 men, 25 women) at 5-63 years of age with CMN were recruited for the study and 46 nevi were assessed. The data was attained by personal history and/or by information provided by parents. All these nevi were examined clinically and dermoscopically. After the clinical photographs were taken, location, size and surface characteristics were recorded. Dermoscopic findings were evaluated regarding pattern, presence of hairs, scale and vessel structures. Also, unusual findings were recorded.

**Results:** 24 (52.1%) nevi were smaller than 1,5 cm, 21 lesions (45.6%) were 1,5-20 cm, only one lesion was larger than 20 cm in diameter. 19 nevi located on the extremities, 14 on the trunk, 13 on the head and neck. Predominant dermoscopic patterns were reticular (36.9%), diffuse pigmentation (19.5%), globular (15.2%), cobblestone (13.0%), reticuloglobular (6.52%) and pseudo-network (4.34%). As there was no predominant pattern in two lesions (4.34%), they were evaluated as "indeterminate pattern". Cobblestone pattern was commonly seen in smaller CMN whereas diffuse pigmentation was frequently seen in medium- sized CMN. Other dermoscopic findings were hypertrichosis, perifollicular hypopigmentation, scale , milia-like cysts and vessel structures.

**Conclusion:** Clinically, small size and the presence of hairs were common. Dermoscopically, the most frequent pattern was the reticular pattern heavily seen with subjects at 11-50 years old at both extremities and trunk. Perifollicular hypopigmentation and indeterminate patterns appeared to be particular for CMN. Scale was an additional feature seen in most nevi.

### Introduction

Congenital melanocytic nevi (CMN) exist at birth or emerge within two years after birth, which are called tardive congenital nevi. They consist of proliferations of benign melanocytes intraepidermally, dermally or both

and, are considered as hamartomas originating from the neural crest pathogenetically [1, 2]. Incidence rates vary with clinical studies and histological confirmation and it has been found to be 0.2-2.1% in newborns. [2, 3, 4].

Clinical appearance of these nevi are quite variable. They usually have lighter color at birth and later become darker and more elevated in years. Outgrowths of terminal hairs may develop. Papular, cerebriform or verrucoid surface appearance and hairs often exist and these features may be accepted typical for CMN [5, 6].

CMN might be larger than usual acquired nevi and this is also important particularly for malignancy risk. For this reason, size has been an important factor for the classification of CMN. The most widely used classification divides lesions into three categories: small (<1.5 cm), medium (1.5-19.9), large (≥ 20 cm). The risk of melanoma might be proportional to the size of the CMN. Although melanoma may develop in any CMN, irrespective of size; it is clear from multiple studies that the larger the nevus is, greater the risk is [1, 5, 6, 7, 8, 9].

Age plays a role in clinical characteristics of CMN. Their color, surface qualities might change with age. Elevation, darkening color, verrucous surface are common. Especially, in patients with large CMN age, color and surface variations may become prominent [2]. On the other hand, it is another important factor in terms of malignancy risk. While melanomas developing in smaller CMN tend to appear after puberty, those occurring in large CMN develop in earlier age [8].

Although CMN have some different clinical characteristics than acquired nevi, knowing about these features are not enough for monitorization. Dermoscopy is a useful tool particularly in small and medium CMN. Thus, it may be possible to avoid needless interventions and operations. Therefore, one should also know about characteristic dermoscopic features and also variations of these features of these nevi according to age, size and surface qualities [4, 10, 11].

In this study, our aim was to determine the clinical characteristics such as location, size and surface and prominent dermo-

scopic features of CMN and to assess the relationship between all these features and the demographic data such as age and sex.

**Materials and Methods**

Total of 46 persons with CMN with the 46 nevi were included in the study (21 males, 25 females; age range 5-63). Demographic data like age, sex, and macroscopic features such as size, surface appearance and location were recorded. Pictures of all lesions were taken with Nikon Coolpix -4500 and dermoscopic data were assessed by Mole Max II software program.

**Results**

Total of 46 nevi were assessed. 24 out of total 46 (52.17 %) nevi were smaller than 1.5 cm, 21 (45.65%) were 1.5-20 cm and one (2.1%) was larger than 20 cm, 19 CMN were on the extremities (41.3 %), 14 CMN were on the trunk (30.4%) and 13 were (28.26 %) on the head-neck region (3 out of them had facial localization). Macroscopically, 33 lesions were macular (71.7 %) and 13 lesions were slightly elevated (28.2%).

Dermoscopically, the frequent patterns were reticular, diffuse pigmentation and globular respectively (Table 1). While all macular lesions had reticular patterns, all elevated CMN had cobblestone patterns.

When considering the relationship between age and dermoscopic patterns, both reticular and globular patterns were observed frequently in all age groups (Table 2). The cobblestone pattern was common in women (83.3 %), whereas other patterns showed no link with sex.

**Table 1.** Distribution of Patterns in CMN

	N	(%)
Reticular pattern	17	(36.9)
Globular pattern	7	(15.2)
Reticuloglobular pattern	3	(6.52)
Cobblestone pattern	6	(13.0)
Diffuse pigmentation	9	(19.5)
Pseudonetwork pattern	2	(4.34)
Indeterminate pattern	2	(4.34)

**Table 2.** The Relationship Between Age and the Patterns

Age/Pattern	Reticular	Globular	Reticuloglobular	Cobblestone	Diffuse Pigm.	Pseudonetwork	Indeterm.	N
≤10	1	1	-	1	2	1	-	6
11-20	5	1	2	2	2	1	-	13
21-30	6	3	-	2	3	-	1	15
31-40	3	2	1	-	1	-	-	7
41-50	2	-	-	-	-	-	1	3
≥51	-	-	-	1	1	-	-	2
N	17	7	3	6	9	2	2	46

**Table 3.** The Link Between the Location and Patterns

Location/Pattern	Reticular	Globular	Ret-glo	Cobblestone	Diffuse pigm	Pseudo network	Indeter.	n
Head-Neck	-	2	1	3	3	-	1	10
Face					1	2		3
Trunk	8	2	2	2	-	-	-	14
Extremities	9	3	-	1	5	-	1	19
n	17	7	3	6	9	2	2	46

**Table 4.** The Link Between the Patterns and Size

Size/Pattern	Reticular	Globular	Ret-glo	Cobble stone	Diffuse pigm.	Pseudo network	Indeterm	n
Small	8	5	3	5	2	-	1	24
Medium	8	2	-	1	7	2	1	21
Large	1	-	-	-	-	-	-	1
n	17	7	3	6	9	2	2	46

The reticular pattern was frequently seen in CMN of the extremities and trunk (**Table 3**).

In considering the relation between size and patterns, the reticular pattern was the most frequent pattern observed in all sizes of CMN; whereas the cobblestone was in small CMN (83.3%) and diffuse pigmentation in medium sized CMN (77.7%)(**Table 4**).



**Figure 1.** Hypertrichosis, perifollicular hypopigmentation and scale were frequent in our CMN



**Figure 2.** Indeterminate pattern (which was seen as a particular pattern)

**Table 5.** Other Dermoscopic Characteristics in CMN

	N	(%)
Hypertrichosis	30	(65.2)
Perifollicular hypopigmentation	16	(34.7)
Scale	16	(34.7)
Milia-like Cysts	12	(26.0)
Vessels	1	(2.1)
Blue-white veil	3	(6)

Other dermoscopic characteristics observed in CMN have been demonstrated in (**Table 5, Figures 1, 2, 3**).

**Discussion**

CMN have different clinical and dermoscopic features than common acquired nevi. Although, both kinds of nevi are benign hamartomas of melanocytic cells, CMN occurring at birth or shortly after birth often have clinical features sufficiently characteristic to differ from their acquired counterparts. The most important concern about these nevi is undoubtedly the risk of malignant transformation. The risk was well documented especially in large CMN [**7, 9**,



**Figure 3.** Blue-whitish veil, irregular globule structures and irregular network were seen in this nevus. Histopathologically, it was a compound nevus

**12, 13, 14**]. Yet, it is difficult to give accurate figures, because approximately half of the patients have prophylactic and/or cosmetic surgery. On the other hand, small congenital nevi can not be excluded for melanoma risk. In small CMN, malignant melanoma is generally of superficial spreading subtype contrary to dermal melanomas which develop in children with large CMN [14].

On one hand malignancy risk and on the other hand structural dynamic changes of CMN with age necessitate us to be informed about dermoscopic characteristics of these nevi. Thus, it might be probable to follow up on particularly small, medium sized and clinically homogenous CMN.

One of the limited studies was conducted by Marghoob *et al* [11]. They aimed to evaluate whether the predominant dermoscopic patterns present in CMN are related to age, gender and anatomic site or not. In general assessment, the reticular pattern was the prevalent one in this study similar to ours. When considering the relation between age and pattern, a reticular pattern was seen exclusively in persons older than 12 years of age, whereas a globular pattern was observed in children younger than 12 years of age. A globular pattern was predominant in the trunk CMN, while a reticular pattern prevailed in the extremity lesions. In this study, age and pattern did not seem to have any relation with each other. As for our study, the reticular pattern was commonly observed in the age group 11-50. Contrary to the study mentioned above, location and pattern did not appear to correlate with each other in our study. The cobblestone pattern was more frequent in women, but other patterns and gender were not in direct relation to each other. Hypertrichosis was most frequently encountered among other dermoscopic features except the reticular network and globules, which was a similar situation found in our study. While milia-like cysts and perifollicular hypopigmentation followed this finding in the former study, perifollicular hypopigmentation and the presence of scale were more frequently observed than milia-like cysts in our study. The presence of scale had not been indicated before by the authors. Braun *et al* examined 26 CMN and determined three different patterns as cobblestone-like pattern (aggregated globules,

73%), indeterminate pattern (absence of specific network and structures, 19%) and regressive pattern (homogenous view, 8%) respectively. Hypertrichosis was highly frequent (88%). In addition, they observed whitish veil in nine nevi (35%) without other signs of dermoscopic criteria for malignant melanoma [15]. We found blue-white view in three CMN (6%). Actually, blue-gray color in banal-acquired nevi is suspected to be malignant melanoma; whereas in CMN, it may occur because of heavily pigmented nests of pigmented cells or dermal melanophages [16]. Only one of CMN in our series was excised because of irregular network and abrupt ending of the bordure and the final pathological decision was compound nevus in this lesion.

Seidanari *et al*, conducted a multicentric research and examined small and medium 384 CMN [17]. In this study, dermoscopic patterns varied with age and with anatomic site. The globular pattern was predominant in the subjects under 11 years of age and on the trunk. The reticular pattern was mostly seen on the limbs. They emphasized that dermoscopic findings of CMN could vary according to age and location.

In conclusion, in our study, the reticular pattern was a dermoscopically predominant characteristic feature in all sizes and all locations. It was found more in the subjects who were 11-50 years old. Hypertrichosis was a very common finding. Additionally, perifollicular hypopigmentation surrounding follicular orifices in hairy CMN, the presence of scale and milia-like cysts also seemed to be common particular structures in CMN of our study group. Although blue-whitish veil is quite rare, it could be observed without other signs of malignancy criteria for banal nevi. In addition, indeterminate pattern scarcely occurred as homogenous view without any specific network or globular structures.

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