Dermoscopic Features of Small, Medium, and Large-Sized Congenital Melanocytic Nevi

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INTRODUCTION

Congenital melanocytic nevi (CMN) are defined as nevi present at birth or appearing during subsequent months. CMN are present at birth on the skin of 1% to 6% of newborns and are usually classified according to their size as small (<1.5 cm), medium (1.5-19.9 cm), and large/giant (>20 cm). Most of the CMN are smaller than 1.5 cm. CMN may not exist at birth, because of the embryonic absence of pigmentation and may appear clinically after the pigment developments months to years after birth. Furthermore, these lesions are described as ‘congenital nevus-like nevi’ or ‘tardive congenital nevi’ by some authors. The estimated prevalence of CMN ranges from 0.5% to 31.7%. Small CMN have an estimated incidence of 1 in 100 live births, whereas large CMN is 1 in 20,000 live births. They occur in all races and ethnic groups, and males and females have an equal risk. Many of the nevi termed “dysplastic” or “atypical” are actually small CMN. CMN may develop due to a mutation that affects the morphogenesis of the embryonic neuroectoderm and migration of precursor cells to the skin.

Our aim was to investigate the dermoscopic patterns of CMN among study participants and to assess the dermoscopic patterns associated with the size of nevi as well.
MATERIALS AND METHODS

A total of 108 patients attending the Department of Dermatology at Bezmialem Vakif University Hospital in Istanbul, a 2-year period were recruited for the study. Essential inclusion criteria were the presence of at least one nevus and the ability of the participants to state with certainty whether each nevus was present at birth or appeared in the first 2 years of life. Lesions which were located on mucosal, subungual, and acral sites were excluded from our study.

A total of 108 melanocytic nevi in 108 consecutive Caucasian patients were evaluated. After verbal consent was obtained from each patient, all study participants received clinical and dermoscopic examinations. Clinical data were obtained for each patient and included the following: sex, age, skin phototype, topography, diameter, color, dermoscopic pattern, symmetry, borders, atypical pigment network, perifollicular hypopigmentation, milia-like cysts, radial streaks, regression, atypical dots/globules, structureless areas, and blue-white veil.

Dermoscopic images of all the lesions were acquired at a 30× magnification and were stored in a digital imaging system (Fotofinder, Digital Dermoscopy; Foto Finder Systems GmbH, Bad Birnbach, Germany). All digital images were examined by the same dermatologist and were evaluated for global and local features. The size of the nevi was calculated by using specific software.

Dermoscopic patterns were classified as reticular, globular, cobblestone, reticuloglobular, homogeneous, peripheral reticular with a central homogeneous area, peripheral globular with a central homogeneous area, and reticular patchy.

CMN were divided into 3 groups, according to the diameter of the lesion: Small-sized congenital nevus is defined as having a diameter less than 1.5 cm; medium-sized congenital nevus is defined as having a diameter more than 1.5 cm but less than 20 cm; large congenital nevus is defined as having a diameter more than 20 cm.

Statistical analysis

Descriptive analysis of the sample was performed, including percentages for categorical variables, and mean and standard deviations for continuous variables. Comparisons between categorical variables were performed with chi-square tests and Fisher corrections when required. \( p < 0.05 \) was considered significant.

RESULTS

Clinical and dermoscopic examinations were performed on 108 participants.

Descriptive results

Sixty-two participants (57.4%) were aged less than 16 years, and 46 participants (42.6%) were aged 16 and more. Table 1 provides all patient demographic data.

| Characteristic | Value |
|----------------|-------|
| Age (yr)       |       |
| Range          | 6 ~ 55 |
| Median         | 24    |
| Mean           | 26.34 ± 6.71 |
| Sex            |       |
| Male           | 51 (47.2) |
| Female         | 57 (52.8) |
| Sunburns       |       |
| Never          | 15 (13.9) |
| Mild~moderate  | 82 (75.9) |
| Severe         | 11 (10.2) |
| Fitzpatrick skin type |     |
| II             | 1 (0.9) |
| III            | 35 (32.4) |
| IV             | 72 (66.7) |
| Location       |       |
| Face and neck  | 17 (15.7) |
| Trunk          | 64 (59.3) |
| Extremity      | 27 (25.0) |

Values are presented as number only, mean±standard deviation, or number (%).
type IV had large-sized congenital nevi.

**Dermoscopic patterns**

1) **General dermoscopic structures in congenital nevi**

On dermoscopic examination, we found the presence of these patterns: reticular pattern, 24.1% (n = 26); globular pattern, 32.4% (n = 35); reticular-globular pattern, 12% (n = 13); homogeneous pattern, 14.8% (n = 16); reticular-homogeneous pattern, 5.6% (n = 6); globular-homogeneous pattern, 1.9% (n = 2); cobblestone pattern, 6.5% (n = 7); reticular patchy pattern, 2.8% (n = 3) (Fig. 1-4, Table 2). The globular pattern as the predominant dermoscopic pattern was more frequent in children younger than 16 years old (32.4%); the reticular pattern as the predominant pattern was more frequent in adults older than 16 years old (28.3%). Perifollicular hypopigmentation was present in 32 congenital nevi (29.6%). An atypical pigment network was observed in 30 congenital nevi (27.8%). Milia-like cysts were present in 23 congenital nevi (21.3%). Hypertrichosis was observed in 17 congenital nevi (15.7%). Radial streaks were observed in 15 congenital nevi (13.9%). Focal hypopigmentation was present in 70 congenital nevi (64.8%). Atypical dots/globules were observed in 72 congenital nevi (66.7%). Regression was present in 6 congenital nevi (5.6%). Blue-whitish veil was present in 3 congenital nevi (2.8%). Vascular structures were always absent.

![Fig. 1. Globular pattern with central dark globules.](image1)

![Fig. 2. Peripheral reticular pattern with central homogen area.](image2)
Fig. 3. Globular pattern with hypertrichosis.

Fig. 4. Patchy reticular pattern.

Table 2. Dermoscopic features according to the size of the nevus

| Dermoscopic features       | Small-sized (n=52) | Medium-sized (n=49) | Large-sized (n=7) |
|----------------------------|--------------------|---------------------|-------------------|
| Border regularity          | 19 (36.5)          | 17 (34.7)           | 2 (28.6)          |
| Perifollicular hypopigmentation | 15 (28.8)       | 14 (28.6)           | 3 (42.9)          |
| Milia-like cysts           | 6 (11.5)           | 16 (32.7)           | 1 (14.3)          |
| Hypertrichosis             | 2 (3.8)            | 11 (22.4)           | 4 (57.1)          |
| Radial streaks             | 5 (9.6)            | 9 (18.4)            | 1 (14.3)          |
| Focal hypopigmentation     | 29 (55.8)          | 38 (77.6)           | 3 (42.9)          |
| Atypical dots and globules | 26 (50.0)          | 39 (79.6)           | 7 (100)           |
| Regression                 | 3 (5.8)            | 1 (2.0)             | 2 (28.6)          |

Values are presented as number (%).

2) Relation between the size and dermoscopic structures in congenital nevi

On dermoscopic examination, we found the presence of these patterns: reticular pattern, 34.6% (n=18); globular pattern, 36.5% (n=19); homogeneous pattern, 19.2% (n=10); reticular-homogeneous pattern, 5.8% (n=3); and cobblestone pattern, 3.8% (n=2) in small-sized congenital nevi; reticular pattern, 14.3% (n=7); globular pattern, 30.6% (n=15); reticular-globular pattern, 22.4% (n=11); homogeneous pattern, 12.2% (n=6); reticular-homogeneous pattern, 6.1% (n=3); globular-homogeneous pat-
Congenital melanocytic nevi (CMN) are described as neural crest-derived hamartomas, which appear at, or shortly after birth as pigmented tumors, by some authors. The incidence of CMN in neonates ranges from 0.2% to 2.1% regardless of nevus size. It is known that the large-sized CMN have a higher risk of malignant melanoma (MM) development than small- and medium-sized nevi. MM arising in CMN usually develops at younger ages and is located deeper within large CMN and superficially within small- or medium-sized CMN. Two important meta-analyses have been conducted to determine the significance of MM in CMN. In one of these reviews, 10 of the 432 patients developed melanoma within their giant congenital nevi. Krengel et al. analyzed 14 studies with a total of 6,571 patients CMN with who were followed for a mean of 3.4 to 23.7 years. Forty-six (0.7%) developed a total of 49 melanomas (mean age at diagnosis: 15.5 years, median age: 7 years). The authors found a markedly increased risk of developing melanoma during childhood and adolescence. Large CMN are sometimes associated with neurocutaneous melanocytosis (NCM). NCM is a melanocytic proliferation including the cranial nervous system; this can increase intracranial pressure. In our study, none of the patients with large CMN had the symptoms of intracranial pressure. Brain MRI examinations were normal.

It has been estimated that the lifetime risk of developing melanoma is 1 in 100 for patients with small and medium CMN.

Congenital melanocytic nevi should be managed conservatively if there are no abnormalities at clinical and dermoscopic examination and the patient has no cosmetic disturbance. Annual clinical and digital dermoscopic examination is indicated in these patients. Therefore, the physician should know the dermoscopic features of CMN to avoid unnecessary excisions, and to recognize melanoma when it begins to develop. In a nationwide study, melanoma developed in 3 of 131 (2.3%) patients with giant CMN. Diagnosis of large CMNs is simple, regarding their size and appearance since birth. Therefore, we did not include so many large CMNs in our study. We aimed to identify dermoscopic features of small- and medium-sized CMN, especially.

In most cases, dermoscopic examination reveals a globular or cobblestone pattern in large CMN. In our study, reticular-globular and cobblestone patterns were the most common patterns of large CMN in line with findings in the literature. The predominant dermoscopic patterns in small-sized and medium-sized nevi were globular, present in 36% of the small-sized group, and in 30% of the medium-sized group. Our results are consistent with those of previous studies. Additionally, the predominant dermoscopic pattern was globular pattern in patients younger than 16 years old, whereas it was reticular pattern in patients older than 16 years. Some authors suggest that a predominantly reticular pattern is present particularly in individuals 12 years or older. Our results support this finding.

In general, atypical dots/globules, focal hypopigmentation, and perifollicular hypopigmentation are the most common dermoscopic features of CMN found in our study. Our results are consistent with the results of Stinco et al. Atypical dots/globules, focal hypopigmentation, asymmetry, and border regularity were common in both of the children and adults.

Milia-like cysts, hypertrichosis, radial streaks were uncommon than atypical dots and globules, focal hypopigmentation.
Small-sized and medium-sized congenital nevi may have the same dermoscopic patterns and features with dysplastic nevi. Our findings may provide information for larger studies designed to accurately define the dermoscopic features of CMN.

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