Birthmarks in 4346 Finnish Newborns

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We examined all babies born live (4346) at two Finnish hospitals in the course of one year to determine the frequency of birthmarks, specially pigmented lesions, among Finnish newborns. All birthmarks excluding common salmon patches on the forehead and neck were recorded and photographed at birth. The babies were re-examined at the age of three months. Various birthmarks were recorded for 241 of 4346 babies, i.e. for 5.5% of all newborns. Ninety-one (2.1%) infants had congenital pigmented skin lesions, 167 (3.8%) had various vascular lesions and 21 (0.5%) had other birthmarks.

The frequency of congenital melanocytic naevi was 1.5%. Most of the naevi were less than 20 mm in diameter. Only one child had a giant naevus.

The frequency of congenital naevi in our study was the same or somewhat higher than previously described (1–8) but fewer other pigmented skin lesions were found than in previous studies perhaps due to racial differences. *Key words: Congenital naevi; Hemangiomas.*

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Birthmarks in newborn babies have previously been reported from Massachusetts (1–2), California (3), Brazil (4), Italy (5), Oklahoma (6) and France (7). The frequency of congenital melanocytic naevi has ranged between 0.6–1.6% in these studies. Only one study of birthmarks in Northern Europe has been published: Kroon et al. studied pigmented skin lesions among 314 newborn babies in Denmark (8).

The purpose of our study was to determine the frequency and types of congenital naevi in Finnish newborns.

PATIENTS AND METHODS

In this study a birthmark is defined as a skin lesion existing at birth or appearing during the first week of life. All (4,346) babies (2,269 boys, 2,077 girls), all Caucasians, born live at Tampere University Hospital and Valkeakoski District Hospital in the course of one year (March 1987–February 29, 1988) were examined by pediatricians within one week of delivery.

All skin lesions excluding common salmon patches on the neck and forehead were recorded and photographed. Three months later a dermatologist examined 238 of these 241 babies with birthmarks and the clinical diagnosis was made.

Pigmented lesions were regarded as melanocytic naevi when they were well demarcated and rather darkened than faded by the age of

Table I. *Types and frequencies of birthmarks found in 238 newborns** (118 boys, 120 girls)

	Males (%)	*Females* (%)	*Total* (%)
Pigmented lesions			
Melanocytic naevus	33 (1.5)	33 (1.6)	66 (1.5)
Lentigo	20 (0.9)	2 (<0.1)	22 (0.5)
Cafe au lait-spot	0	1 (<0.1)	1 (<0.1)
Mongolian spot	1 (<0.1)	1 (<0.1)	2 (<0.1)
Vascular naevi			
Salmon patch**	34 (1.5)	39 (1.9)	73 (1.7)
Strawberry hemangioma	18 (0.8)	36 (1.7)	54 (1.2)
Portwine stain	4 (0.2)	6 (0.3)	10 (0.2)
Reticular/cutis marmorata	2 (<0.1)	3 (0.1)	5 (0.1)
Cavernous hemangioma	1 (<0.1)	1 (<0.1)	2 (<0.1)
Nevus anemicus	5 (0.2)	2 (<0.1)	7 (0.2)
Other hemangiomas	8 (0.4)	8 (0.4)	16 (0.4)
Miscellaneous			
Naevus sebaceous Jadassohn	5 (0.2)	3 (0.1)	8 (0.2)
Other	6 (0.3)	7 (0.3)	13 (0.3)

* 37 of these children had two or more different types of birthmarks
** Does not include salmon patches on the forehead and neck.

three months. If the pigmented lesion was poorly demarcated, totally at skin level and showed a fading tendency, it was considered as a lentigo.

Forty-nine of 70 lesions regarded as melanocytic naevi were biopsied when the child was one to two years old. The informed consent of the parents was obtained in every case.

The biopsy specimens were fixed in buffered formalin, routinely embedded in paraffin, cut and stained with modified van Gieson.

The *t*-test was used for statistical analysis.

RESULTS

Birthmarks were recorded for 241 of 4,346 (5.5%) babies at birth. The frequencies of various birthmarks are presented in Table I. Thirty-seven children had two or more different types of lesions.

Pigmented skin lesions were recorded for 91 (2%) children, 66 of whom had clinically recognizable melanocytic naevi at the age of 3 months. Four children had two melanocytic naevi. The frequency of the melanocytic naevi was about the same among girls and boys. One child had a garment-type giant naevus. The size of the naevi is shown in Table II. Most of the naevi were located on the trunk or lower extremities (Table III). Sixty-three of these children were seen later at the age of 1–2 years. In 2 children the lesions regarded as melanocytic naevi at the age of 3 months had conspiciously faded and became more poorly demarcated. Unfortunately a biopsy was not performed in these cases.

Light brown, macular, poorly demarcated lesions were clinically classified as lentigos. They were seen in 22 children (20 boys and 2 girls). At the three-month control visit, cafe-au-lait spots were seen in one female infant with a strawberry hemangioma at birth. Brown spots had begun to develop during the first weeks of life. Her father has neurofibromatosis (von Recklinghausen). Two children had typical mongolian spots over the sacrum. The father of one of them and both parents of the other were gypsies.

Table II. *Size of 70 congenital melanocytic naevi* (33 boys, 33 girls)*

Diameter/mm	Male (%)	Female (%)	Total (%)
≤4	12 (35)	13 (36)	25 (36)
5–9	11 (32)	6 (17)	17 (24)
10–19	8 (24)	6 (17)	14 (20)
20–49	3 (9)	9 (25)	12 (17)
≥50	0	2 (6)**	2 (3)

* four children had two melanocytic naevi
** one of these was a giant naevus

Vascular birthmarks were recorded for 167 children (3.8%). They were more frequent among girls (4.6% versus 3.2% among boys, $z=2.39$, $p=0.017$). Most of the vascular birthmarks were diffuse, telangiectatic, salmon-patch type hemangiomas. Portwine stains were found in 10 babies. One or more strawberry hemangiomas were seen in 54 children. Cavernous or mixed subcutaneous hemangiomas were found in two children. Miscellaneous birthmarks included scar-like lesions, most of which had disappeared by the age of three months. One baby had an interesting sacral dimple with long hair without spina bifida, and one had an osseus dysostosis on the occipital area.

Histological findings

Forty-nine of 70 lesions thought to be melanocytic naevi were biopsied at the age of 1–2 years. All proved to be histologically melanocytic naevi.

In 46 of these 49 lesions junctional activity was seen in addition to intradermal naevus cells. Pigmentation was of variable intensity. No significant atypia was encountered, but there was variation in cellular and nuclear size, and occasional multinucleated giant cells were seen. The intradermal component nearly always extended to at least the mid-dermis and followed the dermal appendages, especially sweat ducts and glands.

Sixteen of the patients with lentigos were reached for control at the age of 1–2 years. Ten of the lentigos had faded or totally disappeared and the remaining 6 were biopsied because of a slight clinical suspicion of a melanocytic naevus. Two of these proved to be melanocytic naevi.

Table III. *Localization of 70 congenital melanocytic naevi*

Localization	Male (%)	Female (%)	Total (%)
Face	1 (3)	6 (17)	7 (10)
Scalp and neck	2 (6)	1 (3)	3 (4)
Trunk	13 (38)	19 (53)	32 (46)
Upper extremity	3 (9)	2 (6)	5 (7)
Lower extremity	15 (44)	7 (19)	22 (31)
Giant nevus	0	1 (3)	1 (1)

DISCUSSION

Our study, based on clinical examination of 4,346 newborn Finnish babies, showed the frequency of birthmarks to be 5.5%, (241 of 4,346). The prevalence of melanocytic naevi was 1.5%, the same level as in previous studies, 0.6–1.6% (1–8). Since only those children with recognizable pigmented lesions at the age of three months were re-examined later it is possible that some non-pigmented or otherwise atypical melanocytic naevi fell out of the follow-up. However, in our opinion, pigmented lesions are distinguishable from vascular and other birthmarks at the age of three months. The frequency of congenital naevi among black babies does not differ from that among white babies, but other pigmented congenital skin lesions are much more common among blacks (6).

The histology of congenital versus melanocytic naevi appearing later in life has been widely studied (9–13). While some histologic patterns in the distribution and organization of naevus cells are reported to be characteristic of congenital naevi, the same patterns can also be found in other melanocytic naevi (11). Therefore the only way to diagnose congenital naevus is the clinical examination of newborns.

The male to female ratio among those with lentigos was 10:1 ($p=0.01$). This difference between the sexes has not been reported in earlier studies (1–8). It is sometimes difficult to distinguish lentigos from melanocytic naevi in newborns, but this becomes easier after a couple of months.

Cafe-au-lait spots occur occasionally in healthy white children (1). In 1979, Alper et al. found three or more cafe-au-lait spots in 1.8% of newborn black infants but not in white ones. In the present study only one child developed cafe-au-lait spots during the first weeks of life. The father of this girl had neurofibromatosis and obviously the cafe-au-lait spots of our patient were the first signs of neurofibromatosis.

The most common birthmarks in our study were vascular lesions. These were recorded for 167 (3.8%) babies. Their prevalences corresponded roughly to those reported in a previous study by Osburn et al. (6).

The most important congenital naevi are the melanocytic ones. Patient histories concerning their appearance are nearly always inaccurate. It would, therefore, be advisable to record all naevi in the documents of all newborns. This is not possible on a global scale but could be achieved successfully for certain populations.

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