

A Survey of Birthmarks and Cutaneous Skin Lesions in Newborns

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Background: The prevalence of birthmarks and cutaneous skin lesions in newborns vary among sex and race. There are limited reports of birthmarks and cutaneous lesions among Thai neonates.

Objective: To determine the prevalence of birthmarks and cutaneous lesions in Thai newborns and evaluate the association between age, gender, maturity, route of delivery, birth weight and skin lesions.

Material and Method: All of the subjects were healthy newborn infants, who were born between September 2008 to September 2009. They were enrolled and examined for cutaneous lesions by two dermatologists.

Results: 574 neonates were included in this report. The most common pigmentary birthmarks were Mongolian spots (100%), followed by congenital melanocytic nevi (2.4%) and Cafe-au-lait spots (0.3%). The most common vascular birthmarks were salmon patch (16.6%), hemangiomas (0.3%) and vascular malformations (0.3%). Among the cutaneous lesions; the three most common skin lesions were sebaceous gland hyperplasia (78%), Epstein's pearls (71.3%), and erythema toxicum neonatorum (46.5%).

Conclusion: Mongolian spot was the most frequent birthmark while sebaceous gland hyperplasia was the most frequent cutaneous lesions found among Thai neonates. The prevalence of the cutaneous lesions of newborns differ among countries could possibly be due to race, the age of the infants and the period of observation of the study subjects.

Keywords: Birthmarks, Cutaneous lesions, Vascular birth marks, Neonate

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Many common cutaneous lesions and birthmarks in the neonatal period are due to the immature function of many organ systems. These can result from sweat glands, sebaceous glands and melanosomes^(1,2). Most skin lesions are transient and self-resolving disorders. Most of them are physiologic responses. However, some lesions are pathological processes. Several reports have documented cutaneous findings and birthmarks in neonates among different racial groups⁽³⁻⁶⁾. Chatproedprai et al⁽⁷⁾ from Thailand has surveyed common cutaneous lesions in children, ages from 1 month to 1 year at well baby clinics in 2008. However, there has been no literature on the prevalence of neonatal skin lesions and birthmarks during the first five days of life reported in the last ten years. The aims of this survey are; (a) to determine the frequency of

congenital birthmarks and cutaneous lesions in Thai neonates born at Ramathibodi hospital, Bangkok, Thailand, (b) to describe more accurately the prevalence of skin lesions and birthmarks with the inclusion of previous data⁽⁷⁾ and (c) to evaluate the association between age, gender, maturity, route of delivery, birth weight and skin lesions.

Material and Method

Patient selection

Healthy newborn infants who were hospitalized in the postpartum unit of Ramathibodi Hospital from September 2008 to September 2009 were included in this literature. The Ethical Committee of Ramathibodi Hospital, Mahidol university approved this article.

Study design

Each newborn was examined by 2 dermatologists during their admission for the first 3 days of their lives. The entire skin surface, oral cavity and scalp were examined. All skin lesions, birthmarks and the data regarding maternal gestation, routes of delivery,

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ages at the time of examination, birth weights and all observed cutaneous findings were recorded.

Statistical analysis

The information that had been collected (age, gender, maturity, route of delivery, birth weight, cutaneous skin lesions and birthmarks) was analyzed by a descriptive analysis, and the Chi-square (χ^2) test result with a p-value < 0.05 was considered statistically significant.

Results

Five hundred and seventy four neonates were examined. There were 288 (50.2%) boys and 286 (49.8%) girls. A total of 531 (92.5%) were delivered full term and 43 (7.5%) were preterm babies. Deliveries were; vaginal 380 (66.2%), cesarean sections 176 (30.7%), vacuum extractions 15 (2.6%), and forceps extractions 3 (0.5%). There were 41 (7.1%) with birth weights $< 2,500$ grams, 520 (90.6%) with birth weights of 2,500-4,000 grams and 13 (2.3%) with birth weights $> 4,000$ grams as shown in Table 1.

Mongolian spots were the most common birthmarks found in 574 (100%) and were frequently presented on the sacrococcygeal area and the buttocks. The other pigmentary birthmarks included salmon patch 95 (16.6%), congenital melanocytic nevi 14 (2.4%), hemangiomas 2 (0.3%), vascular malformations 2 (0.3%), and Cafe-au-lait spots 2 (0.3%) as shown in Table 2. Salmon patch was most frequently found at the occipital area.

Regarding skin lesions, three common cutaneous lesions found in the neonates were sebaceous gland hyperplasia, 448 (78%); Epstein pearls, 409 (71.3%); and erythema toxicum neonatorum, 267 (46.5%).

There was no statistical significance when making comparisons to age, birth weights, modes of delivery and sex in regard to all cutaneous lesions and birthmarks.

Discussion

There were many reports on the skin problems of neonates from various countries⁽³⁻⁸⁾. In this literature, the three most common birthmarks were Mongolian spots, 574 (100%); salmon patches, 95 (16.6%); and congenital melanocytic nevi, 14 (2.4%); as shown in Table 2. Sebaceous gland hyperplasia, 448 (78%); Epstein's pearls, 409 (71.3%); and erythema toxicum neonatorum, 267 (46.5%); were frequently found in this report as is shown in Table 3.

Mongolian spots are dermal melanocytosis defined as blue-gray patches, usually appearing in the lumbrosacral area. It was speculated that its appearance may result from the variance of the remaining melanocytes in the dermis⁽⁹⁾. It is reported as the most common birthmark in Asian infants but it is rarely seen

Table 1. Demographic data of 574 newborns

Parameters	Number of cases (574)	%
Gender		
Male	288	50.2
Female	286	49.8
Maturity		
Term	531	92.5
Preterm	43	7.5
Route of delivery		
Vaginal	380	66.2
Cesarean sections	176	30.7
Vacuum extractions	15	2.6
Forceps extractions	3	0.5
Birth weight (gram)		
$< 2,500$	41	7.1
2500-4000	520	90.6
$> 4,000$	13	2.3

Table 2. Classification of birthmarks findings

Birthmarks	Number of cases (574)	%
Mongolian spots	574	100.0
Salmon patch	95	16.6
Congenital melanocytic nevi	14	2.4
Hemangiomas	2	0.3
Vascular malformations	2	0.3
Cafe-au-lait spots	2	0.3

Table 3. Classification of dermatological findings

Skin findings	Number of cases (574)	%
Sebaceous gland hyperplasia	448	78.0
Epstein's pearls	409	71.3
Erythema toxicum neonatorum	267	46.5
Milia	93	16.2
Desquamation	15	2.6
Miliaria	7	1.2
Nevus sebaceous	1	0.2

in Caucasian neonates^(10,11). The author's article shows results similar to the previous 2 studies originating from Taiwan as is shown in Table 4, reported by Tsai FJ et al and Shih-IH et al^(12,13). Most Mongolian spots are seen in the sacrococcygeal area and the buttocks (93.9%).

Salmon patch is a result of the temporary dilatation of capillaries. It is a pink to red patch usually appearing on the forehead and the nape of neck. The prevalence of Salmon patch in Caucasian neonates is higher than in Asians: 64.2% observed in Spanish neonates⁽¹¹⁾ as compared to 22.6%-27.8% observed in Taiwanese neonates^(12,13) and 16.6% as shown from the results in this article. The marked difference in the prevalence of salmon patch can be explained by neonates' skin types as it is more easily seen in those with lighter skin as compared to neonates with darker skin.

Regarding hemangiomas, it is usually apparent during the first few weeks of life. It is more prevalent in female infants and the incidence shows an increase in preterm neonates. The prevalence of hemangiomas noted in this article is the same as found in previous studies done in Taiwan^(12,13) and Iran⁽¹⁴⁾ but all cases of hemangiomas in this report were observed in full term newborns (Male:Female = 1:1). This differs from Wananukul S's⁽¹⁵⁾ study of 197 hemangioma patients

had found the female to male ratio at 2.1:1. This result may be due to the small number of preterm infants, and an insufficient observation time.

Congenital melanocytic nevi (CMN) have been classified into three groups. Small size has been defined as lesions smaller than 1.5 cm in diameter, medium size has been defined as 1.5-19.9 cm in diameter, and large size is considered as lesions greater than 20 cm in diameter. The prevalence of CMN in this article is at 2.4% compared with a prevalence of 0.6% from Denmark⁽⁹⁾, 3.2% from Italy⁽¹⁰⁾, 0.6% from Taiwan^(12,13), and 0.7% from Iran⁽¹⁴⁾.

Of concern to transient cutaneous lesions, the prevalence of neonatal skin lesions varies among different countries.

Desquamation is common finding in post term neonates. It is present in 2.6% in this article which is nearly similar to the result of Moosavi et al⁽¹⁴⁾ from Iran (1.9%), whereas it was observed with a higher prevalence in Australia and Turkey at 65% and 39.5% respectively^(18,19). This result can be explained by the small number of post term infants.

Erythema toxicum neonatorum (ETN) was first described by Metlinger in 1472⁽¹⁶⁾. It is characterized by blotchy red papules and occasionally presents with pustules. It usually appears during the first few days

Table 4. Percentage of birth marks detected in the present study compared with other studies

	The author's report, Thailand (n = 574) %	Tsai FJ et al, Taiwan (n = 3,345) %	Shin HI et al, Taiwan (n = 500) %	Moosavi Z et al, Iran (n = 1,000) %	Boccaddi D et al, Italy (n = 620) %
Mongolian spots	100	86.3	61.6	71.3	10
Salmon patch	16.6	22.6	27.8	26.2	23.1
Hemangioma	0.3	0.7	0.2	1.3	-
Congenital melanocytic nevi	2.4	1	0.6	0.7	3.2
Portwine stain	-	0.4	0.6	-	14.7

Table 5. Percentage of cutaneous lesions detected in the present study compared with other studies

	The author's report, Thailand (n = 574) %	Tsai FJ et al, Taiwan (n = 3,345) %	Rivers JK et al, Australia (n = 420) %	Moosavi Z et al, Iran (n = 1,000) %	Ayten et al, Turkey (n = 816) %
Desquamation	2.6	-	65	1.9	39.5
Erythema toxicum neonatorum	46.5	33.7	34.8	11.1	30.9
Epstein's pearls	71.3	-	56	70.2	-
Sebaceous gland hyperplasia	78	-	48	43.7	31.8

of life and lasts for several days. The prevalence of ETN had shown a variance from 11.1%-40.8%^(12,14,17-19). Tsai FJ et al⁽¹²⁾ have demonstrated an incidence of 33.7% in Chinese infants and have reported ETN as one of the most three common skin lesions noted. It has been reported as 40.8% in Japan⁽¹⁷⁾, 30.9% in Turkey⁽¹⁸⁾ and 11.1% in Iran⁽¹⁴⁾. Its prevalence has been noted as 46.5% in this article.

Epstein's pearls are defined as a benign cystic lesion that is always seen at the junction between the hard and soft palates. It has been found in 71.3% of the neonates studied in this article which was nearly identical to the results of Moosavi et al⁽¹⁴⁾ from Iran (70.2%). However, Rivers et al⁽¹⁹⁾ from Australia observed only 56% incidence of Epstein's pearls in their report.

Sebaceous gland hyperplasia manifests as multiple yellowish papules on the tip of the nose. It is present in 78.0% of our findings whereas it was observed with a lower prevalence in Iran, Australia and Turkey at 43.7%, 48% and 31.8% respectively^(14,18,19).

The limitations of this article were the relatively small number of cases and a small number of preterm and post term infants. Therefore, the prevalence of hemangiomas and desquamation were lower when compared to other studies^(14,18,19). Furthermore, the period of observation was restricted to the first three days of life and this resulted in a lower number of hemangiomas and other skin disorders found.

In conclusion, Mongolian spots and sebaceous gland hyperplasia were the most frequent birthmarks and skin lesions of note. Cutaneous lesions present in the newborn period depend on many factors. These factors are; race, the age of the infants studied and the period of observation. However, further studies regarding the risk factors, a greater number of cases studied and long term follow-up may present a more accurate study for determining the incidence of birthmarks and cutaneous skin lesions in newborns.

Potential conflicts of interest

None.

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การสำรวจความชุกของปานแต่กำเนิดและผื่นผิวหนังในทารกแรกเกิด

สุธิดา ชัยธีระยานนท์, อมรศรี ชุณหรัศมิ์

ภูมิหลัง: ความชุกของผื่นผิวหนังและปานแต่กำเนิดในทารกแรกเกิดมีความแตกต่างกันตามเชื้อชาติ และอายุ การศึกษาในเรื่องดังกล่าวในประเทศไทยมีอยู่จำกัด

วัตถุประสงค์: เพื่อศึกษาหาความชุกในการเกิดปานแต่กำเนิดและผื่นผิวหนังในทารกแรกเกิด และศึกษาหาความสัมพันธ์ระหว่าง เพศ อายุ วิธีการคลอด น้ำหนัก กับผื่นผิวหนังและปานแต่กำเนิด

วัสดุและวิธีการ: ทารกแรกเกิดทั้งหมดที่นอนในหอผู้ป่วยหลังคลอด โรงพยาบาลรามารับดีตั้งแต่เดือนกันยายน พ.ศ. 2551 ถึง เดือนกันยายน พ.ศ. 2552 ทารกทั้งหมดจะได้รับการตรวจร่างกายและเก็บข้อมูลโดยแพทย์ผิวหนัง

ผลการศึกษา: ทารกแรกเกิดจำนวน 574 คน ได้รับการคัดเลือกเข้าการศึกษาในครั้งนี้ ปานแต่กำเนิดชนิด pigmented ที่พบมากที่สุดคือ Mongolian spots ซึ่งพบถึงร้อยละ 100 ส่วนปานชนิดอื่นๆ ที่พบ ได้แก่ congenital melanocytic nevi พบร้อยละ 2.4 และ cafe au lait spots พบร้อยละ 0.3 สำหรับปานเส้นเลือดที่พบมากที่สุดคือ salmon patch พบร้อยละ 16.6 รองลงไปคือ hemangiomas และ vascular malformations พบประมาณร้อยละ 0.3 ทั้งสองชนิด นอกจากนี้ ในด้านผื่นของผิวหนังพบ sebaceous gland hyperplasia ร้อยละ 78 รองลงไปคือ Epstein's pearl พบร้อยละ 71.3 และ erythema toxicum neonatorum พบร้อยละ 46.5

สรุป: Mongolian spots เป็นปานแต่กำเนิดที่พบมากที่สุด ในขณะที่ sebaceous gland hyperplasia เป็นผื่นผิวหนังที่พบได้มากที่สุดในทารกแรกเกิดไทย ความชุกของผื่นผิวหนังในทารกแรกเกิดแตกต่างกันตามการศึกษาในแต่ละประเทศ ซึ่งอาจจะเกิดจากเชื้อชาติ อายุของทารก และระยะเวลาในการศึกษาของแต่ละการศึกษา
