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ORIGINAL ARTICLE

Salmon Patch: a Descriptive Study

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Abstract
Background and objectives: Salmon patch is a congenital venous malformation that usually affects the midline. Although it is very common, few studies have analyzed its prevalence or predisposing factors. The aim of this study was to determine the prevalence and clinical characteristics of salmon patch in a group of newborn infants from a health care area in northwest Spain and to assess its association with neonatal and maternal variables.
Patients and methods: A descriptive study was undertaken of live newborn children seen in the neonatal unit of the Department of Pediatrics at Hospital Arquitecto Marcide, Ferrol, Spain between May 1, 2008 and January 31, 2009. The study protocol included collection of data on neonatal variables (including gestational age, sex, ethnic origin, weight, and presence and anatomical site of salmon patch) and maternal variables (including age and number of previous pregnancies).
Results: Of the 600 newborn infants included in the study, 59% had salmon patches. The most commonly affected sites were the nape of the neck (226 infants, 37.6%) and eyelids (211 infants, 35.1%). In a number of cases, more than one part of the body was affected. There was a higher prevalence of salmon patch in full-term or post-term births, in girls, white children, heavier children, and infants born to mothers aged between 30 and 34 years or who had not been pregnant previously.
Conclusions: Salmon patch occurred most frequently on the nape of the neck, the eyelids, and the glabella. Its prevalence was associated with certain neonatal and maternal factors.

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PALABRAS CLAVE
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Mancha salmón;
Neonato;
Nevo flameo;
Recién nacido

Mancha salmón: estudio descriptivo

Resumen

Introducción: La mancha salmón es una malformación venular congénita que tiene predilección por la línea media. Aunque es muy frecuente, hay pocos estudios que analicen su frecuencia y los factores que predisponen su aparición. Nuestro objetivo es conocer su prevalencia y características clínicas en los recién nacidos de nuestra Área Sanitaria, y ver cómo influyen los parámetros neonatales y maternos.

Pacientes y métodos: Estudio descriptivo donde fueron reclutados, entre el 1 de mayo de 2008 y el 31 de enero de 2009, los recién nacidos vivos vistos en una consulta de Perinatología del Servicio de Pediatría del Hospital Arquitecto Marcide (Ferrol, España). En cada caso se recogieron de forma protocolizada: a) datos del neonato, edad gestacional, sexo, raza, peso, presencia y localización anatómica de la mancha salmón; y b) datos de la madre, edad y número de gestaciones previas.

Resultados: Presentaba mancha salmón el 59% de los 600 neonatos revisados. La nuca y los párpados fueron las localizaciones más comunes, con 226 (37,6%) y 211 pacientes (35,1%) respectivamente. Muchas veces había más de un área corporal afecta. Se observó una prevalencia mayor en los recién nacidos a término o postérmino, de sexo femenino, caucasiano, con mayor peso, con madre con una edad comprendida entre 30 y 34 años y sin gestaciones previas.

Conclusiones: La mancha salmón se localiza sobre todo en la nuca, los párpados y la glabela. Determinados factores neonatales y maternos influyen en su prevalencia.

Introduction

Salmon patch is a congenital venous malformation that predominantly affects the midline. It is also known as nevus flammeus neonatorum, nevus simplex, midline nevus flammeus, Unna nevus, nuchal rash or nuchal telangiectatic nevus, stork bite, and angel's kiss.[1,2]

Clinically, salmon patches present as irregular pink or reddish macules that may or may not be confluent. They blanch under pressure and are made more visible by crying, breath holding, fever, and changes in environmental temperature. They are usually transient and disappear within the first 2 years of life. However, almost half of those located on the nape of the neck or sacral region and a small proportion of those located on the glabella persist.[2,3]

Although salmon patch is a very common malformation, few studies have addressed its frequency and the factors that predispose to its appearance.[4] The aim of this study was to determine the prevalence and localization of salmon patch in newborn infants in our health care area and to assess the potential relationship with neonatal and maternal variables.

Patients and Methods

A descriptive study was performed of newborn infants seen in the neonatal clinic of the Department of Pediatrics at Hospital Arquitecto Marcide in Ferrol, Spain between May 1, 2008 and January 31, 2009. All infants born in hospital in the health care area of Ferrol are seen in this clinic within the first 72 hours of life.

In each case, the following data were collected on the infant (a) and the mother (b) according to a defined protocol: *a)* gestational age, sex, ethnicity or geographic origin of the parents, birthweight, and the presence and localization of salmon patch (subdivided into glabella, eyelid, nasal dorsum, supralabial region, nape of the neck, back, and sacral region); and *b)* age and number of previous pregnancies.

Diagnosis of salmon patch was based on typical appearance and localization: irregular pinkish macules close to the midline. Data on quantitative variables were divided into groups: *a)* gestational age of less then 37 weeks (preterm), between 37 and 41 weeks (term), and 42 or more weeks (post-term); *b)* birthweight up to 2500 g (low), between 2501 and 3999 g (normal), and 4000 g or more (high); maternal age up to 29 years, between 30 and 34 years, and 35 years or older; and 0, 1, or 2 or more previous pregnancies.

Qualitative variables were expressed as percentages. χ^2 test was used to compare categorical variables. Data were analyzed using the SPSS statistical software package version 15.0. A cutoff of $P<.05$ was set for statistical significance.

Results

Six-hundred neonatal infants were seen during the 9-month study period. Table 1 shows the prevalence and anatomical distribution of salmon patch according to sex. Salmon patch was observed in 354 newborn infants (59%). Girls had salmon patches in 62.7% of cases and boys in 55.7%. The most commonly affected sites were the nape of the neck (226 newborns, 37.6%) and the eyelids (211 newborns, 35.1%). In many cases, multiple sites were affected.

Table 1 Prevalence and Anatomical Distribution of Salmon Patch According to Sex

Site	Boys		Girls		Total	
	n	%	n	%	n	%
Total	321	53.5	279	46.5	600	100
Total with salmon patch	179	55.7	175	62.7	354	59
Nape of the neck	110	34.2	116	41.5	226	37.6
Eyelid	112	34.8	99	35.4	211	35.1
Glabella	33	10.2	34	12.1	67	11.11
Nasal dorsum	6	1.8	5	1.7	11	1.8
Supralabial region	1	0.3	7	2.5	8	1.2
Sacral region	1	0.3	4	1.4	5	0.8
Back	0	0	2	0.7	2	0.2

Table 2 shows the frequency of salmon patch according to gestational age, sex, ethnicity or geographic origin of the parents, birthweight, maternal age, and number of previous pregnancies. Salmon patch was more prevalent in term and post-term newborns, girls, white infants, infants with a higher birthweight, and in children born to mothers aged between 30 and 34 years and with no previous pregnancies. The differences were only statistically significant, however, for the number of previous pregnancies ($P<.05$).

Discussion

In neonates, an important distinction should be made between salmon patch, port wine stain, and infant hemangioma since their natural history and management differ considerably. Vasomotor instability in neonates leads to flushing, acrocyanosis, and cutis marmorata, and this can make the differentiation more difficult.[3,5]

On rare occasions, salmon patch is associated with or appears as a manifestation of other conditions,[6] such as Beckwith-Wiedemann syndrome (persistent salmon patch in the medial region of the forehead), macrocephaly-capillary malformation syndrome (prominent salmon patch-type lesions in the central facial region), Nova syndrome (on the glabella),[3,7,8] early appearance of cherry hemangiomas,[9] and chronic, extensive forms of alopecia areata (salmon patch on the nape of the neck).[10]

The results of our study support some findings reported in the literature:

1. The prevalence of salmon patch is high, occurring in around half of all newborn infants. There is a slightly higher prevalence in girls. As reported in 1989 by Leung et al,[4] the most commonly affected sites are the nape of the neck, the glabella, and the eyelids. Lesions are often present at multiple sites.
2. Differences are observed according to skin color and ethnic group. Other studies such as those reported by Alper et al,[11] Osburn et al,[12] and Pruksachatkunakorn et al[13] also found a higher prevalence in white infants compared with black or Asian children. However, such differences may be due to the ease of observation of the lesions in children with lighter colored skin.[14] One of the limitations of our study is the small number of children from non-white ethnic groups included in the study. Our results should therefore be interpreted with caution.
3. Our results confirm those of Ferahbas et al[15] in Turkey and Sachdeva et al[16] in India that this venous malformation is more common in term or post-term infants with a heavier birthweight. The relationship with maternal age above 30 years coincides with the results of a study undertaken in Italy by Boccardi et al.[17] Our observation

Table 2 Occurrence of Salmon Patch According to Different Variables

Group	No.	Sex		Ethnicity or GOP		Maternal Age, y			Previous Pregnancies			Gestational Age, wk			Birthweight		
		Male	Female	White	Non-white	≤29	30-34	≥35	0	1	≥2	<37	37-41	≥42	Low	Normal	High
SP	354	179	175	329	25	157	128	69	192	98	64	29	319	6	26	309	19
No SP	246	142	104	220	26	115	73	58	111	90	45	24	218	4	22	212	12
Total	600	321	279	549	51	272	201	127	303	188	109	53	537	10	48	521	31
%	59	55.7	62.7	59.9	49	57.7	63.7	54.3	63.4	52.1	58.7	54.7	59.4	60	54.1	59.3	61.2
χ^2		2.990		2.295		3.150			6.062			0.442			0.551		
P		.084		.130		.207			.048			.802			.759		

Abbreviations: GOP, geographical origin of the parents; SP, salmon patch.

that salmon patch was more frequent in infants from mothers with no previous pregnancies differs from the findings of other studies in which a lower frequency of salmon patch was observed in first pregnancies.[16]

In summary, we observed salmon patch in 59% of newborn infants from a total of 600 live births. The majority of lesions were located on the nape of the neck, the eyelids, and the glabella. There was a higher prevalence of salmon patch in term and post-term infants, girls, and white infants, in those with a heavier birthweight, and in infants born to mothers with no previous pregnancies and who were aged between 30 and 34 years.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Redondo P. Malformaciones vasculares (I). Concepto, clasificación, fisiopatogenia y manifestaciones clínicas. Actas Dermosifiliogr. 2007;98:141–58.
2. Sánchez-Carpintero Abad I, Hontanilla Calatayud B. Hemangiomas y malformaciones vasculares. Claves diagnósticas y tratamiento. Barcelona: ESMONpharma; 2008.
3. Enjolras O, Garzon MC. Vascular stains, malformations, and tumors. In: Eichenfield LF, Frieden LJ, Esterly NB, editors. Neonatal Dermatology. 2nd ed. Philadelphia: Saunders Elsevier; 2008. p. 343–74.
4. Leung AK, Telmesani AM. Salmon patches in Caucasian children. Pediatr Dermatol. 1989;6:185–7.
5. Cordoro KM, Speetzen LS, Koerper MA, Frieden IJ. Physiologic changes in vascular birthmarks during early infancy: mechanisms and clinical implications. J Am Acad Dermatol. 2009;60:669–75.
6. Schepis C, Greco D, Failla P, Siragusa M, Romano C, Scaffidi M, et al. Medial telangiectatic sacral nevi and MCA/MR syndromes. Pediatr Dermatol. 2003;20:370–1.
7. Wright DR, Frieden IJ, Orlow SJ, Shin HT, Chamlin S, Schaffer JV, et al. The misnomer ''macrocephaly-cutis marmorata telangiectatica congenita syndrome'': report of 12 new cases and support for revising the name to macrocephalycapillary malformations. Arch Dermatol. 2009;145:287–93.
8. Garzon MC, Huang JT, Enjolras O, Frieden IJ. Vascular malformations. Part II: associated syndromes. J Am Acad Dermatol. 2007;56:541–64.
9. Gao XH, Wang LL, Zhang L, Hong YX, Wei H, Chen HD. Familial nevus flammeus associated with early onset cherry angiomas. Int J Dermatol. 2008;47:1284–6.
10. Akhyani M, Farnaghi F, Sirafi H, Nazari R, Mansoori P, Taheri A. The association between nuchal nevus flammeus and alopecia areata: a case-control study. Dermatology. 2005;211:334–7.
11. Alper JC, Holmes LB. The incidence and significance of birthmarks in a cohort of 4,641 newborns. Pediatr Dermatol. 1983;1:58–68.
12. Osburn K, Schosser RH, Everett MA. Congenital pigmented and vascular lesions in newborn infants. J Am Acad Dermatol. 1987;16:788–92.
13. Pruksachatkunakorn C, Duarte AM, Schachner LA. Skin lesions in newborns. Int Pediatr. 1999;14:28–31.
14. Atherton DJ, Moss C. Naevi and other developmental defects. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. Rook's Textbook of Dermatology. 7th ed. Massachusetts: Blackwell Publishing; 2004. p. 15.1–114.
15. Ferahbas A, Utas S, Akcakus M, Gunes T, Mistik S. Prevalence of cutaneous findings in hospitalized neonates: a prospective observational study. Pediatr Dermatol. 2009;26:139–42.
16. Sachdeva M, Kaur S, Nagpal M, Dewan SP. Cutaneous lesions in new born. Indian J Dermatol Venereol Leprol. 2002;86: 334–7.
17. Boccardi D, Menni S, Ferraroni M, Stival G, Bernardo L, La Vecchia C, et al. Birthmarks and transient skin lesions in newborns and their relationship to maternal factors: a preliminary report from Northern Italy. Dermatology. 2007;215:53–8.