Scientific Article

A study of small superficial capillary hemangiomas on the lips in children

Ilana Kaplan, DMD Eliyahu Mass, DMD Mark Littner, DMD

Abstract

Purpose: *This study describes 77 small vascular lesions on the lips of 74 children and adolescents.*

Results: *Of the 77 lesions, 70% were on the lower lip and 30% on the upper. The diameter range was 0.5–5.0 mm (mean 1.4 mm). On both lips the lesions were in the vermilion zone, close to the border with the skin. The surface of the lesions was smooth and slightly raised, and varied in color from red (49%) through bluish red (45%) to purple (6%). The borders were well defined in most cases. The histology of the lesions was consistent with capillary hemangioma. Small superficial capillary hemangiomas (SSCH) in this study behaved differently from most hemangiomas and vascular malformations in that they did not increase in size, and were persistent in the age group in which most hemangiomas are reported to involute or disappear. The gender distribution of SSCH also differed from the female predominance in hemangioma. SSCH is a solitary benign lesion on the lips of children and adolescents, which has not been separately classified before.*

Conclusions: *Based on the differences from hemangioma in gender distribution, size, border definition, and growth characteristics, it is suggested that SSCH be classified as a variant or a subgroup of hemangioma. (Pediatr Dent 20:3 188–91)*

Hemangiomas are a diverse group of lesions which can be found anywhere on the body. Most frequently they are found on the skin and mucous membranes of the head and neck region.[1, 2] According to their location, they are classified as either superficial, deep, or mixed.[2–4] The term hemangioma is used inconsistently, some sources including vascular malformations,[1, 5] others classifying vascular malformations separately.[2–4] Furthermore, not all lesions exhibit similar clinical or histopathological characteristics. Hemangiomas develop in the neonatal period and have a rapid growth phase, lasting several months. When first seen, 83% are larger than 1 cm in diameter.[2] In 90–95%, slow regression results in involution by age 9. Vascular malformations are present at birth. Their size is not less than 5 cm in diameter. They grow slowly in proportion to the child's growth, fail to regress, and may fluctuate in size with the growth spurt of puberty.[2–4] Histopathologically, hemangiomas are made up of endothelial proliferation and small capillary-size vessels, or larger vascular cavernous spaces. In vascular malformations, there is no endothelial proliferation and the lesions are composed of irregular vascular channels. The literature is in disagreement on the issue of pathological classification of hemangioma, as a true neoplasm, hamartoma, or malformation.[1, 3–7]

The purpose of this study was to describe small superficial vascular lesions on the lips of children and adolescents. This type of lesion has not been separately described before.

Methods

The study group included 74 children and adolescents (36 males and 38 females; age: 3–15 years, mean 8.9, median: 9). All patients were seen for routine dental examination and treatment at a pediatric dental clinic over a period of 5 years. Whenever a vascular lip lesion was identified the patient was included in the study following informed consent by the parents. All patients were examined by the same examiner (EM).

Clinical photographs were taken using the same camera at standard magnification (Medical Nikon® lens, 2/3 magnification, Fuji® film for color slides). A flow-sheet questionnaire was filled out including demographic data and clinical features of the lesions (such as number of lesions in the same patient, exact location, size, color, border definition, and surface characteristics). Other details included past medical history, existence of similar lesions in other parts of the body, or in other members of the close family. History of the lip lesion, if known, and possible etiologic factors, such as local trauma, lip biting, or habits were also noted. All lesions were tested for blanching by applying pressure and by stretching the lip. Lesions that failed to blanch or were brown in color were excluded from the study. Measurements of each lesion's diameter were verified by simultaneously projecting the clinical photographic slide on a screen from a constant distance with a millimetric grid, followed by evaluation by two examiners (EM and ML). Clinical

TABLE. DISTRIBUTION OF THE STUDY POPULATION ACCORDING TO AGE AND GENDER

	<5 yrs	*5–10 yrs*	*>10 yrs*	*Total*
Males	1	19	16	36
Females	5	17	16	38
Total	6	36	32	74

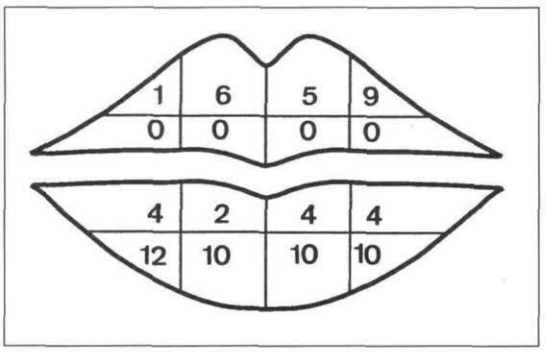

Figure 1. Distribution of 77 SSCHs on the lips.

evaluation was repeated at the follow-up examinations for comparison.

In six cases in which the patients' parents expressed concern and insisted on removal of the lesion, the lesions were excised and submitted for histological examination. The rest were followed during recall visits.

Results

The distribution of the 74 children according to age and gender is described in Table 1. There were three cases with two lip lesions each (total of 77 lip lesions). In two cases the patients had vascular lesions in locations other than the lips. These were clinically diagnosed as hemangiomas. In one patient there was a history of a large hemangioma on the back, which had involuted. Similar lesions in other close adult family members of the patients were found in only three cases (4%).

Most lesions (70%) were located in the vermilion zone of the lower lip whereas the upper lip was involved in only 30%. Most lesions were closer to the border of the vermilion zone with the skin than to the oral mucosa. Fig 1 shows the distribution of the lesions on the lips. The most prevalent clinical presentation (80%) was that of a slightly raised lesion, whereas 20% were flat. The surface of the lesions was smooth in all cases (Fig 2). The color was red in 49%, bluish red in 45% and purple in 6%. The size, measured at the largest diameter, varied between 0.5 and 5.0 mm, (mean 1.4 mm). The borders were sharply defined in the majority of cases (86%) and slightly diffused in the rest (14%).

In the majority of patients, the duration of the lesion was unknown. Moreover, most patients and their parents were unaware of its existence but could not exclude congenital origin. Only in three cases (4%) could the parents report that the lesion was noticed in early infancy. Local trauma, such as lip biting or sucking and parafunctional habits were not reported. However, when thoroughly questioned, six patients (8%) reported occasional lip biting. Spontaneous bleeding episodes were not reported.

During the follow-up period of 2–5 years (mean: 3.8 years), no change in size was observed in any of the lesions. In two lesions, slight fading of the color was noticed. In the patients in which surgical excision was performed, the cosmetic result was satisfactory with no recurrence.

The histopathological examination of the six submitted lesions showed vascular spaces, mostly of capillary size, in a mature connective-tissue stroma. Very sparse inflammatory infiltrate was associated with the vascular spaces. The lesions were covered by normal to slightly hyperplastic stratified squamous epithelium (Figs 3, 4).

Discussion

The lesions described in this study are solitary SSCHs, confined to the vermilion zone of the lips and not exceeding 5 mm in diameter. Their size did not change during the period of observation. No case of spontaneous involution or regression was observed during a relatively long follow-up period (2–5 years). In comparison, hemangiomas in children become apparent within the first month of life. When first noticed, the majority are larger than 1 cm in diameter. They exhibit a rapid growth phase of several months duration and are reported to regress or involute in 90–95% of cases by the age of 9.[2–7] Vascular malformations are present at birth. They are larger than 5 cm in diameter, they increase slowly in size during growth, and do not regress spontaneously.[2–6] In 4% of the SSCHs

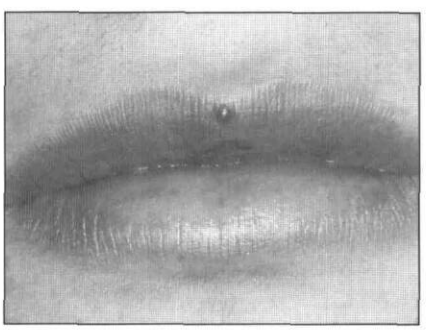

Figure 2a. SSCH midline, upper lip.

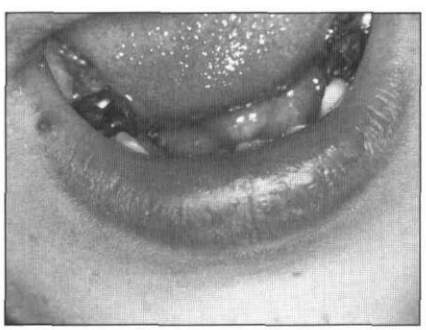

Fig 2b. SSCH right lower lip.

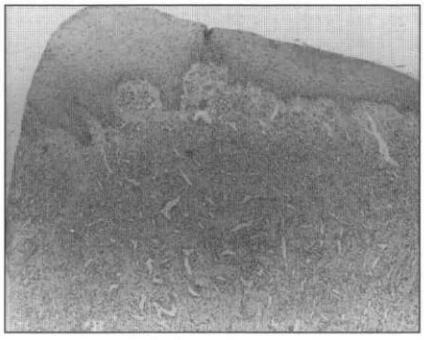

Figure 3. Histopathology of SSCH at low magnification shows oral mucosa covered by keratinized stratified epithelium, with an aggregate of small capillaries and dilated blood vessels in the submucosa. (Hematoxylin and eosin stain, original magnification 40x).

Figure 4. Small capillaries in a loose connective tissue stroma are evident with occasional lymphocytes. (Hematoxylin and eosin stain, original magnification 200x).

in this study, there was definite information that the lesions were noticed as early as infancy, yet in the majority of cases the duration could not be established. Indeed, most patients and their parents were unaware of the lesion, but were convinced that a larger or more evident lesion never existed. A familial pattern was found in 4% of the patients who had family members with an SSCH, whereas this pattern is reported in 10% of patients with hemangiomas.[3] According to various studies, hemangiomas are characterized by a female predominance, which ranges from a 2:1 to 5:1 ratio, whereas in vascular malformations, a 1:1 ratio was described.[2–4] In our study, a 1:1 gender distribution was found.

In the majority of the SSCHs described in this study, the border of the lesion was well defined. In contrast, hemangiomas and vascular malformations of the oral cavity have diffuse borders.[1–8] The SSCH lesions caused no discomfort. Although thoroughly questioned, parents reported no episodes of bleeding. In regular hemangiomas and vascular malformations bleeding episodes are common, even in minor trauma.[5, 6, 9]

Apart from two cases in which vascular lesions in other body locations were diagnosed, and three patients with two coexistent SSCHs, most lesions were solitary, thus excluding angiomatous syndromes, such as Sturge-Weber or Maffucci's syndrome.[9, 10]

In six cases, either the patients or their parents expressed concern, usually due to the lesions' "unesthetic appearance". In these cases, they were surgically excised and submitted for histological examination. All cases were histologically similar and showed local proliferation of capillary-size vessels with no inflammatory infiltration. These features are consistent with hemangioma rather than vascular malformation. The absence of an inflammatory component and fibroblastic proliferation rules out the possibility of pyogenic granuloma as a possible differential diagnosis.

Local trauma as a possible etiologic factor could have been suspected in only six patients (8%). It is interesting to note that four of these cases were relatively large (1.5–5 mm). One can speculate on whether the larger size of the lesion elicited a lip-biting habit, or that the constant irritation caused enlargement of a pre-existing smaller lesion. It is accepted that hemangiomas may expand in size with trauma, infection, or endocrine changes.[6] The vast majority of the patients did not report habits associated with the lesion; thus local trauma is probably not a significant etiologic factor in SSCH.

SSCH is similar to hemangioma, being also found in the head and neck region. Both lesions are typically described in children and have a low familial distribution pattern. Multiple lesions occur in 20% of patients with hemangioma and in 4% of patients with SSCH.

Although the lesions in this study have the histologic characteristics of superficial capillary hemangioma, they differ from hemangioma in some clinical features, such as size, gender distribution, border definition, and growth characteristics. Therefore, it is suggested that these lesions represent a variant or subgroup of hemangiomas with a characteristically different biological behavior.

In the patients reported in this study, the lesions seldom caused significant esthetic problems and were not associated with any danger of bleeding in normal circumstances. Due to the benign nature of SSCH, the only treatment strategy recommended is periodic follow-up. Cryosurgery, laser therapy, injection of local steroids, and sclerosing agents are treatment modalities which have been recommended for vascular lesions of unacceptable esthetics.[11–15] These modalities may also be considered for the treatment of SSCH. In this study, no complications and no recurrences were associated with excision of SSCH.

Dr. Kaplan is an instructor in the Departments of Oral Pathology and Oral Medicine, Dr. Mass is a lecturer in the Department of Pediatric Dentistry, and Dr. Littner is a professor in the Departments of Oral Pathology and Oral Medicine, all at the Maurice and Gabriela Goldschleger School of Dental Medicine, Tel Aviv University, Tel Aviv, Israel

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