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Giant Infiltrant Hemangioma—Treatment with Pulsed Dye Laser and Triamcinolone Infiltration

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Introduction

The hemangiomas are the most frequently occurring class of tumors in childhood. They are of benign nature; however, in some cases, their quick growth can become destructive, even with a fatal outcome for the patient^{1,2,3}. With an incidence from 5 to 10 percent up to the first year of age; they are more frequent in Caucasians, females (3:1) and those born prematurely with body weights less than 1500 g⁴. Although it has been postulated that these tumors happen in a sporadic way, the autosomal dominant mode of transmission has been reported with moderate or high penetrance^{5,6}, with most frequent localization in the face and neck⁷.

These tumors arise from the vascular endothelium and usually distribute along the fusion lines. This hypothesis is sustained by Bischoff, adding that the hemangioma begins when a somatic mutation occurs in a progenitor endothelium, proposing a type of monoclonal expansion of endothelial cells^{8,9}. These mutations may lead to deregulated activity of one or more genes that control the development of the vascular endothelium.

This deregulation of the endothelial development can produce patterns of genetic expression disruption in neighboring cells, influencing the hemangioma's development on the embryonic fusion lines⁹. At the present time, there is a large group of therapeutic options for the treatment of this pathology ranging from expectant observation to the use of different types of lasers.

Method

An eight-month-old female infant presented with a birth tumor located in the upper-middle face. The tumor had an irregular surface; a hairy, leather texture; and intense red coloration. The patient had been treated previously with three external alcohol embolizations, the final, ineffective treatment resulting in a 15-day admission to intensive care.

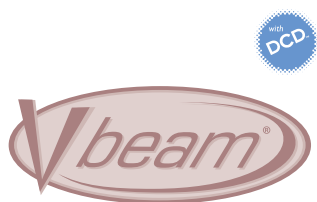
Physical Exam: The infant patient was hemodynamically stable, hydrated and without fever. Examination evidenced a tumor, dark red in color with an irregular surface encompassing the entire superior face and scalp such that it impeded the opening of both eyes. A similar, enlarged intracutaneous tumor occurred in the parotid region and in the right infraparotid; and similar occurrence was seen in the right nasogenic line and in the superior and inferior eyelids. Additional physical exams were inside of the normal limits. Angioresonance was indicated.

Diagnosis and Treatment: The case was diagnosed as giant hemangioma infiltrant in turban, secondary to mixed vascular malformation. It was decided to begin therapy combining sedation with triamcinolone infiltrations in parotid regions, pre-auricularis, ciliary and right nasogenic line and ciliary region, and left glabellar, and with 10 sessions of pulsed dye laser treatment (595 nm, Vbeam® long pulse dye laser). Laser treatment parameters were: 595 nm wavelength, 7 mm spot size, 1.5 ms pulse width, DCD™ (Dynamic Cooling Device™) 30–10. Laser fluence varied in each session from 12 to 15 J/cm² based on initial tolerance tested in each session. The course produced excellent clinical improvement.

Discussion

Hemangiomas are among the most frequent childhood tumors constituting a frequent cause of dermatologic consultation¹⁰. Due to their nature, these tumors may resolve themselves spontaneously, supporting expectant observation. However, a medical intervention is required when the hemangiomas are extensive, ulcerative or existing on vital structures. In 10 percent of cases, hemangiomas may cause complications requiring active treatment, such as in the cases of rapid growth and the absence of signs of involution

Other indications for treatment include heart failure; presence in the airways, rectum, anus or genitals; auditory obstruction; ocular complications, coagulopathy; ulceration or infection¹¹. In 1997, the American Academy of Dermatology established a guide for the handling of this



pathology that pursues five main objectives: to prevent or to treat complications with organic or vital commitment, to prevent a permanent dysmorphism, to minimize the psychosocial impact to the patient and family, to avoid aggressive procedures and potential causes of scars, and to prevent or to treat the ulceration to minimize the scars, the infections and the pain¹².

The therapeutic options used in the treatment of this entity include: systemic corticoids (the first choice in the treatment of large destructive hemangiomas or with risk of life), corticoid intralesion (generally triamcinolone infiltrations), and systemic interferon alpha-2a. Other effective alternatives are cryosurgery and conventional surgery^{12,13}.

Cyclophosphamide and vincristine have been used with success in treating large hemangiomas with poor prognosis in diffuse neonatal hemangiomatosis, and in vascular tumors associated with the phenomenon of Kasabach-Merritt Syndrome^{14,15}. The pulsed dye laser seems to get an excellent cure index in ulcerated hemangiomas, also correlating to an improvement of associated pain. There have also been good results in treating superficial hemangiomas or those of recent appearance, where a detention of the growth is noted^{16,17}. In our case, excellent clinical improvement was accomplished in nine sessions with the 595 nm wavelength pulsed dye laser using a 7 mm spot size, 1.5 msec pulse width and a fluence between 12 and 15 J/cm². However, it should be noted that three infiltrations of triamcinolone also produced excellent clinical improvement.

Conclusion

Hemangiomas are a frequent cause of dermatologic consultation in the pediatric age group. With multiple therapeutic options, they should be treated when they commit a vital function. In our experience, the application of the 595 nm pulsed dye laser to the superficial component of the hemangioma, together with intralesion triamcinolone in the deep components of malformations, has produced good results. We recommend their use in treating these lesions.

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Figure 1.
Giant infiltrant hemangioma pretreatment.



Figure 2.
Giant infiltrant hemangioma post-treatment.



Figure 3.
Giant infiltrant hemangioma post-treatment.



Figure 4.
Giant infiltrant hemangioma post-treatment.

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