Short communication

Propranolol: Treatment of capillary hemangioma with orbital involvement

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Abstract
Clinical case: A 2-month-old girl had a fast growth hemangioma in the left side of the face, that involved upper eyelid and superior and external portion of the orbit, covering her visual axis and pushing the eye and lateral rectus muscle. We gave oral propranolol as treatment and we noticed a fast and constant hemangioma reduction and resolution of orbital and palpebral component.

Discussion: According to previous researches, propranolol seems to be an effective and safe drug to treat capillary hemangioma. In our case, response to propranolol was satisfactory and with no side effects. This treatment should be considered as a promising alternative.

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Propranolol: tratamiento del hemangioma capilar con afectación orbitaria

Resumen
Caso clínico: Lactante de 2 meses con un hemangioma de crecimiento rápido en la hemicara izquierda, que afecta al párpado superior y la porción superoexterna de la órbita, obstaculizando el eje visual y desplazando medialmente el recto lateral y el globo ocular. Se administra propranolol oral y se observa una rápida y sostenida disminución del hemangioma, con regresión del componente órbito-palpebral.

Discusión: Según estudios previos el propranolol parece ser un fármaco seguro y efectivo en el tratamiento del hemangioma infantil. En nuestro caso, la respuesta al propranolol fue satisfactoria y no se presentaron efectos adversos. Este tratamiento debe ser considerado como una alternativa promisoria.

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Introduction

Capillary hemangioma is the most frequent benign eyelid and orbital tumor in children. Its prevalence ranges between 1% and 3%. It expresses mainly during lactation in the first year of life. Although its natural tendency is towards involution, depending on its depth it can cause complications such as anisometropia, strabismus or amblyopia due to deprivation. Multiple drugs have been applied for treating capillary hemangioma, with corticoids being the classic choice despite the high number of described adverse effects. This article presents the case of a girl with a large capillary hemangioma treated with propranolol, a drug which has recently started to be used for this condition.

Clinical case

A two-month-old lactating baby who exhibited since birth a reddish lesion compatible with hemangioma involving the left side of the face, which had grown rapidly in the last few days and had caused retroauricular skin erosion with hemopurulent secretion (Fig. 1) visited our clinic.

The baby was born within term after a controlled pregnancy, delivered through eutocic labor with a weight of 2900 g, normal endocrine-metabolic screening. No relevant family history was referred.

Upon exploration, the baby exhibited a good general condition, without fever and eutopic breathing and normal cardiopulmonary auscultation. The abdominal and neurological spheres were normal. She was admitted by the pediatrics service and in a few days the exudate entered complete remission.

Our service assessed the hemangioma which turned white without crepitation upon finger pressure. It involved the upper left eyelid (tharsus and sac fundus) and caused severe mechanical ptosis which was more marked in the external edge and obstructed the visual axis (Figs. 2 and 3). Orthophoria was impaired in the primary position, with slight left eye abduction limitation. Biomicroscopy revealed transparent media and preserved pupil reactivity. The ocular fundus was normal.

Magnetic resonance (MR) evidenced vascular malformation compatible with hemangioma which extended from the left temporofrontal to the left temporoccipital area, comprising the upper eyelid (post-tharsal submucosa), upper external of the orbit (medial displacement of the lateral rectus and ocular globe), ear lobe, external hearing path and dorsal side of the sternocleidomastoid (Fig. 4).

The case was assessed in a multidisciplinary session by pediatrics, ophthalmology and dermatology and in view of the potential complications (including the risk of amblyopia), treatment with systemic corticoids was established. The response was poor and therefore propranolol was considered after obtaining the informed consent for compassionate use and cardiological assessment. The latter was normal and the drug was administered orally in increasing dosages from 0.5 mg/kg/day to reach 2 mg/kg/day, divided in two takes.

In the follow-up, rapid reduction of hemangioma size, thickness and color was observed as well as diminished intraorbital-palpebral component with near complete recovery of the ocular globe alignment and improvement of the eyelid opening, releasing the visual axis (Figs. 5 and 6). Electrocardiographic control was performed with normal results and medication was continued.

Fig. 1 – Initial appearance of the capillary hemangioma (left lateral view).

Fig. 2 – Initial appearance of the capillary hemangioma (front view).

Fig. 3 – Initial appearance of the capillary hemangioma (details).
Fig. 4 – Magnetic resonance image: note the hemangioma (arrow) immediately displacing the ocular globe and the lateral rectus.

Fig. 5 – Appearance after 3 weeks of treatment with propranolol.

Fig. 6 – Appearance of the lesion after 3 months of treatment with propranolol.

Discussion

Hemangiomas are the most frequent benign tumors in infancy, appearing in the first or second week after birth and increase in size the first 6 months or one year of life (proliferative stage). Subsequently, hemangiomas decrease and 75% disappear in 4 years. Approximately 20% of hemangiomas give rise to complications, generally at the local level, such as compression or obstruction of structures, at which point treatment should be considered. In ophthalmology, indications for treatment are amblyopia, anisometropia, strabismus, compressive optic neuropathy and keratopathy due to exposure. Amblyopia is the most frequent complication with an incidence of 60%.

Typical therapies include systemic and/or intralesional corticoids, interferon alfa-2a, laser, embolization, immunomodulators and surgery. Generally, corticoids are the first choice despite severe adverse effects such as low height, sleep alterations, hypertrophic myocardopathy, skin necrosis and visual loss due to embolism. It was recently discovered that propranolol, a nonselective beta blocker, is able to inhibit growth and produce regression in infantile hemangioma without significant adverse effects. It is essential to previously carry out a cardiological study and the patient must be free of bronchial disease. In addition, during treatment it is important to control glycemia and arterial pressure.
In the instant case, treatment for the hemangioma was decided due to the extensive orbitary and palpebral involvement in addition to the risk of amblyopia and strabismus. A few days after beginning the treatment, the hemangioma was observed to rapidly diminish in size and color, progressively releasing the visual axis due to ptosis decrease. This evolution was sustained after 6 months of treatment.

To date, there are no significant clinical trials on propranolol although the potential risks of the drug are known. However and according to our experience, the response of the capillary hemangioma to propranolol was satisfactory as no adverse effects arose. This treatment should be considered as a promising alternative.

**Conflict of interests**

No conflict of interests has been declared by the authors.

**REFERENCES**