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Role of Propranolol in the Management 0f Complicated Infantile Haemangiomas

Dr Fazal-e-Rabi Subhani[1*], Dr. Fazal-i-Akbar Danish[2]

[1]Department of Neonatal Registrar, University Hospital Galway, Newcastle Rd, Ireland

[2]Department of Consultant Physician, Gloucestershire Royal Hospital, Great Western Road, Gloucester GL1 3NN, UK

[*]**Corresponding author:** Fazal-e-Rabi Subhani, Department of Pediatric Nutrition, Rotunda Hospital, Parnell Square E, Rotunda, Dublin, Ireland; Tel No: 00353857294455; E-Mail: fazal249@yahoo.com

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Introduction

Infantile haemangiomas are the most common vascular tumours of infancy. They can occur anywhere on the skin, mucous membranes & internal organs, and may vary in size from few millimetres to many centimetres. Although benign & generally self-limiting, some tumours are classified as high-risk as they can cause serious complications, e.g. large, rapidly-growing facial lesions may ulcerate, scar, & thus cause permanent disfigurement; lesions in the periorbital or periocular regions may cause functional impairment; CNS or spine lesions may cause developmental anomalies; deep visceral lesions in airways, liver, or GI tract may even cause life-threatening complications.

MATERIALS AND METHODS

A comprehensive search of PubMed & EMBASE from January 2000 to May 2020 was made using 4 search items: infantile haemangiomas, complications, therapy, and propranolol. The search items were combined using the Boolean operator & cross-referenced with each of the treatment modalities found. Foreign languages Publications were also included if they had abstracts in English. A further search was made of the society guidelines of American Academy of Dermatology, American Academy of Pediatrics, American Academy of Family Physicians, British Association of Dermatologists, Cochrane library, & ClinicalTrials.gov.

Results

Most haemangiomas undergo an initial rapid growth phase (typically between 5.5 & 7.5 weeks of age) followed by an involution phase. Since most haemangiomas' ultimately involute spontaneously after the first year of life, the mainstay of treatment for uncomplicated haemangiomas located in non-cosmetically sensitive locations remains active non-intervention (serial observations). In practice, this is best accomplished with serial photographs to monitor the temporal involution process. Haemangiomas with a potential to complicate, or those who already have developed complications require an active intervention however. Unless contraindicated, oral Propranolol - a nonselective beta blocker - remains the current first-line agent of choice in all such cases. It's use causes inhibition of the growth phase and initiation of the involution phase in most cases of haemangiomas. The proposed likely mechanisms include vasoconstriction, decrease in the expression of vascular endothelial growth factor & fibroblast growth factor, and/or triggering of apoptosis. A meta-analysis of 18 RCTs & cohort studies (1265 children between 2 weeks to 9 years of age) evaluated the relative expected clearance rates of haemangiomas with oral propranolol vs oral corticosteroids vs placebo. The results demonstrated that oral propranolol had the largest mean estimate of expected clearance (95 percent, 95% Bayesian credible interval [BCI] 88-99), relative to oral corticosteroids (43 percent, 95% BCI 21-66) and placebo or observation (6 percent, 95% BCI 1-11).

Conclusion

Oral propranolol (starting dose 0.5 to 1 mg/kg per day and then gradually increased to the target dose of 2 mg/kg per day) is the first-line agent of choice for the treatment of complicated & potentially-complicating haemangiomas. The overall results with propranolol are generally promising enough that second-line agents (oral corticosteroids, vincristine, and interferon alfa) are rarely required nowadays. For ulcerated haemangiomas that may cause permanent disfigurement, oral propranolol therapy must be augmented with meticulous wound care and appropriate analgesia.

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