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Successful Treatment of Multiple Infantile Hemangiomas with Atenolol after Propranolol Failure

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Abstract

Impact of lactose; Powder Flowability and Capsu; Infantile hemangioma (IH) is the most common benign vascular tumor of childhood. In rare cases, it may occur as multiple cutaneous hemangiomas, which can be associated with visceral involvement and may require systemic therapy. Propranolol is currently considered the first-line treatment for IH; however, therapeutic resistance has occasionally been reported. We report the case of a 4-year-old girl presenting with ten multiple cutaneous infantile hemangiomas that had appeared since the age of one month. The patient had previously received oral propranolol at a dose of 3 mg/kg/day for one year without any clinical improvement. Owing to the persistence of the lesions and cosmetic concern, oral atenolol was initiated at a dose of 2 mg/kg/day after exclusion of visceral involvement by abdominal ultrasound. A marked regression of the subcutaneous component and significant fading of the lesions were observed after three months, with complete remission of the majority of lesions after six months. No adverse effects or recurrence were noted during follow-up. This case highlights atenolol as an effective and well-tolerated therapeutic alternative in patients with multiple infantile hemangiomas resistant to propranolol.

Keywords

Infantile Hemangiomas; Powder Flowability; Cutaneous hemangioma; Papulo-nodular lesions.

Introduction

Cutaneous hemangioma is a benign vascular tumor and represents the most common soft tissue tumor in children [1]. Infantile hemangiomas (IHs) usually occur as solitary lesions; however, in rare cases, they may present as multiple cutaneous hemangiomas, defined by the eruption of five to several hundred infantile hemangiomas, with or without visceral involvement [2]. Propranolol is currently considered the first-line therapy for infantile hemangiomas; nevertheless, cases of therapeutic resistance have been reported [3]. In this context, we report a case of multiple infantile hemangiomas successfully treated with atenolol after therapeutic failure of propranolol.

Case Presentation

We report the case of a 4-year-old girl, born by vaginal delivery at 37 weeks of gestation from a well-monitored singleton pregnancy, with an Apgar score of 10 at birth and a birth weight of 2800 g. Since the age of one month, she had developed multiple cutaneous vascular tumors. Two years earlier, she had been treated on an outpatient basis with oral propranolol at a dose of 3 mg/kg/day. No clinical improvement was observed after one year of treatment.

Due to the persistence of the lesions and the associated cosmetic concern, the patient was referred to our department for further management. On admission, dermatological examination revealed ten raspberry-like papulo-nodular lesions ranging from 1 to 3 cm in diameter, distributed over the back, trunk, décolleté, face, and both upper and lower limbs, suggestive of multiple infantile hemangiomas.

Given the increased risk of hepatic hemangioma associated with multiple cutaneous lesions, an abdominal ultrasound examination was performed and showed no abnormalities. Oral atenolol was therefore initiated at a dose of 2 mg/kg/day.

A marked regression of the subcutaneous component associated with significant fading of the lesions was observed three months after treatment initiation, with complete remission of most lesions after six months (Figure 1,2,3). No adverse effects were reported during follow-up. Furthermore, no recurrence was noted one year after discontinuation of therapy.

Figure 1 a&b: lesions partially resolved on the Face after 6 months.

Figure 2 a&b: lesions completely resolved on the back after 6 months.

Figure 3 a&b: Lesions completely resolvd on the chest after 5 months.

Discussion

Several medical treatment options are currently available for cutaneous infantile hemangiomas; however, no universally standardized management guidelines exist. Since its serendipitous discovery in 2008, oral propranolol has become the gold standard treatment for problematic IHs. Despite its well-established efficacy, cases of resistance and treatment-limiting adverse effects have prompted the search for alternative therapeutic agents.

Atenolol, a selective hydrophilic β1-adrenergic blocker, has emerged as a promising alternative. Unlike propranolol, atenolol does not readily cross the blood–brain barrier, thereby reducing the risk of central nervous system adverse events such as sleep disturbances, agitation, and potential cognitive effects. Its selective β1-receptor activity and pharmacokinetic profile may also influence therapeutic responsiveness in infantile hemangiomas [4].

Several studies have demonstrated that atenolol is an effective alternative to propranolol, particularly in patients who develop adverse effects or show poor response to initial therapy. Previous reports have shown a favorable clinical response in approximately 90% of patients with propranolol failure, with significant lesion regression and improved tolerability [5-7]. Similarly, complete or partial involution of lesions has been described in children switched to atenolol after unsuccessful propranolol therapy [8].

In addition, atenolol appears to have a more favorable safety profile, with fewer adverse effects than propranolol. Reported side effects are generally mild and include transient gastrointestinal discomfort and occasional temporary decreases in blood pressure. These characteristics make atenolol an attractive therapeutic option, especially in cases of propranolol resistance or intolerance.

Our observation further supports these findings, highlighting the efficacy of atenolol in inducing rapid and sustained regression of multiple infantile hemangiomas after failure of propranolol therapy, without any reported adverse events.

Conclusion

Atenolol appears to be an effective and well-tolerated therapeutic alternative in the management of infantile hemangiomas, particularly in patients exhibiting resistance or adverse effects to propranolol. Its distinct pharmacological profile, combined with sustained clinical efficacy and an improved safety margin, makes it a valuable option in the treatment of complex infantile hemangiomas.

Conflict of interest: The authors declare that they have no competing interests.

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