

ORIGINAL RESEARCH

Role of Interventional Radiology in Patients with Different Orbital Vascular Lesions: A Case Series

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ABSTRACT

Orbital vascular lesions encompass a spectrum of rare, heterogeneous pathologies that can present with varying clinical manifestations. The four cases described in our case series are: one 14-year-old boy with gradually progressive unilateral proptosis diagnosed as orbital hemangioma, one 3-year-old child with bilateral anophthalmos and lid swelling diagnosed as orbital lymphangioma, one 47-year-old lady with gradually growing medial canthal mass diagnosed as hemangioma, and lastly, one 8-year-old boy with unilateral lid swelling diagnosed as orbital hemangioma. All patients were thoroughly examined clinically and diagnoses were confirmed radiologically. All patients demonstrated significant clinical improvement following sclerotherapy. The treatment was well-tolerated, with no major complications noted. Cosmetic outcomes were favourable, with a reduction in lesion size on follow up visits. The cases presented illustrate the versatility and safety of sclerotherapy as an effective and minimally invasive therapeutic option for the management of orbital vascular lesions across a variety of pathologies, emphasizing its potential as a first-line treatment in carefully selected patients.

Key Words: Intralesional sclerotherapy, Vascular lesions, Orbit, Orbital hemangioma, Lid lymphangioma, Minimally invasive treatment, Interventional radiology, Complications, Cosmetic outcomes.

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BACKGROUND

Vascular lesions in the orbit and eyelids can present across all age groups, from pediatric to adult patients. Traditional surgical resection has been associated with significant morbidity, specially due to increased chance of bleeding in cases of vascular tumors, and also postoperative scarring and deformity. Intralesional sclerotherapy, which involves the injection of a sclerosing agent directly into the lesion, has emerged as an alternative therapeutic option. The procedure aims to induce vascular occlusion and shrinkage of the lesion while minimizing the cosmetic and functional sequelae associated with surgery.

OBJECTIVES

The primary objective of this study is to evaluate the effectiveness of intralesional sclerotherapy in the management of different vascular lesions involving the orbit and eyelids. We aim to assess the improvement in clinical symptoms and signs in a

series of cases and discuss the safety and cosmetic outcomes of this minimally invasive approach.

METHODOLOGY

We conducted a prospective study of four cases with different vascular lesions, presented in a tertiary health care centre.

Our first case was a 14-year-old boy presented with gradually progressive unilateral proptosis of right eye since 5 years. On examination, the visual acuity, IOP, anterior segment and fundus picture was within normal limits. CEMR study revealed a fairly well-defined lesion involving the medial and superior extraconal and intraconal compartment of the right orbit with its mass effect and delayed enhancement with progressive filling on post contrast study, suggestive of orbital hemangioma. Figure 1 shows picture of 14-year-old boy with unilateral proptosis on presentation. Figure 2 shows the lesion in CEMRI.



Figure 1. 14-year-old boy presenting with unilateral proptosis



Figure 2. CEMRI showing the lesion

Our second case was a 3-year-old boy presented with gradually progressive bilateral lid swelling (right > left) with anophthalmos since birth associated with occasional local pain and erythema. CEMR study revealed a fairly well-defined thin walled multiloculated cystic lesion in right and left orbit with no intracranial extension or bony involvement with bilateral anophthalmos and bilateral

atrophied optic nerves. On post contrast study, there was peripheral enhancement with enhancement of septations. These features were closely suggestive of orbital lymphangioma. Figure 3 shows 3-year-old boy with bilateral anophthalmos and bilateral lid swelling (right > left) on presentation. Figure 4 shows the lesion in CEMRI.



Figure 3. 3-year-old boy with bilateral anophthalmos and bilateral lid swelling (right > left)

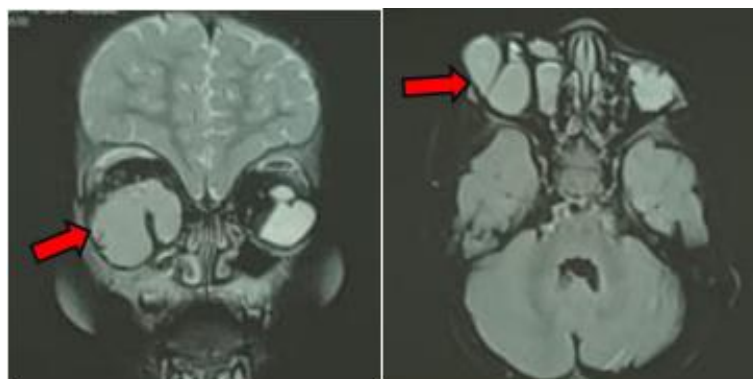


Figure 4. CEMRI showing the lesion

The third case was a 47-year-old woman presented with a gradually progressive medial canthal mass since last 3 years with occasional headache. On examination, the visual acuity, IOP, anterior segment and posterior segment were within normal limits.

CEMR study showed fairly well-defined multilobulated solid cystic lesion involving subcutaneous plane of medial canthus of right eye with peripheral flow voids with heterogeneous enhancement of the solid component on post contrast

study, with no intracranial extension, suggestive of hemangioma at the medial canthus of right eye. Figure 5 shows 47-year-old woman with right medial canthal

mass on presentation. Figure 6 shows the lesion in CEMRI.



Figure 5. 47-year-old woman presenting with right medial canthal mass

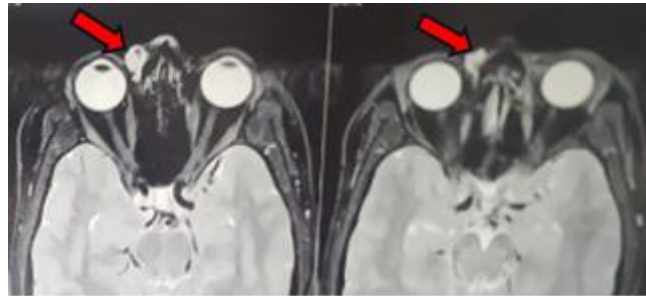


Figure 6. CEMRI showing the lesion

Our last case was an 8-year-old boy with gradually progressive unilateral upper lid swelling since birth. On examination, the mass was found to cause complete ptosis of left upper lid. The best corrected visual acuity was found to be 6/6 in right eye and 6/24 in left eye. Anterior segment, posterior segments examination and IOP were within normal limits. On CEMR study, it revealed a fairly well delineated

diffusely infiltrative homogenous mass lesion involving both intraconal and extraconal compartment of the left orbit with no obvious intracranial extension, with delayed progressive enhancement on post contrast study, suggestive of orbital hemangioma. Figure 7 shows 8-year-old boy with unilateral upper eye lid swelling on presentation. Figure 8 shows the lesion in CEMRI.



Figure 7. 8-year-old boy presenting with unilateral upper eye lid swelling

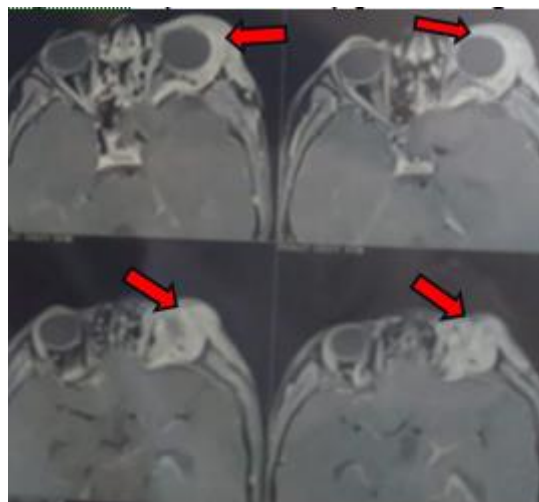


Figure 8. CEMRI showing the lesion

All cases underwent percutaneous intralesional sclerotherapy with STS (sodium tetradecyl sulphate) foam injection under digital subtraction angiography and USG guidance by interventional radiology. Patients were advised to have systemic steroid, oral analgesic anti-inflammatory medicines in post operative period and were followed up.

RESULTS

All four patients demonstrated substantial improvement in their clinical symptoms and signs following intralesional sclerotherapy. The treatment effectively reduced the proptosis in the 14-year-old boy with orbital hemangioma, decreased the size of

the lid swelling in the 3-year-old boy with bilateral anophthalmos and orbital lymphangioma, and significantly reduced the size of the medial canthal mass in the 47-year-old lady with a hemangioma. The 8-year-old boy with unilateral lid swelling also experienced a noticeable reduction in the lesion size. There was transient local swelling and tenderness in immediate post therapy period, which was completely subsided by systemic steroid, and oral analgesic anti-inflammatory medications. apart from it, no major complications or side effects were observed in any of the cases. Figure 9, 10, 11 and 12 shows Pre and Post(2months follow up) Intervention pictures of the four cases.

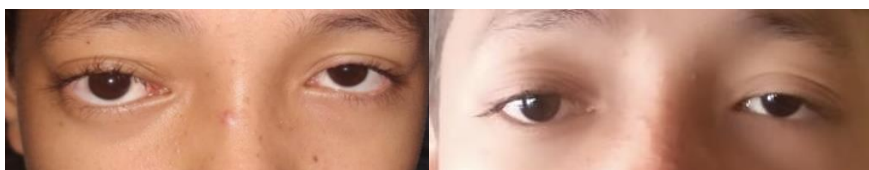


Figure 9. Pre and Post(2months follow up) Intervention pictures of the 14-year-old boy with orbital hemangioma

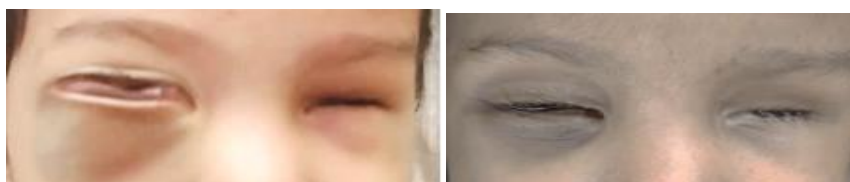


Figure 10. Pre and Post(2months follow up) Intervention pictures of the 3-year-old boy with bilateral anophthalmos and orbital lymphangioma



Figure 11. Pre and Post(2months follow up) Intervention pictures of the 47-year-old lady with a hemangioma at right medial canthal region



Figure 12. Pre and Post(2months follow up) Intervention pictures of 8-year-old boy with orbital hemangioma

DISCUSSION

The results of this case series highlight the potential benefits of intralesional sclerotherapy in the management of various vascular lesions affecting the orbit and eyelids. This minimally invasive approach offers an alternative to surgery, with fewer cosmetic and functional sequelae. A systematic review and meta-analysis study by Lucio De Maria et al showed

percutaneous sclerotherapy is a safe and effective modality for treatment of lymphatic malformations of the head, neck, and face with an overall complete cure rate 50.5%.¹ A systematic review and meta-analysis study by Lucio De Maria et al showed percutaneous sclerotherapy is a safe and effective modality for treatment of lymphatic malformations of the head, neck, and face with an overall complete cure rate

64.7%.²Srivastava et al studied a case of capillary hemangioma in a child with significant decrease in size after sclerotherapy.³ Razavi et al studied Eleven patients with low-flow venous and lymphatic malformations among which the lesions completely resolved in 4 cases and in other 7 cases there was partial resolution to less than half of primary size, post sclerotherapy with STS.⁴Chiramel et al studied ten patients with congenital slow-flow vascular malformations among which all patients had improvement of symptoms on follow up after percutaneous sclerotherapy.⁵

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CONCLUSION

Intralesional sclerotherapy appears to be an effective and well-tolerated treatment option for vascular lesions of the orbit and eyelids. Many studies including case series, case study, randomised control trial, meta-analysis and systematic review have been carried out all over world which also showed the efficacy and safety of sclerotherapy over conventional surgeries. Studies showed complications like intra-procedural bleeding episodes, deep vein thrombosis, deep tissue injury, nerve injury, post procedure infection in minimal cases. While the four cases presented in our study showed significant improvement in clinical symptoms and signs without major complications. This minimally invasive approach holds promise as a viable alternative to traditional surgical interventions and warrants further investigation to establish its role in the management of vascular lesions.

Conflict of Interest: Nil

Financial support: Nil

Informed consent: Written informed consent was taken from each patient/ patients party.

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