Progressive restrictive strabismus acquired in infancy

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The authors present three cases of severely restricted motility and large angle strabismus acquired rapidly during the first months of life in otherwise normal children who had normal eye alignment and movements at birth. Surgical treatment of these cases is difficult and outcomes are variable. Myositis causing extraocular muscles fibrosis is a possible cause of the strabismus in these cases.

Restrictive strabismus in infancy is not rare. Congenital extraocular muscle fibrosis and abnormal bands and tendon restriction, sometimes associated with other body or ocular anomalies, are well documented. We report here three cases of large angle restrictive unilateral strabismus developing over a period of a few months in infancy in otherwise normal children documented to have normal eye alignment and motility as newborns. Some findings are suggestive of inflammation as the cause of the strabismus.

CASE REPORTS

Case 1
Case 1 was a male child who had normal gestation and birth. There is no family history of strabismus. Normal eye alignment and movements were present until 2 months of age (fig 1). Then, the right eye started to deviate medially and downward without proptosis, redness of the eye, or associated illness. At 4 months of age, the eye position stabilised in 50 degrees of esotropia and 30 degrees of hypotropia. Magnetic resonance imaging examination (MRI) showed fuzziness around the medial and inferior rectus muscles, which was interpreted by the radiologist as typical of myositis. There was no alignment change after a trial of systemic prednisone at 4 months. Surgery at 4 months of age and again 2 weeks later did not succeed in hooking the medial and inferior rectus muscles. An MRI scan at 6 months of age showed only the enlargement of the medial and inferior muscles expected with marked rotation of the eye into their field of action. At surgery at 6 months of age, the medial and inferior rectus muscles restrained any passive globe rotation into abduction or elevation. A small dental mirror allowed visualisation of the tendons, which could not be visualised directly. After these were clamped and detached from the globe, the eye rotated freely. Each muscle was recessed 10 mm on adjustable sutures. The eye was exotropic on the next day, and the medial rectus suture was tightened 3 mm. The left eye was patched for amblyopia. At 4 years of age there was an esotropia of 20 prism dioptres with mild limitation of adduction and infrafraction. At 11 years of age the right eye had become more esotropic, perhaps as a result of amblyopia. Vision was 20/60 in the right eye 20/20 in the left.

Case 2
Case 2 was a male child with normal gestation and birth and no family history of strabismus. Normal eye and lid movements were reported until 4 months of age, when the right eye developed increasing hypertropia (fig 2) finally stabilising at age 7 months. At age 8 months, right hypertropia of about 45 degrees was observed, with the cornea barely visible underneath the superior eyelid. Computed tomography (CT) scan showed an enlarged superior rectus. Serological tests for Graves’ disease were normal. At surgery at 8 months of age, the right eye could not be passively infraaducted. A blind free tenotomy of the superior rectus muscle released the restriction to infrafraction. Eight months after the operation, orthotropia was observed except in supraversion where there was a small right hypotropia. Intraocular structures and refraction were normal. Vision was equal in the two eyes with central fixation in each eye.

Case 3
Case 3 was a female child with normal eyes and health at birth. No family history of strabismus. Family photographs 42 days of age 4 years of age 11 years of age

Figure 1 Case 1.
document normal eye alignment and appearance at 1 month of age. At 3 months, the parents observed a right esotropia, which progressed to 40–50 degrees esotropia and 40–50 degrees hypotropia at the time of examination at age 4 months. There was no history of trauma. CT and MRI scans showed enlarged right medial and inferior rectus muscles. Passive ductions showed total limitation of elevation and abduction. Biopsy of a right thigh muscle was normal. At surgery at 5 months of age, the inferior rectus muscle was red and swollen. The medial rectus and inferior rectus muscles were recessed. A second operation removing adhesions and using traction sutures did not eliminate the hypotropia. Postoperatively, the eye remained hypertropic, esotropic, and amblyopic.

**DISCUSSION**

An earlier report by Palolillo and others reported a unilateral case of inferior rectus fibrosis, which progressed to 40–50 degrees esotropia and 40–50 degrees hypotropia at the time of examination at age 4 months. There was no history of trauma. CT and MRI scans showed enlarged right medial and inferior rectus muscles. Passive ductions showed total limitation of elevation and abduction. Biopsy of a right thigh muscle was normal. At surgery at 5 months of age, the inferior rectus muscle was red and swollen. The medial rectus and inferior rectus muscles were recessed. A second operation removing adhesions and using traction sutures did not eliminate the hypotropia. Postoperatively, the eye remained hypertropic, esotropic, and amblyopic.

**REFERENCES**