Case Report

Ophthalmologica

Ophthalmologica 2003;217:308–309
DOI: 10.1159/000070641

Received: December 19, 2002
Accepted: January 31, 2003

Conservative Treatment of Vertical Diplopia in a Patient with Silent Sinus Syndrome

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Key Words
Vertical diplopia · Conservative treatment · Silent sinus syndrome · Enophthalmos

Abstract
Silent sinus syndrome is a rare disease of the maxillary sinus characterized by bony absorption processes leading to progressive sinus wall thinning with consecutive enophthalmos and hypoglobus. It represents a benign cause of acquired enophthalmos and is often accompanied by painless vertical diplopia, the latter treated surgically in all cases published to date. We report a 56-year-old patient with silent sinus syndrome in whom vertical diplopia was treated with prisms showing that conservative treatment alone may, in mild cases, be an effective alternative to reconstructive surgery.

Introduction

Silent sinus syndrome is a rare disease characterized by slowly progressive enophthalmos and hypoglobus caused by ipsilateral maxillary sinus hypoplasia secondary to orbital floor resorption. In 1994, Soparkar et al. [1] first called this condition 'silent sinus syndrome'. Clinically, patients present with slowly progressive enophthalmos and hypoglobus and often complain of painless vertical binocular diplopia. Differential diagnosis includes orbital floor malignancies, osteomyelitis, systemic inflammatory disease and other rare causes of acquired enophthalmos such as enophthalmos associated with neurofibromatosis. There is ongoing controversy about the pathogenetic mechanisms leading to silent sinus syndrome [for a review, see ref. 2].

Underlying causes may include chronic sinusitis [2], retention cysts [3], or mucoceles of the maxillary sinus [4]. In 1999 Davidson et al. [2] proposed a potential pathogenetic mechanism: measurements of pressure within the maxillary sinus of a patient suffering from silent sinus syndrome revealed an internal pressure of –23 mm Hg. The authors suggested that absorption processes might be responsible for negative pressure, thus explaining the diminution of volume of the maxillary sinus and consecutive lowering of the orbital floor.

Recently, the spectrum of presentation of silent sinus syndrome has been described. To our knowledge, all cases that have been published underwent reconstructive surgery [5].

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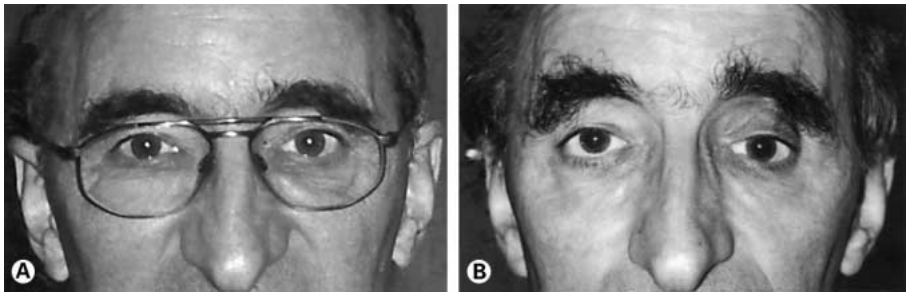

Fig. 1. A Old photograph provided by the patient showing regular orbital structures. **B** Photograph taken at first examination in 1999 with distinct hypotropia and enophthalmos of the left eye.

Case Report

In 1999, a 56-year-old male patient with vertical diplopia was referred for neuro-ophthalmologic evaluation. The patient had a 3-month history of progressive binocular diplopia, painless slowly progressive enophthalmos and hypoglobus. He had no previous ocular or maxillary sinus trauma or surgery. Clinical examination revealed fully compensated esophoria and full random dot stereopsis with 5 base-out and 6 base-up prisms on the left eye. Ophthalmometry confirmed left enophthalmos of 3 mm. Ocular motility was normal except for mild left inferior oblique overaction and mild restriction of elevation. Other findings from the ophthalmological examination were normal (visual acuity 20/20 on both eyes). Computerized visual field examination demonstrated no defects. Gradual progression of enophthalmos was documented by photographs (fig. 1A, B). A CT scan revealed a diminution of left maxillary sinus volume with orbital floor lowering and thinning of the sinus bony walls (fig. 2). No signs of inflammation, orbital malignancies or maxillary sinus cysts were observed.

Vertical diplopia was successfully treated conservatively using prisms (5 base out and 6 base up). At 22 months after initial examination the clinical situation was stable.

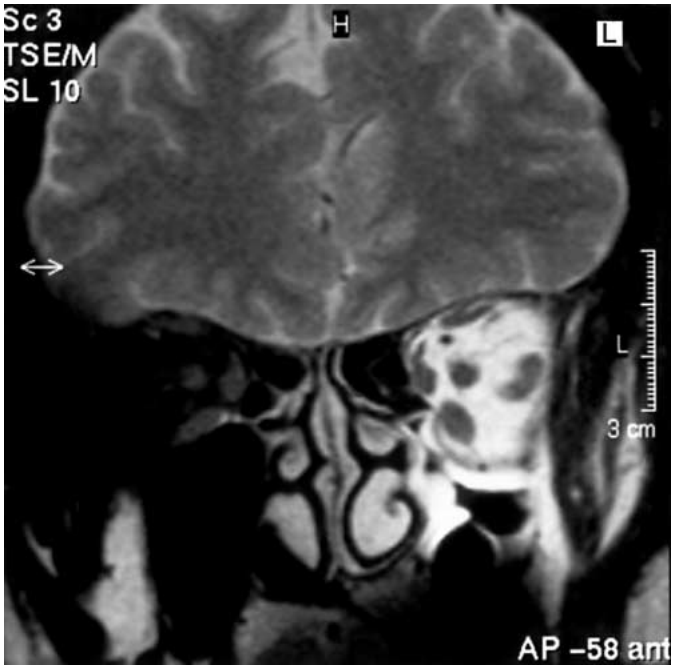

Fig. 2. Axial 1.5-mm contrast-enhanced CT scan showing orbital floor lowering and thinning of the bony walls of the left maxillary sinus.

Discussion

To our knowledge, all cases of silent sinus syndrome and concomitant vertical diplopia described in the literature underwent orbital reconstructive surgery. In our case the patient refused left orbital floor reconstruction and was successfully treated with prisms. He was seen regularly for follow-ups over a period of 40 months.

This case report demonstrates for the first time that mild forms of vertical diplopia in silent sinus syndrome do not necessarily require reconstructive surgery.

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