Superior Orbitary Fissure Syndrome by Face Trauma Without Medial Third Fracture – Case Report

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ABSTRACT

The aim of this work is to present a clinical case of the Superior Orbitary Fissure Syndrome in a patient with face trauma without medial third fracture and to establish a correlation of this injury with the orbitary commitment, suggesting that its ethiology is due to the impact force transmission throughout the pillars of the face's reticulated skeleton up to the orbit.

The necessity of the knowledge of this ethiopathological mechanism is stressed and the diagnostic and therapeutical of this syndrome are the discussed aspects.

INTRODUCTION

The Superior Orbitary Fissure Syndrome (SOFS) was described by Hirchfield in 1858[1], and was characterized by ophthalmoplegia, superior palpebral ptosis, eye proptosis, mydriasis and frontal region and superior eyelid anesthesia due to the concurrent or not lesion of the III, IV and VI cranial pairs, first division of the V cranial pair and autonomic innervation of the eye globe and its extrinsic musculature[1, 2] (Fig. 1). This nosological entity's ethiology varies: medial segment fractures of the facial bones, neoplasias, retrobulbar hematomas and sinus carvernosus, meninges or central nervous system infections[2].

This work's purpose is to report a SOFS clinical case in a patient with face trauma without medial third fractures and without clinical and tomographic evidences of sphenoidal fracture or evident pathologies at the orbit apex, such as retrobulbar hematoma, and correlate the entity's ethiopathology to the impact force transmission throughout the superficial medium third of the facial skeleton towards the endocranium, as presented by Sturla[3].

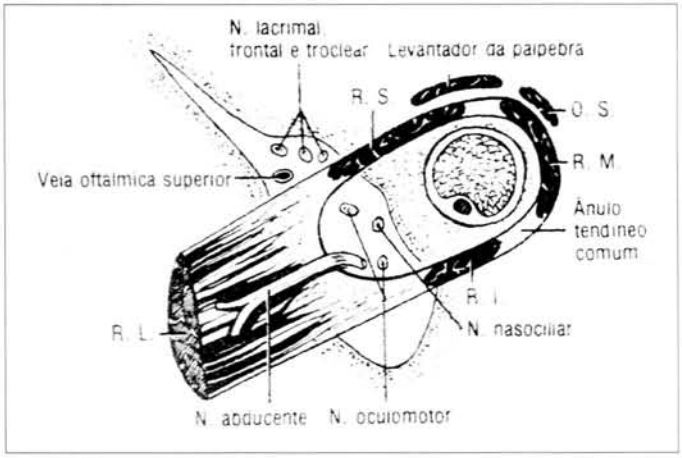

Fig. 1 – Anatomical structures of the orbit apex, according to Gardner.

Fig. 1 - Estruturas anatômicas do ápice da órbita, segundo Gardner.

CASE REPORT (MATERIAL AND METHODS/ RESULT)

31 years old female patient was hit by a car. She reports trauma at the right hemiface and diplopia. During the physical examination, she presented proptosis, excessive infero-lateral abduction and rotation of the eye, palpebral ptosis, unilateral mydriasis to the right, and divergent strabismus. Denied frontal region parestesia (Figs. 2 and 3). She also presented buccal opening limitation, occlusal dystopia and edema to the right of the mandible.

The radiological examination revealed fracture of the body of the mandible to the right, and no fractures at the medial third or endocranium, only a discrete velamentum of the right maxillar sinus was observed (Fig. 4).

Fig. 2 – Patient's clinical aspect; note the palpebral ptosis and divergent strabismus to the right.

Fig. 2 - Aspecto clínico da paciente; notar a ptose palpebral e o estrabismo divergente à direita.

The tomographies didn't show cranial or orbital fractures, as well as orbitary cone's soft tissue alterations, except by a density increase at the extrinsic musculature of the eye globe. There were no signals of orbitary apex compression (Figs. 5 and 6).

The mandible's body fracture to the right and SOFS were diagnosed.

The patient underwent the mandible's fracture reduction on 07/21/99, with a rigid fixation, without intermaxillar block (Fig. 7). The SOFS conservative treatment was chosen, together with the sequential ophtalmological follow-up and prednisone administration.

At the last assessment performed on 08/30/99, a partial improvement of the SOFS' signals and symptoms was evidenced (Figs. 8 and 9).

Fig. 3 – Detail of the ophtalmoplegia to the right (superior view).

Fig. 3 - Detalhe da oftalmoplegia à direita (mirada superior).

DISCUSSION

With the purpose of providing an adequate assessment of the craniofacial traumas, STURLA (1980), supported by the 1901 works[4] of René Le Fort, de-

Fig. 4 – Radiographic aspect; note the innominated line integrity to the right and the absence of fracture signals at the medial third.

Fig. 4 - Aspecto radiográfico; notar integridade da linha inominada à direita e ausência de sinais de fraturas de terço médio.

Fig. 5 – Coronal cut tomography, note the orbit apex integrity.

Fig. 5 - Tomografia em corte coronal; notar integridade do ápice da órbita.

Fig. 6 – Coronal cut tomography; note the absence of right compression signals of the orbitary apex.

Fig. 6 - Tomografia em corte coronal; notar ausência de sinais de compressão direta do ápice orbitário.

Fig. 7 – Radiographic aspect of the mandible's fracture treatment.

Fig. 7 - Aspecto radiográfico do tratamento da fratura da mandíbula.

Fig. 8 – Patient's clinical aspect on 08/30/99. Note the improvement of the palpebral ptosis and mydriasis to the right.

Fig. 8 - Aspecto clínico da paciente em 30/08/99. Notar melhora da ptose palpebral e da midríase à direita.

Fig. 9 – Patient's clinical aspect detail on 08/30/99.

Fig. 9 - Detalhe do aspecto clínico da paciente em 30/08/99.

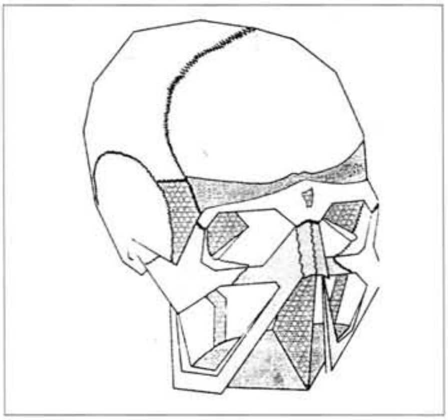

Fig. 10 – Reticular structure of the facial skeleton, according to Sturla.

Fig. 10 - Estrutura reticular do esqueleto facial, segundo Sturla.

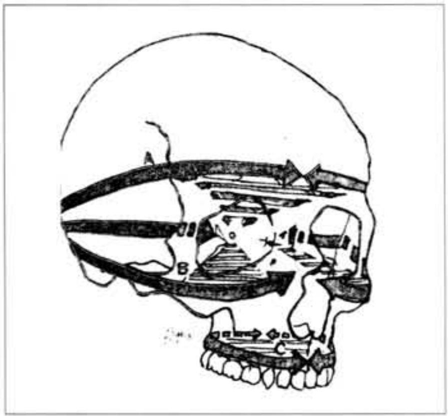

Fig. 11 – Craniofacial rings, according to Sturla.

Fig. 11 - Anéis craniofaciais, segundo Sturla.

veloped an experimental study in which he presented the face's fixed skeleton as a reticular structure, comprised of superficial and profound pillars, axial rings and craniofacial crosses, responsible for this skeleton's support and capable of transmitting superficial impact forces to the profound regions, where the orbit is particularly important for us[3] (Figs. 10 and 11).

The ophtalmological complications, associated to the facial traumas and face osteotomies, are reported in the literature[1, 2, 5, 6, 7, 8, 9, 10], being SOFS described as a rare entity, mainly when associated to the trauma[2]. There are no statistics regarding the presence of the syndrome without fractures of the face's medial segment and the major and minor sphenoid wings. For that, it is inferred that injury mechanism is indirect, as suggested by Lanigan[6, 10], and that takes us back to Sturla[3]previously cited observations, and is illustrated by the clinical case herein presented. The facial trauma can have its impact force transmitted throughout the face's medial skeleton pillars, affecting the orbitary apex and promoting this topography's neurovascular structures compression, even without evidences or fractures or retrorbitary hematomas.

This pathology diagnosis is clinical, and a cranial and orbit tomographic study must be requested in order to observe the orbitary apex fractures or other evident signals of compression[6, 7, 10, 11].

Once that vascular phenomenons can progressively appear, affecting the orbit's nervous structures, a sequential ophthalmological assessment must be installed.

The SOFS treatment in case of trauma is conservative in the majority of the cases, and steroids can be used with the clinical improvement in a variable period of time (3 weeks to 4 months). The orbit decompression is performed in a endocranial or transfacial way in the rarest situations[1, 2, 8, 10].

The clinical case presented stresses the necessity of knowing the impact conduction mechanisms of the face traumas, orientated as to perform an early diagnosis and adequate therapeutical procedure of the profound repercussions of the superficial injuries.

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