CASE REPORT

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Tolosa-Hunt syndrome – Diagnostic problem of painful ophthalmoplegia

Tolosa-Hunt sindrom – dijagnostički problem bolne oftalmoplegije

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Abstract

Background. Tolosa-Hunt syndrome (THS) is an uncommon disease caused by non-specific inflammation of the cavernous sinus, superior orbital fissure and the apex of the orbit. The disease is characterized by periorbital pain, paresis of the bulbomotor and quick response to steroid treatment. The orbital process may lead to optic nerve atrophy. According to the International Headache Society Classification of 2004, the diagnostic protocol includes magnetic resonance imaging (MRI) and biopsy. **Case reports.** We presented 46-year old male patient, with THS. The patient had unilateral periorbital pain, inflammatory process in the cavernous sinus, the apex of the orbit and the paranasal sinuses. Inflammatory process had spread into the fascia of the bulbomotor and performed compression to the optic nerve, causing paresis of the bulbomotor, protrusion of the eyeball and atrophy of the optic nerve. Pulse doses of corticosteroids were effective. Regarding the presented patient, diagnostic dilemmas arose from nonspecific sinusitis. The initial ophthalmological diagnosis, based on periorbital pain, drop in visual acuity and the narrow chamber angle was angular glaucoma, which resulted in a delayed diagnosis of THS and the beginning of the treatment. MRI and positive response to the treatment with corticosteroids were relevant for making the diagnosis. **Conclusion.** According to the International Headache Society Classification of 2004, THS is an entity that occurs rarely, its etiopathogenesis is unknown, it is manifested clinically by unilateral orbital pain associated with simple or multiple oculomotor paralyses, which resolves spontaneously but may recur. MRI orbital phlebography and biopsy are the recommended methods for making diagniosis. In our patient MRI findings and positive response to the corticosteroide treatment were relevant for making the diagnosis.

Key words:
tolosa-hunt syndrome; diagnosis; diagnosis, diferential; radiosurgery; drug therapy; treatment outcome.

Apstrakt

Uvod. Tolosa-Hunt sindrom (THS) je nespecifično inflamatorno oboljenje kavernoznog sinusa, gornje orbitalne fissure i vrha orbite. Oboljenje se karakteriše periorbitalnim bolovima, parezama bulbomotora i povoljnim efektom na kortikosteroidni tretman. Orbitalni proces može da dovede do atrofije optičkog nerva. U skladu sa Internacionalnim društvom za klasifikaciju glavobolja od 2004. godine dijagnostički protokol uključuje nuklearnu magnetnu rezonancu i biopsiju. **Prikaz bolesnika.** Prikazan je bolesnik, star 46 godina, sa THS. Bolesnik je imao unilateralni periorbitalni bol, zapaljenski proces u kavernoznom sinusu, vrhu orbite i paranazalnim šupljinama. Zapaljenski proces je zahvatio fascije bulbomotora i doveo do kompresije optičkog nerva, pareze bulbomotora, protruzije očne jabučice i atrofije optičkog živca. Pulsne doze kortikosteroida bile su efikasne. Dijagnostička dilema je bila nespecifični sinusitis. Početna oftalmološka dijagnoza zasnovana na periorbitalnim bolovima, značajnom padu vida, povećanom intraokularnom pritisku i plitkoj prednjoj očnoj komori bila je angularni glaukom, a posle ispitivanja magnetnom rezonancom (MR) započeto je lečenje kortikosteoridima na koje je bolesnik dobro odreagovao. **Zaključak.** Prema Međunarodnoj klasifikaciji Društva za glavobolje iz 2004. godine, THS predstavlja entitet nepoznate etiopatogeneze. Klinički se manifestuje unilateralnim orbitalnim bolom udruženim sa pojedinačnom ili multiplom paralizom okulomotora, koja spontano može nestati ili se ponovno pojaviti. Dijagnostički protokol ovog sindroma obuhvata MR, orbitalnu flebografiju i biopsiju. U ovom slučaju odlučujući nalazi za dijagnozu THS bili su nalaz MR i pozitivan odgovor bolesnika na primenu kortikosteroida.

Ključne reči:
tolosa-hunt sindrom; dijagnoza; dijagnoza, diferencijalna; radiohirurgija; lečenje lekovima; lečenje, ishod.

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Introduction

Tolosa-Hunt syndrome (THS) is a condition caused by nonspecific granulomatous inflammation of the cavernous sinus, superior orbital fissure and/or the apex of the orbit. The disease is characterized by periorbital pain, headaches on the same periorbital side and diplopia. Clinical signs of the disease are slight protrusion, limited movements of the eyeball due to paresis of the oculomotor nerve and sensitive outbreaks in the area of V1 and V2 branch of the trigeminal nerve [1–15]. The disease is recurrent and it responds well to steroid treatment [5–7, 16]. According to the redefined diagnostic criteria, THS is unspecific granulomatous inflammation diagnosed by nuclear magnetic imaging and biopsy [7, 16–18, 19]. We presented a male patient with THS, previously diagnosed with angular glaucoma.

Case report

A 46-year old male patient referred to the ophthalmologist within one week due to decreased vision in his right eye and pain on the right side of the head. The ophthalmologist made a diagnosis of angular glaucoma based on increased intraocular pressure (TOU = 22 mmHg) and gonioscopic findings of the narrow chamber angle. Visual acuity was normal (VOU = 1.0). The therapy was antiglaucomatous (dorzolamide hydrochloride/timolol maleate ophtholmic solution 2 times per day).

One month later, in February 2009 the patient referred to the ophthalmologist again due to severe periorbital pain, drop in vision of the right eye and double vision. During ophthalmological examination, protrusion of the right eyeball was detected as well as limited movements and diplopia. Intraocular pressure was normal (TOU = 18 mmHg), the vision of the right eye decreased and visual acuity was 0.4, while the visual acuity of the left eye was normal. Computed tomography (CT) head scan and otorhinolaryngological (ORL) findings spoke in favour of non-specific chronic sinusitis (both maxillary sinuses, left frontal sinus and right sphenoidal sinus), without visible orbital tumor mass. The therapy was antiglaucomatous. In the period from February 2009 to April 2009 the vision of the right eye was 0.1. The patient had severe periorbital headache on the right side.

In April 2009 the functional endoscopic sinus biopsy was performed in the ORL Clinic. The histological finding was: polyposis without description. Based on this histological finding the decision to perform maxillary sinus surgery was made.

In May 2009 maxillary sinus surgery was performed in the ORL Clinic. During the operation a tissue filling in the right maxillary sinus, expanding to the adjacent tissues, was detected and the surgery was given up. The biopsy was not made. After the surgery, the ophthalmologist sent the patient to the tertiary ophthalmological institution. The patient had severe periorbital headache on the right side and could not see on his right eye.

In June 2009, after ophthalmological examination it was established that the visual acuity of the right eye was VOD = L+ P+ and of the left eye VOS = 1.0. Intraocular pressure was normal, TOU = 12 mmHg. The right pupil reacted more sluggishly to the light. Atherosclerotic changes in the blood vessels were observed in the fundus. The right papilla was atrophyc with clear borders. Due to CT and ORL findings it was presumed that the patient suffered from Wegener's granulomatosis, THS or pseudotumour of the orbit of some other etiology. The patient had to undergo laboratory examinations and nuclear magnetic resonance imaging. Laboratory tests such as erythrocyte sedimentation rate and basic biochemical analysis were within the normal limits, except C-reactive protein (CRP), the levels of which were higher and amounted to 23.3 units. The value of circulating immune complexes (CIC), cANCA, pANCA, were within the normal limits.

Magnetic resonance imaging (MRI) scan of the endocranium performed in July 2009 primarily proved the inflammation of the right cavernous sinus with the protrusion of inflammatory process through the superior orbital fissure into the intraconic section of the orbit in which it caused pseudotumor spreading along the same-sided maxillary nerve and the mandibular nerve. In making the differential diagnosis, THS should be considered, although it is not possible to exclude the spreading of inflammatory process from the sphenoidal sinus “per continuitatem” (Figure 1).

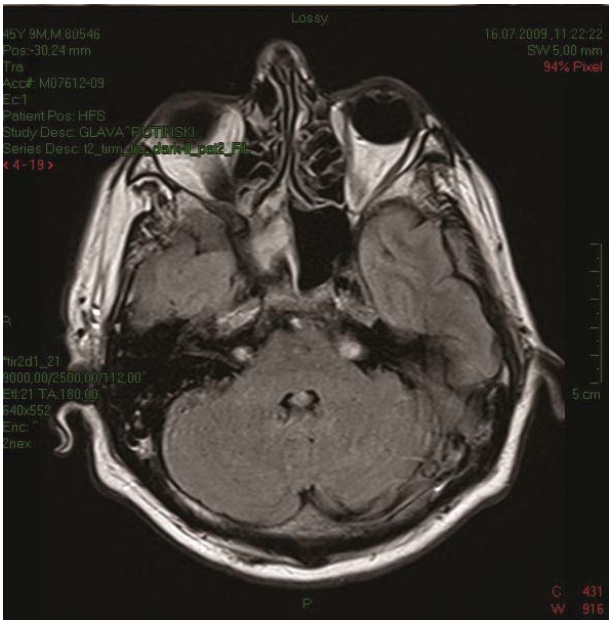

Fig. 1 – Magnetic resonance imaging (MRI) scan in July 2009 (before corticosteroid treatment)

The patient received pulse doses of corticosteroids (1000 mg methylprednisolon administered intravenously for five days), and then, he received 80 mg of methylprednisolon *per os* and the dose was gradually decreased for 2 months. After the applied treatment the patient did not feel pain. The mobility of his eyeball and intraocular pressure were normal, visual acuity was VOD=L+ P+. In the following course the patient had periods of an impairment of the disease characterized by headaches due to which he received pulse doses of

corticosteroids. The ophthalmological finding was unchanged.

A control MRI scan of the endocranium performed 7 months later as compared to the previous result revealed the following: obvious reduction in the retrobulbar intraocular substrate by about 40%, which was most markedly reflected in the lateral aspect with the persistently lower circumferential perineural zone, and still persistent zone of paracavernous inflammation to the same extent (Figure 2). The ophthalmological course in the following year was unchanged. The clinical aspect showed an improvement of the disease.

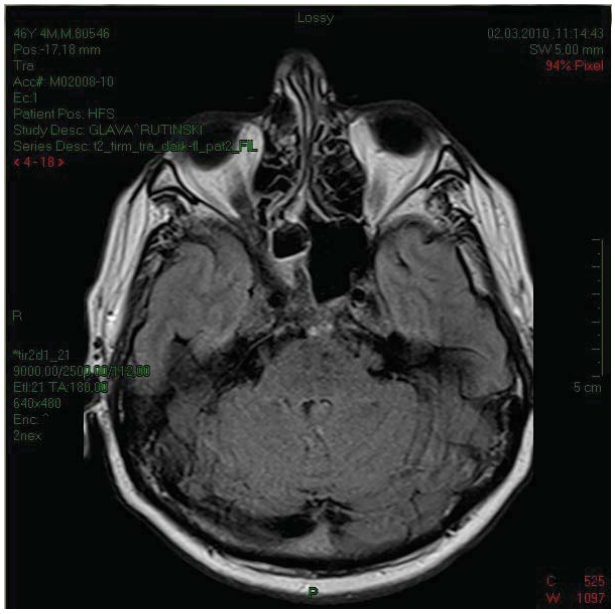

Fig. 2 – Magnetic resonance imaging (MRI) scan in March 2010 (7 months later following corticosteroid treatment)

Discussion

Tolosa-Hunt syndrome is uncommon disease. In the period from 1988 through 2002 only 124 cases of the disease were analysed and published [3]. In the period from 2009 to 2011 twenty five cases were described [11–14, 16, 18–36] three of them were children [20, 24, 31].

THS is characterized by initial and recurrences episodes of painful ophthalmoplegia due to idiopathic granulomatous inflammation of the cavernous sinus and orbita [1–15]. In our case the propagation of pseudo inflammatory process from the cavernous sinus into the retrobulbar space and paranasal cavities was interpreted by the otorhinolaryngologist as non-specific sinusitis. The confirmation of chronic non-specific sinusitis was obtained from a histological result: polyposis. The initial diagnosis was angular glaucoma due to a shallow front anterior eye chamber and increased intraocular pressure. It was treated with an antiglaucomatous therapy.

Further on, the disease manifested itself by severe periorbital pain, diplopia, limited movements of the eyeball and eyeball protrusion which was an indication of an inflammatory orbital process. Anisocoria was present – the right pupil was wider and it reacted more sluggishly than the left pupil. There was a drop in visual acuity and the atrophic papilla of the optic nerve indicated inflammatory process spreading around the optic nerve and that some compression made on it. Diseases that might be included in the differential diagnosis, such as Wegener's granulomatosis were excluded. The key diagnostic procedure was MRI which proved inflammatory process spreading in the cavernous sinus, along the superior orbital fissure into the retrobulbar space, reaching the fascia of the bulbomotor and spreading around the second half of the intraorbital section of the optic nerve on the same side. In 2004, the International Headache Society (IHS) redefined the diagnostic criteria for THS specifying that granuloma, demonstrated by magnetic resonance imaging or biopsy is required for diagnosis.

Steroid therapy dramatically reverses symptoms and clinical signs [5–7, 16].

Because they also may respond to steroids, tumors such as lymphoma and meningioma [15, 23, 37], and orbital tumors can make differential diagnosis difficult. MRI findings before and after systemic corticosteroid treatment are important diagnostic criteria to make the final diagnosis of THS and to diferentiate it from other cavernous sinus lesions that stimulate THS [17].

The pulse doses of corticosteroids resulted in a significant withdrawal of the inflammatory process and discomforts that the patient felt [5–7, 16]. The atrophy of the optic nerve and poor vision acuity remained as definite ophthalmological findings due to the delayed diagnosis and the delayed initiation of appropriate treatment.

In the differential diagnosis, diseases similar to THS are diseases of various etiology, such as neoplasms, and infectious diseases [23, 28, 32, 38]. The cases of granulomatous pachymeningitis spreading into the cavernous sinus and secondary spreading to the hypophysis were described [39]. The simultaneous occurrence of THS and fibrillary glomerulonephritis was reported [35]. It is speculated that bacterial infection might cause clinical features mimicking THS [40].

THS could be diagnosed in patients with carotid-cavernous fistula [29, 30, 34, 36]. The case of recurrent alternating THS was described [27].

Conclusion

According to the International Headache Society Classification of 2004, THS is an entity that occurs rarely, its etiopathogenesis is unknown, it is manifested clinically by unilateral orbital pain associated with simple or multiple oculomotor paralyses, which resolves spontaneously but may recur. MRI, orbital phlebography and biopsy are the recommended methods for making diagniosis.

In this case MRI and positive response to the treatment with corticosteorids were relevant for making the diagnosis.

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