Short communication

Webino syndrome caused by meningovascular syphilis.
A rare entity with an unexpected cause

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ABSTRACT

Case report: The patient is a 57-year-old obese and hypertensive male. His chief complaints were double vision and dizziness, with mild exodeviation in both eyes in primary gaze position in the ocular motility examination, but more predominant in the left eye. The exotropia was noticeably more evident on the attempted upgaze. On horizontal gaze, the abducting eye deviated fully, but the adducting eye did not cross the midline. Nystagmus in the abducting eye and convergence impairment were found. Pupil size and testing were normal. Ataxia and areflexia were also present. Bilateral internuclear ophthalmoplegia was suspected and imaging and laboratory tests were performed. The CAT scan showed a right occipital hypo-attenuated lesion. In the MRI scan, a mesencephalic subacute ischemic lesion was found, involving the medial rectus subnuclei. Blood and cerebrospinal fluid tests for syphilis were positive.

Discussion: Bilateral internuclear ophthalmoplegia is a very uncommon—and difficult to diagnose—condition. In the reported case the lesion involved the medial rectus subnuclei. This fact could explain the exotropia in the primary gaze position, and supports that it is not possible to exclude the involvement of the medial rectus subnuclei in the webino syndrome. The rapid identification of the pathology contributed to the better prognosis of the patient.

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Síndrome de webino secundario a sífilis meningovascular. Una entidad excepcional con una etiología inesperada

RESUMEN

Caso clínico: Paciente varón de 57 años que refiere visión doble y mareo de aparición brusca. A la exploración oftalmológica se observó una exotropia evidente en posición primaria de la mirada, ausencia de aducción de ambos ojos, nistagmo en abducción e incapacidad para la convergencia. Ante la sospecha de oftalmoplejía internuclear (OIN) bilateral se


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Oftalmoplejía internuclear

realizan pruebas de imagen y de laboratorio. La RMN craneal objetiva una lesión isquémica subaguda en el centro del mesencéfalo, afectando a los núcleos motores oculares comunes. Las pruebas para sífilis fueron positivas en sangre y líquido cefalorraquídeo.

Discusión: El síndrome de webino es muy infrecuente y de difícil diagnóstico. En el caso presentado, la lesión se encuentra perfectamente localizada en la zona media de la protuberancia, afectando a los núcleos motores oculares comunes. La rápida derivación del paciente y el establecimiento de tratamiento con penicilina posibilitaron la mejoría del cuadro.

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Introduction

The gaze centers coordinate the action of motor nuclei for cooperating muscles to carry out symmetrical movements. The horizontal gaze center is the paramedian pontine reticular formation (PPRF), located in the protuberance close to the nucleus of the CN VI nerve pair. For horizontal gaze to take place the PPRF must activate the nucleus of CN VI which is comprised 2 types of neurons: motor neurons that innervate the ipsilateral rectus and internuclear neurons, whose axons cross the contralateral medial longitudinal fasciculus (MLF) and synapse in the subnucleus of the median rectus.

In the event of MLF lesion, the connection of CN VI nucleus with the subnucleus of the contralateral median rectus does not take place. This produces and abduction deficit in the ipsilateral eye with normal gaze to that side because the opposite eye is able to adduct and the eye of the affected side exhibits normal abduction. It is frequent to observe disassociated nystagmus in horizontal sharp eye movements in abduction. This motor alteration is known as internuclear ophthalmoplegia (INO). It can be unilateral or bilateral and can be associated to vertical gaze palsy, vertical nystagmus and oblique deviation.

The possible causes of INO include multiple sclerosis, myasthenia gravis, traumatisms, tumors, Wernicke's encephalopathy, infections such as syphilis, cryptococcosis and tuberculosis, the Arnold–Chiari malformation, occlusive vascular disease as well as some pharmaceutical drugs (barbiturates, lithium, and narcotics).

The wall eyed bilateral internuclear ophthalmoplegia (webino) syndrome is a particular type of bilateral INO with exotropia. It is a rare entity described by Lubow in 1971, characterized by horizontal gaze alteration exhibiting difficulty for abduction, exotropia in primary gaze position, nystagmus in the abducting eye and convergence inability.

The pathogeny of this peculiar form of INO is far from clear. It is known that most cases are caused by high brainstem injuries. The most accepted explanation for the cause is an injury in the midbrain which bilaterally affects the MLF and both medium rectus subnuclei. Exotropia and convergence inability would be derived from the impairment of said subnuclei.

Other authors propose that the lesion is located at the pontine and doubt that the involvement of the rectus muscle subnuclei is an essential condition. Even though the majority of reported cases derive from mesencephalic injuries, some publications report that the syndrome is caused by isolated pontine injuries.

The webino syndrome etiology is similar to that of INO: vascular causes are more frequent, followed by multiple sclerosis and traumatism. A post-surgery webino syndrome has also been reported.

Clinical case

A diabetic, hypertense and obese male patient, aged 57, smoker and with moderate drinking habit, in treatment with metformin and enalapril, visited the emergency ophthalmology section referring double horizontal vision with dizziness and instability, stable from onset. General examination revealed ataxic gait and areflexia.

Ophthalmological exploration produced a corrected visual acuity (BCVA) of 0.7 in the right eye and difficult 0.8 in the left eye. Anterior pole exploration and funduscoppy with midriasis did not produce significant findings other than slight lens sclerosis. Intraocular pressure was within normal limits. Pupil reflexes were normal. Eye movement exploration revealed severe exotropia in primary gaze position, absence of adduction in both eyes, nystagmus abduction in both eyes and absence of convergence (Fig. 1). Simple and alternate cover test revealed alternating exotropia. Bielchowsky maneuver evidenced discrete skew. In levoversion, major vertical nystagmus (downbeat) was evidenced.

Due to suspected bilateral INO, imaging and lab tests were carried out. Cranial CAT casually revealed right occipital hypointenens lesion. Cranial NMR in T2 flair mode evidenced a shiny pointed lesion affecting the subnuclei of ocular motor nerves, with ischemic and subacute appearance (Fig. 2). The ischemic origin of the lesion was confirmed by the black color of the affected area in the ADC map (Fig. 2). Similarly, the NMR diffusion image showed involvement of the same area (Fig. 3).

A range of exhaustive tests was carried out with samples of blood, urine and cerebrospinal fluid (CSF). Serology revealed positive total antibodies for syphilis and RPR (1/64). Pn CSF, FTA (1/2) and VDRL (1/1) were positive. Additional findings were pleiocitosis and protein increase. Accordingly the condition was diagnosed as meningovascular syphilitic meningitis.

The patient was admitted for supervision, treatment and additional studies. Treatment was established with IV penicillin (24,000,000 daily units during 10 days), with partial remission of motor ocular alterations, predominantly in the left side. Three months after diagnosis, the condition subsisted partially with persistent left side INO. With one year of evolution, the patient exhibits slight and residual persistence of left side ophthalmoplegig.
Discussion

In what concerns the anatomical location of the webino syndrome, the most accepted hypothesis is that it is a bilateral lesion of the MLF and both subnuclei of the medial rectus. Some authors sustain that the involvement of the medial rectus is an essential condition for primary position exotropia because most patients with uni- or bilateral INO are in orthophoria in primary gaze position. The webino syndrome is more a pontine injury than an involvement of the midbrain. The literature includes reports of webino syndrome with involvement of different midbrain sections but not all involved the medial rectus nuclei. These cases agree with the thesis proposed by Komiyama et al. according to which the medial rectus subnuclei involvement cannot be assumed as the exclusive cause of exotropia. It is postulated that alternating exotropia could be due to bilateral paralytic pontine exotropia and that the hyperactivity of the PPRF contralateral to the damaged MLF is involved in secondary exotropia deviation when fixing the paretic eye in adduction. Finally, other authors point out that the lesion which accounts for convergence insufficiency could also be located at the cerebellar or internal capsule level.

In the case presented herein, the injury is perfectly located in the midbrain center and involves the common ocular motor subnuclei, which would explain the exotropia and convergence absence exhibited by the patient in primary position and would also support the theory that said subnuclei are involved in the webino syndrome.

Bilateral INO is an infrequent and difficult to diagnose syndrome. It is necessary to carry out exhaustive examinations and to suspect the entity in order to screen acute vascular lesions, tumors, demyelinizing diseases, infections or malformations in order of preference.

Even though syphilis is one of the possible etiologies for the webino syndrome, the authors have not found in recent
literature any described case of webino syndrome caused by vascular lesions secondary to syphilis.

To conclude, early pathology identification contributed to better prognosis in the case described. The establishment of treatment with penicillin facilitated condition improvement.

**Conflict of interest**

No conflict of interests has been declared by the authors.

**REFERENCES**