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CLINICAL REPORT

Abscess of cavum and ophthalmoplegia secondary to malignant external otitis

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KEYWORDS
Skull base osteomyelitis;
Malignant external otitis;
Retropharyngeal abscess;
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Abstract
We present a rare case of ophthalmoplegia, labyrinthitis, and abscess of cavum secondary to skull base osteomyelitis by malignant external otitis. Since symptoms persisted in spite of antibiotic therapy, surgical drainage using a transnasal endoscopic approach was performed.

PALABRAS CLAVE
Osteomielitis de base de cráneo;
Otitis externa maligna;
Absceso retrofaríngeo;
Oftalmoplejía

Absceso de cavum y oftalmoplejía secundarios a otitis externa maligna

Resumen
Presentamos un caso excepcional de oftalmoplejía, laberintitis y absceso de cavum secundario a osteomielitis de base de cráneo por una otitis externa maligna. Ante la persistencia de los síntomas a pesar de la terapia antibiótica, se practicó un drenaje quirúrgico mediante un abordaje endoscópico transnasal.

Introduction

Malignant otitis externa is an infection of the external auditory canal that can spread to the temporal bone and adjacent tissues. It is rare, usually with aetiology of Pseudomonas and generally affects diabetic elderly people.

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Surgical treatment is not recommended, and prolonged high dose antibiotic therapy is the treatment of choice.

Clinical report

Diabetic patient, poorly controlled, of 76 years who came to the emergency service with otorrhea and right parotid tumour, firm and non painful on palpation, of 2 months of evolution. The otoscopy showed a soft tissue with swollen aspect in the anterior-superior area of the right external auditory canal (EAC). An adenopathy was palpable in the right carotid-jugular. We carried out a biopsy of the EAC which showed a benign inflammatory lesion, and the blood test showed only a mild leukocytosis with left deviation. We began treatment with oral ciprofloxacin.

A few days later, the tumour had remitted almost completely. In the computed tomography (CT) of the mastoid, a material with the density of soft tissue was observed occupying the EAC, the chamber of the ear, the antrum, the attic and the mastoid air cells as well as an erosion of the anterior wall of the right EAC and the bony canal of the petrous carotid. The CT showed a thickening of the right tubal torus enhanced by contrast, which led to radiological suspicion of carcinoma of the cavum. We conducted a rhinofibroscopy which was normal.

After 15 days the patient began to suffer intense rotational vertigo, diplopia and moderate alteration of level of consciousness. Upon examination, a right sided oculomotor palsy was observed (Figure 1), together with hypoesthesia of the second and the third branch of V cranial nerve pair, right horizontal nystagmus of grade III and a bulging of the posterior wall of the cavum, so we admitted him immediately and proceeded to treat him with intravenous antibiotics (ceftriaxone and gentamicin), antiinflammatory drugs, and vestibular sedatives.

The CT scan showed an inflammatory process with a partial abscess affecting the skull base, the posterior cranial fossa and dorsum of the sella, which also reached the cavum, the carotid and masticator spaces and right temporomandibular joint (Figure 2). Magnetic resonance imaging (MRI) of the brain ruled out an intracranial condition.

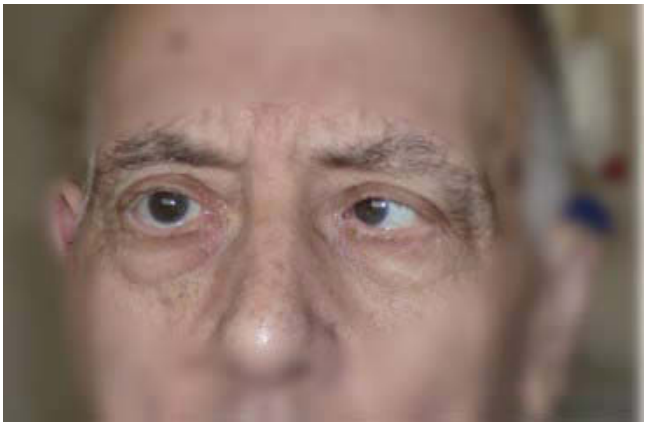

Figure 1 Paralysis of the right ocular motor muscle by neuritis of the VI cranial nerve pair, evidenced when sight is directed toward the side of the lesion.

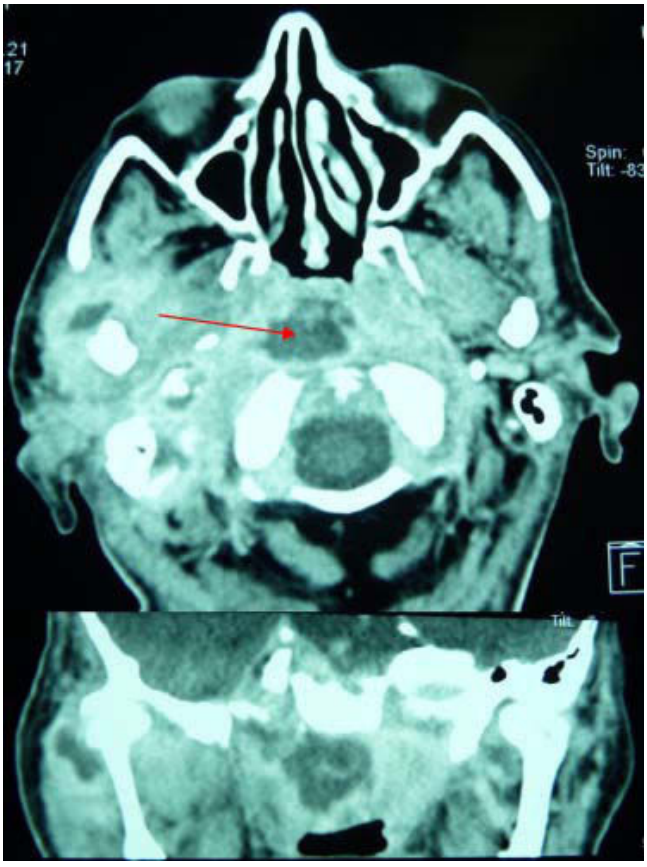

Figure 2 Partially abscessed inflammatory process affecting the skull base, extending to the posterior fossa and reaching the back of the sella.

Because of the limited improvement of the patient after several days with medical treatment, it was decided to perform a draining of the abscess through the cavum by nasal endoscopic surgery. Purulent material was obtained which was cultured and resulted positive for *Staphylococcus epidermidis*, leading to a modification of the treatment (carbapenem and metronidazole). The subsequent evolution was favourable and the patient was discharged 22 days after surgery; paresis of the sixth cranial nerve pair persisted.

Currently, ocular motion has returned, although the right ear presents a severe sensorineural hearing loss and some degree of instability persists.

Discussion

Osteomyelitis of the skull base may be the result of otitis media or a malignant external otitis (MEO), which reaches the petrous region by various means. It can lead to severe complications such as meningitis, intracranial abscess, labyrinthitis, retropharyngeal, parapharyngeal or prevertebral abscess, paralysis of cranial nerve pairs, venous sinus thrombosis and death.[1] Sometimes the infection spreads through the fissure of Santorini into the infratemporal fossa, temporomandibular joint and parotid gland. This explains the parotid tumour of our patient.

It can involve cranial nerves; the VII nerve pair is the most commonly affected due to its proximity to the stylomastoid foramen, followed by lower cranial nerves (IX, X, and XI).[2] The affectation of the V and VI in patients with MEO is rare, and exceptional in cases with neuropathy of both without facial paralysis.[3] Rubin et al[4] confirmed the high frequency of VI cranial nerve dysfunction in 24%34%and other cranial neuropathies in 14%35%. VI nerve palsy is presented under the aspect of internal strabismus accompanied by diplopia. Cases of petrositis have been reported which were expressed only by the appearance of this paralysis.[5] The resolution time is very variable. Burston et al[6] describe cases of VI nerve palsy secondary to petrositis with complete recovery between 4 days and 6 weeks. Our patient recovered eye mobility one and a half months after surgical treatment. The affection of cranial nerves has traditionally been considered as an indicator of worse prognosis[7]; however in a recent study by Mani et al[8] no differences in survival were found.

Many authors (Cohen and Friedman, Meltzer and Keleman, Chandler, Sreepada and Kwartler) have considered severe otalgy as a constant symptom and even as required diagnostic criteria in MEO. Our patient did not report pain at any time and, despite the rarity of its absence, there are reported cases of MEO with prolonged painless otorrhea as a single symptom[9] or followed by paralysis of multiple cranial nerve pairs.[10]

Pseudomonas aeruginosa has been cultured in 98% of cases,[2] although other organisms such as *S aureus*, *Proteus mirabilis*, *S epidermidis,* and even fungi have also been isolated; nevertheless it is difficult to know which of them is really the causative agent. *S epidermidis* is a multidrug-resistant nosocomial pathogen which is opportunistic in immunocompromised patients, and which is associated with postoperative wound infections. As for its role in MEO, we only found 2 cases where it was recognized as a direct pathogen.[11,12] Treatment can be difficult due to its resistance to penicillins and cephalosporins.

As for treatment, extensive surgical debridement is not considered as the choice and has been displaced by prolonged antimicrobial treatment (4 to 8 weeks) at high doses; ciprofloxacin is the most used. It can be supplemented with limited surgical actions, especially in case of bone involvement or other situations that may cause persistent infection.[2,6,13,14] In the literature we found only one case of nasal endoscopic drainage of a retropharyngeal abscess associated with skull base osteomyelitis secondary to MEO, with satisfactory evolution.[15] We believe that nasal endoscopic surgery is a safe and effective treatment in certain abscesses localized in the cranial portion of the retropharyngeal space, as it accounts for reduced morbidity, hospitalization time and risk in debilitated patients, compared with open surgery.

There is controversy regarding the duration and discontinuation of treatment. Our patient continued with oral antibiotic treatment for 2 weeks after being discharged. For us discontinuation of treatment was based on the disappearance of all inflammatory phenomena with normalization of EAC, resolution of oculomotor paresis and unaltered control MRI. Recurrences may occur up to 1 year after completion of therapy; therefore, the patient cannot be considered free of disease until then.

Conflict of interests

The authors have indicated there is no conflict of interests.

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