

Cerebellopontine Meningioma Revealed By Intratumoral Microhemorrhage Following Whiplash Injury

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Citation

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Abstract

We present the case of a 42-year-old woman who developed nystagmus and dizziness after a whiplash injury. Cerebral Magnetic Resonance Imaging showed in the right cerebellopontine angle a meningioma which was asymptomatic before the trauma. The patient underwent surgical excision of the mass through an extended trans-apical translabyrinthine approach. The specimen revealed areas of microhemorrhage dispersed throughout the tumour. Since the signs and symptoms developed shortly after the accident and the patient was completely asymptomatic just before, it is likely that the whiplash injury participated in the microhemorrhagic event due to the acceleration-deceleration mechanism.

INTRODUCTION

This work presents a case of intracranial meningioma which was revealed by a possible intratumoral bleeding secondary to neck injury. After a minor head trauma a massive hemorrhage in a brain neoplasm is not particularly rare, representing approximately 8% of all intracerebral or subarachnoid bleeding^{1,2}. These complications occur most commonly in malignant gliomas and metastatic tumour. Subarachnoid hemorrhage, acute subdural haematoma, intratumoral and intraparenchymal haematomas are the most common forms of bleeding associated with meningioma. In 1960 Askenasy and Behmoaram reported 80 cases of meningioma with massive hemorrhage³, and in 1983 Shimabukuro described a trigeminal neurinoma revealed by intratumoral hemorrhage following a minor head injury⁴, but none of these were secondary to whiplash injury.

CASE REPORT

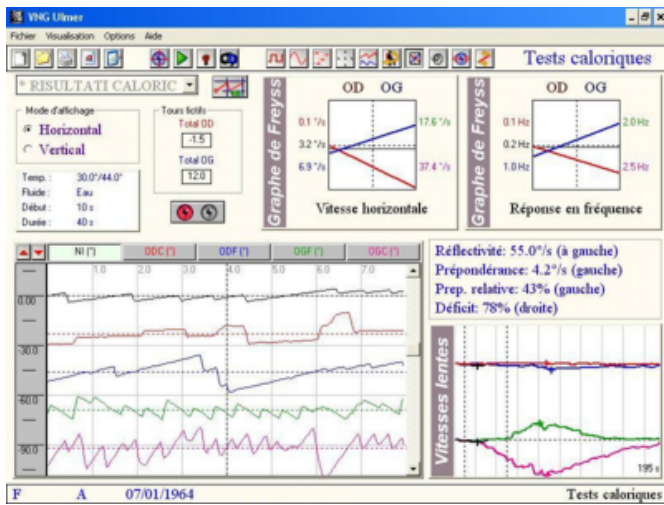
A 42-year-old woman presented to our ENT office with a 3-month history of dizziness increasing during head movements and of right continuous tinnitus appeared shortly after a whiplash injury. Moreover she reported occipital headache, cervical pain and blurred sight. She was otherwise healthy.

Otoneurologic examination revealed a persistent, constant velocity (3.5°/sec), horizontal left nystagmus, both spontaneous and positional, inhibited by fixation, and the positivity of Head Shaking Test (HST) by increasing of the

spontaneous nystagmus. A pure-tone audiogram showed a neurosensorial bilateral hearing loss on high tones, slight on the left side and middle on the right one. Auditory brainstem response (ABR) was not achieved on the right ear and it was obtained on the one left with normal waves I, III, V latency and normal interwave intervals (I-III, III-V, I-V). A videonystagmographic assessment with caloric (bithermic test according to Fitzgerald-Hallpike) and rotatory (burst and sweep protocols) tests was performed (System Ulmer, Synapsys, Marseille, France). It demonstrated a severe right vestibular deficit (78%) with a pathological left horizontal directional preponderance (4.2°/sec) both on caloric and rotatory tests (fig.1).

Figure 1

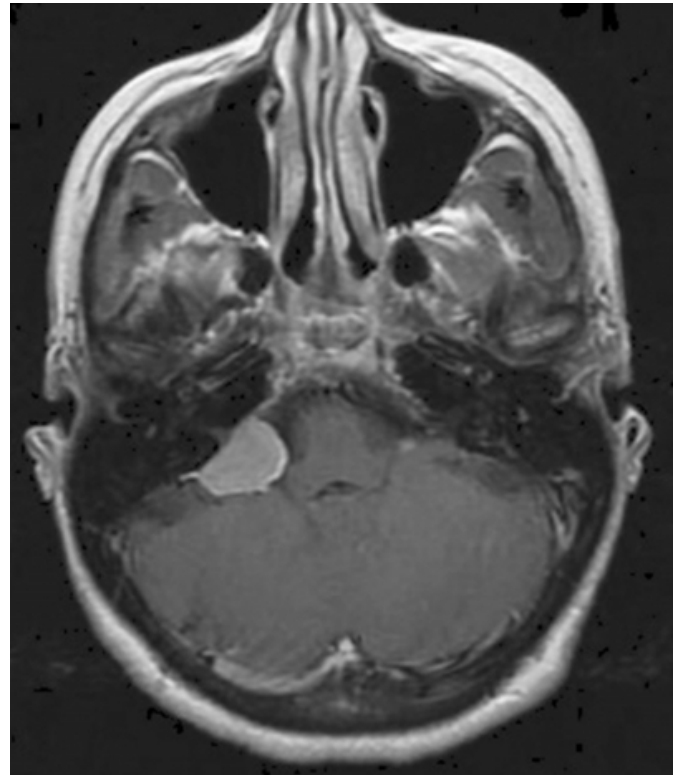
Figure 1: Videonystagmographic assessment revealed a severe right vestibular deficit (78%) with a pathological left horizontal directional preponderance (4.2°/sec) on caloric test (System Ulmer, Synapsys, Marseille, France).



Magnetic Resonance Imaging (MRI) showed in the right cerebellopontine angle a well defined, homogeneous, isointense mass on T1 and T2-weighted spin-echo images without a signal loss on the fat-suppressed image. It measured about 2.1 cm in size, presented the well sharp edges and not compressed but slightly displaced the homolateral peduncle cerebellar (fig.2).

Figure 2

Figure 2: Magnetic Resonance Imaging (MRI) showed in the right cerebellopontine angle a well defined, homogeneous, isointense mass on T1 and T2-weighted spin-echo images without a signal loss on the fat-suppressed image.



The patient underwent surgical excision of the mass through an extended trans-apical translabyrinthine approach. The diagnosis of meningotheiomatous meningioma with hemosiderin sediments was made on the basis of histological study. The specimen showed areas of microhemorrhage dispersed throughout the tumour with the sharp lines of demarcation from the tumoural tissue. The postoperative course was uneventful except for a transitory vagus palsy that rapidly improved. The patient was discharged 8 days after surgery. She presented a right severe neurosensory hearing loss and a right facial palsy. The patient has been on regular follow-up for the last 6 months. One year after surgery, MRI showed no evidence of a recurrence. The study was approved by the institutional review board.

DISCUSSION

As far as we know, it is the first case of intracranial meningioma revealed by an intratumoral microhemorrhage secondary to whiplash injury.

The mechanism of bleeding into a neoplasm has been discussed by many Authors, but the pathogenesis of the rupture of vessels in benign tumours is not well understood.

Goetting suggested that an abrupt increase in arterio-venous pressure leads to a transient gradient between the vascular and extravascular intracranial compartments which can determinate the rupture of fragile tumor vessels with hemorrhage or multiple microhemorrhage 5.

In our case, since the signs and symptoms developed shortly after the accident and the patient was completely asymptomatic just before, it is likely that the whiplash injury participated in the microhemorrhagic event due to the acceleration-deceleration mechanism and that a certain contusion was produced in this meningioma by the rigid neighboring structure of the tentorial incisura. This etiopathogenetic hypothesis is confirmed by the presence of hemosiderin-laden macrophages in the histopathological study of the specimen. So the tumor, asymptomatic before the accident owing to its slow growth, became clinically evident because of changes of its volume in the posterior cerebral fossa. In a short time dizziness and tinnitus appeared and patient was very symptomatic.

Any patient whose history presents a whiplash injury could be undergone to an accurate cocleovestibular assessment by auditory brainstem response and videonystagmographic tests. Peripheral vestibular deficit on caloric tests and loss of

I-III-V waves on auditory brainstem response are both uncommon after a whiplash injury. So a cerebral Magnetic Resonance is an imperative in the diagnostic procedure when pathological findings are brought out, independently to the possible existence of an etiopathogenetic association between a mild skull trauma and the clinical evidence of an intracranial tumor.

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