LACERATION OF THE POSTERIOR INFERIOR CEREBELLAR ARTERY BY SUBOCCIPITAL PUNCTURE OF THE CISTERNA MAGNA

Case report

Luiz Antonio Pezzi Portela¹, Valéria Souza¹, Félix Hendrick Pahl², Alberto Cappel Cardoso², Eduardo de Arnaldo Silva Vellutini², Eduardo Genaro Mutarelli², Luis dos Ramos Machado³, José Antonio Livramento³

ABSTRACT - We report the case of a 27 year old man who presented to the emergency room of a hospital with headache, vomiting and an episode of loss of consciousness. A cranial CT scan was normal and the patient discharged. Ten hours later he came to the emergency room of our hospital with the same complaints. A technically difficult cisternal puncture in an anxious patient who moved during the needle introduction was done. The CSF sample showed 1600 intact red blood cells without other alterations. His headache worsened and after 6 hours he became drowsy, numb and exhibited decerebration signs. A new CT scan showed diffuse subarachnoid and intraventricular blood. An emergency angiogram demonstrated laceration of a left posterior-inferior cerebellar artery in its retrobulbar loop with a pseudoaneurysm. He was succesfully treated by surgical clipping without injury. Sixteen days later he was discharged with a normal neurological exam.

KEY WORDS: CSF, suboccipital puncture, angiogram, posterior inferior cerebellar artery, pseudoaneurysm, laceration.

Suboccipital puncture for cerebrospinal fluid (CSF) collection is known to present increased risk for vascular injury when compared with lumbar puncture. However, since easier to perform by experienced hands and without risk of post-puncture headache, it is still favoured by many.

We report the laceration of a posterior-inferior cerebellar artery by suboccipital puncture, successfully treated by surgical clipping, without permanent injury.

CASE

A 27 years old man presented to the emergency room complaining of headache, vomiting and an episode...
of loss of consciousness 10 hours before. At that time he was seen in another hospital, where he had a cranial CT scan that he was told was normal and was discharged. Ten hours later he came to the emergency room of our hospital (Hospital Alemão Oswaldo Cruz) with the same complaints. A technically difficult cisternal puncture in an anxious patient who moved during the needle introduction was done. The CSF sample showed 1600 intact red blood cells without other alterations, judged to be due to a traumatic tap. His headache worsened and after 6 hours he became drowsy, numb and exhibited decerebration signs. A new CT scan showed diffuse subarachnoid and intraventricular blood. An emergency angiogram demonstrated a laceration of the left posterior-inferior cerebellar artery in its retrobulbar loop, with contrast extravasation towards the cisterna magna, apparently contained in the subdural compartment of the falx cerebelli, pseudoaneurysm (Fig 1). He was submitted to a suboccipital craniotomy and, after evacuation of subdural and subarachnoid clots, a clip was applied at the base of a pseudoaneurysm, preserving the arterial flow. Postoperatively he followed the uncomplicated course of a subarachnoid hemorrhage and was discharged sixteen days later with a normal neurological exam. Figure 2 shows the follow-up angiogram 7 months later.

**DISCUSSION**

Suboccipital puncture of the cisterna magna was introduced as a method to collect cerebrospinal fluid in 1920 by Ayer1. Because it was effective in most patients, well tolerated and without post-puncture complaints it became popular until complications began to be reported2. A paper by Burzaco and Schissano3 in 1964 summarized the events until that date, and is the last reference published on this subject that could be found on a Medline search. Eight cases of vascular injury were added to those previously reported, with five deaths despite immediate surgery. Since that time lumbar puncture became the accepted method to collect CSF4,5, despite the fact that it is difficult to perform in the aged or in those with abnormal spinal curvatures, and that headache is a common complication. Following international recommendations, the Brazilian Academy of Neurology issued a normative directive on the collection of CSF by lumbar route, insisting on
the necessity of informed consent. The present case illustrates once again the dangers of suboccipital puncture even in experienced hands. It has been demonstrated that the dura-mater buckles inwards with the advancing needle before being penetrated, and once this occurs the needle tip will be exposed far inside the subarachnoid space. At this point, independently of a normal or anomalous course, a large artery, vein or even the medulla may be entered and serious injury occur. As observed in the past, even immediate surgery may not prevent death. Our patient had prompt surgical care, but most likely survived because the bleeding was directed primarily to a subdural compartment in the falx cerebelli, which contained its flow and dampened the increased intracranial pressure.

REFERENCES