Interesting image

Lack of cerebrospinal fluid circulation due to post puncture epidural hemorrhage: An interesting case of radionuclide cisternography

Falta de circulación de líquido cefalorraquídeo secundaria a hemorragia epidural postpunción: un caso interesante de cisternografía isotópica

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A twenty-five year-old male with Marfan syndrome was admitted to emergency department with orthostatic headache, dizziness, light and voice sensitivity, nausea and vomiting. Magnetic resonance imaging (MRI) of the brain was normal. The patient had an aortic dissection operation two months ago and was taking coumadin and aspirin as anticoagulants. The INR (international normalized ratio) level was 1.3 (reference range: 0.85–1.2). He underwent lumbar puncture (LP) due to suspicion of cerebrospinal fluid (CSF) leakage and the opening pressure was 1 mm H2O. Biochemical parameters and microbiological examination results of the CSF were unremarkable.

Radionuclide cisternography (RNC) was performed to investigate whether CSF leakage may cause intracranial hypotension. RNC showed that the tracer is accumulated in the lumbar region irregularly and do not move to thoracic region and cerebral convexities (Fig. 1).

MRI was performed to reveal of these unusual findings of RNC. MRI showed a large epidural hematoma in the dorsal aspect of L2–L4 and a complete spontaneous resolution of the hematoma was seen on follow-up MRI after two months (Fig. 2).

CSF leakage occurs spontaneously or after secondary events such as lumbar puncture, spinal surgery, traumatic lumbar meningecele, and spinal meningeal diverticula which is frequently seen in Marfan’s syndrome. 1 CSF leakage is typically presented with orthostatic headaches. Nausea, vomiting, diplopia, light sensitivity, back pain, dizziness and neck stiffness are other associated symptoms. The disease is often self-limiting and most cases heal spontaneously. RNC has been used extensively in the evaluation of CSF leakage. It can be used to determine localization of CSF

Fig. 1. Radionuclide cisternography was performed by using 111 MBq (3 mCi) 99m Tc DTPA intrathecally injection into the lumbar subarachnoid space. A low-energy high-resolution collimator was used. RNC showed that the tracer is accumulated in the lumbar region irregularly at 1 (A) and 4 h (B) (arrows) after injection. The kidneys and bladder activity indicates that abnormal rapid uptake of the radionuclide into the bloodstream at early and late images.

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leakage, to guide the level of the injection of autologous blood patch and to evaluate the effects of the treatment.\textsuperscript{2,3} Comparing to the other imaging modalities such as MRI and CT, RNC must be preferred as a first choice due to its advantage of visualizing the whole spinal cord. However, this method may cause such complications in the patients under anticoagulant therapy.

**References**


**Fig. 2.** MRI showed epidural hematoma in the dorsal aspect of L2–L4, indicated by heterogeneous hypointensity on sagittal T2-weighted images and iso-hyperintensity relative to spinal cord on sagittal T1-weighted images (A and B). No abnormal signal intensity change of the spinal cord. Spontaneously complete resolution of the hematoma was seen on follow-up MRI (C and D).