We describe a patient readmitted after developing a persistent postural headache resulting from an accidental lumbar puncture during labor 10 days earlier. Magnetic resonance imaging demonstrated bifrontal subdural hygromas and diffuse pachymeningeal enhancement. The patient had signs of a puerperal infection, and an epidural patch was performed with dextran 40 instead of blood, after which gradual improvement was noted. The patient was discharged totally asymptomatic 3 days later.


On the second day after the lumbar puncture the patient developed a positional headache. She was treated with bedrest, fluids, and orally administered analgesia of 2 g of paracetamol and 30 mg of codeine (Cod-efferalgan®, Upsamedica S.A. Madrid, Spain) every 6 h, 300 mg/day of caffeine (formulate by pharmacy department of the hospital Dr. Josep Trueta, Girona, Spain), and IV 16 mg/day of dexamethasone (Fortecortin®, Merck Pharma, Madrid, Spain). After 5 days she was discharged from the hospital but without total resolution of her symptoms.

Ten days after the lumbar puncture the patient was readmitted for persistent severe fronto-occipital headache, tinnitus, unstable gait, and fever. She had no history of trauma or alcohol abuse. Neurological examination, performed by a neurologist, was normal. The gynecological examination showed leukorrhea suggesting puerperal infection. Cells blood count was notable for leukocytosis (12.2 K/mcL); however, no other signs of infection were detected. Cranial computed tomography (CCT) showed bifrontal subdural hygromas (Fig. 1). An epidural patch at the L3-4 level with 20 mL of dextran 40 (B Braun Medical®, Rubí, Barcelona, Spain) was performed the next day, after which there was gradual improvement until complete disappearance of the symptoms at approximately 10 h. Two days after readmission she complained of brief episodes of moderate paresthesias on her right side, particularly in the leg, and the neurological examination was again normal. Magnetic resonance imaging (MRI) showed frontal fluid collection corresponding to bifrontal hygromas and, after administration of IV contrast (gadolinium), diffuse pachymeningeal enhancement. The patient was discharged from the hospital totally asymptomatic 3 days after readmission. A follow-up MRI 2 weeks later showed the size of the bifrontal hygromas had been reduced by 50%.

Case Report

A healthy, 28-yr-old nulliparous woman presented in active labor requesting epidural analgesia for pain relief. The epidural space was identified with the loss of resistance to air technique at the L3-4 level with the patient in a sitting position using an 18-gauge Tuohy epidural needle. An 18-gauge epidural catheter was inserted; however, free-flowing CSF was observed. The subarachnoid catheter was subsequently withdrawn and the epidural procedure was successfully repeated at the L2-3 level. A test dose of 2.5 mL lidocaine 2% was then administered resulting in a motor block (Bromage 2) of the lower extremity and a sensory block to T10. Based on this response to the test dose, a subarachnoid placement of the second catheter was suspected. Although the catheter was left in place, no further drugs were required. The labor proceeded without incident, and approximately 90 min after initiation of the epidural the patient underwent a spontaneous vaginal delivery, after which the epidural catheter was withdrawn.

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includes a spontaneous, traumatic, and lumbar puncture mechanism (3). The signs and symptoms vary depending on the brain and nerve structures that are affected during the change from the supine to an upright position (4). In our patient, a positional headache and tinnitus were observed. Of the various MRI-detected abnormalities (5,6) after CSF leaks, we observed diffuse pachymeningeal gadolinium enhancement and subdural hygromas (probably formed by a passive effusion of CSF).

The optimal treatment strategy of CSF leakage has not been defined. Where conservative measures are ineffective, an epidural patch with blood is a recognized treatment. For cases in which a blood patch cannot be placed, dextran may serve as an alternative (6). In addition, surgical repair of the leak has been performed in cases of epidural patch failure in which the precise site of the CSF leak has been identified (7).

The patient complained of persistent postdural puncture headache (PDPH) after epidural analgesia, and a CCT was performed to elucidate the pathogenesis. The unintentional dural puncture during labor epidural placement was most likely responsible for the continuous leakage of CSF through the dural hole and the subsequent development of subdural hygroma (8). A second possible unintentional dural puncture on reinsertion of an epidural catheter may also have contributed to CSF loss in this patient. Denehy and Rosaeg (9) recommend leaving the catheter in the intrathecal space to avoid the risk of complication in resiting the epidural.

Autologous epidural blood patch is considered to be the most effective treatment for PDPH (10). However, as there was a possibility that this patient had a coexisting puerperal infection and hence possible bacteremia, the fear of the formation of an epidural abscess led us to use 20 mL dextran 40 as an alternative to autologous blood (6,11). It has been suggested that the injection of colloid increases epidural pressure and relief of the headache occurs either immediately or in the next few hours (12). The viscosity and high molecular weight of dextran 40 delay its reabsorption from the epidural space and lead to a greater and longer-lasting compression, enabling closure of the dural tap1 (6). Dextran 40 may produce transient dysesthesia at the injection site, a burning sensation at the time of injection, or an allergic reaction (6). In addition, although concerns about possible neurotoxicity of dextran have been raised, we did not observe any complication in our patient.

In conclusion, the existence of subdural hygroma should be considered in the differential diagnosis of a persistent PDPH. Although the diagnosis is difficult on a clinical basis alone, with MRI it is possible to ascertain the degree of cerebral and spinal involvement, predict the evolution of the clinical picture, and visualize the effect of different approaches to reducing CSF leakage. The present case is unique in that a severe PDPH with subdural hygromas was successfully treated with an epidural patch of dextran 40 as a result of the presence of maternal infection.

References
