Subarachnoid hematoma following lumbar puncture causing compression of the cauda equina

Case report

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A case of conus and cauda equina compression caused by a subarachnoid hematoma is reported which was probably due to needle trauma during an attempted lumbar puncture.

KEY WORDS • lumbar puncture • cauda equina • subarachnoid hemorrhage • subarachnoid hematoma

HEMATOMAS in the spinal canal can occur in the epidural, subdural, subarachnoid spaces and within the spinal cord. Bleeding in the spinal subarachnoid space usually produces a clinical syndrome characterized by the sudden onset of intense back pain followed by neck stiffness and headaches. On rare occasions a clot may form in the subarachnoid space and, if sufficiently large, may compress the spinal cord or cauda equina producing progressive neurological deficits. We are reporting such a case.

Case Report

A 64-year-old man fell and sustained an intertrochanteric fracture of the right femur. He was admitted to a local hospital where a Jewett nailing was done 6 days later. For the surgical procedure, a spinal anesthesia was attempted but because of failure to obtain spinal fluid at L1-2 and L2-3, no anesthetic agent was injected. Operation was completed under general endotracheal anesthesia uneventfully. About 12 hours postoperatively, the patient complained of numbness and paralysis in the legs. He developed retention of urine. He was transferred to the Kansas City Veterans Administration Hospital for neurosurgical evaluation.

Examination. The patient was alert and oriented. Cranial nerves and motor strength in the arms were normal. He had total flaccid paralysis of the legs except in the hip flexors and the hamstrings, which showed 60% weakness. There was loss of sensation in all modalities in the L-4 through S-5 dermatomes with patchy areas of sparing in the S3-5 dermatomes. The rectal sphincter was patulous. The cremasteric, knee, and ankle reflexes were absent. There was no plantar response. Lumbar spine films revealed moderate degenerative changes with osteophytic lipping in the lower thoracic and
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were removed by irrigation and suction. At the end of the procedure, the conus and cauda were free of clot. The dura was not closed; a Penrose drain was left under the fascia for 24 hours.

Postoperative Course. Over a period of 4 weeks the patient gradually regained sensation in all modalities except for patchy areas of loss in the S-1 and S-5 dermatomes on the right. There was a 60% return of strength in the legs except for a persistent right foot drop. There was partial return of sphincter function to the point where the patient could be managed with an external catheter. When neurological recovery had reached this plateau, there was no additional improvement over the next 4 months in spite of continued physiotherapy. He was transferred to a long-term care facility 5 months after decompressive laminectomy.

Discussion

Every physician has had the experience of doing a "traumatic tap," obtaining dark venous blood or blood-stained fluid which later clears. This is most often due to puncture of the dorsal or ventral epidural venous plexus or occasionally to injury of the vessels along the cauda equina, and is usually without consequence. Blood in the subarachnoid space usually does not clot, probably because of the great dilution by spinal fluid; defibrination of blood from the pulsatile motion derived from the brain and the spinal cord may be an additional factor. However, if the bleeding is massive or rapid, clotting does indeed occur as is sometimes seen in the basal cisterns following rupture of aneurysms of the circle of Willis.

The occurrence of lumbodorsal subarachnoid hematoma secondary to lumbar puncture and of sufficient magnitude to cause compression of the cauda equina is extremely rare. Only five such cases have been reported; in three of these the diagnosis was confirmed at surgery, and in one, at autopsy. In the fifth case the diagnosis was made on clinical impression although the spinal fluid was not blood-stained.

Rapid progression of neurological deficits in the legs following lumbar puncture yielding bloody spinal fluid should arouse suspicion of subarachnoid hematoma, particularly in patients who are on anticoagulant therapy.
References


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