



TRANSIENT PARAPLEGIA AFTER EPIDURAL CATHETERIZATION: ANAESTHESIOLOGISTS' NIGHTMARE

Anaesthesiology

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ABSTRACT

Epidural analgesia is highly recommended in patients undergoing various abdominal surgeries. However, like any other procedure it may be associated with grave complications. While there are several reports of paraplegia after epidural catheterization due spinal cord injury, epidural hematoma and air bubble compressing the cord, however in our patient accidental injection of the isobaric lidocaine into the subarachnoid space was the cause of the transient paraplegia. Ultrasound guided epidural depth assessment and catheter placement must be encouraged to decrease the incidences of such complications-.

KEYWORDS

epidural, complication, ultrasound

INTRODUCTION

Epidural analgesia in patients undergoing major abdominal surgeries has its share of benefits like superior analgesia, early mobilization, extubation, return of bowel function, obtunded stress response and less pulmonary complications.¹ However, epidural catheterization can occasionally lead to severe neurological complications, including epidural hematoma (EH), spinal cord injury, infection, cauda equina syndrome or paraplegia.² We report a case where the patient experienced sudden onset transient paraplegia after lumbar epidural catheterization. We have taken written consent from the patient for reporting this complication.

24 years, 47 kg, ASA I female, diagnosed case of mucinous cystadenoma was scheduled for ovarian laparotomy under general anaesthesia with epidural analgesia. During preoperative assessment she was counselled for epidural analgesia. All her laboratory investigations were normal. Platelet count was 1.2 lakhs/cu mm and INR was 1.2. In the operation theatre all routine monitors were attached and wide bore intravenous access was secured. Under all aseptic precautions, in sitting position, 2% lidocaine 3ml was infiltrated into the skin, subcutaneous tissue and ligaments with 27G dispovan needle in L1-2 interspace. Atraumatic localization of epidural space by LOR technique was done using epidural minipack 18 G {Smiths medical, Czech Republic} at a depth of 2.8cm and catheter threaded in 4cm. While positioning supine she complained of inability to lift up her legs. Physical examination revealed decreased sensation below T₁₀ dermatome, bilateral lower extremity motor weakness (power 1/5) and absent plantar reflexes. There was no respiratory or consciousness impairment. A decision was made to investigate the cause of sudden onset paraplegia and surgery was deferred after consultation with neurosurgeon and the concerned surgical unit. The catheter was removed. MRI spine revealed no evidence of EH or spinal cord injury but a few specks of air bubbles in epidural space.

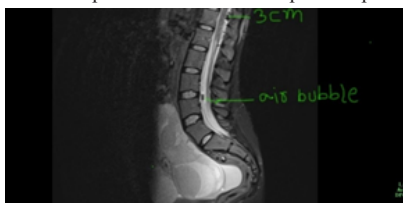


FIG1 MRI spine showing air bubbles

The sensory motor deficit showed rapid recovery from one-hour post procedure onwards till a complete recovery at 2 hours. In view of the duration and spontaneous recovery of paraplegia with a normal MRI, a diagnosis of accidental subarachnoid injection of local anaesthetic at the time of subcutaneous infiltration was made. The patient was operated the next day. She was ambulated and discharged from ICU the day after.

DISCUSSION

The incidence of permanent neurological complications following

epidural catheterization is low, with an incidence < 0.02%.² The list of the causative factors of acute onset flaccid paraplegia is exhaustive, including non-compressive (infective) and compressive. With a diagnosis of installed acute paraplegia, whatever the underlying cause, the prognosis will be reserved, if not in Faust. The possible differential diagnosis in our patient could be -Epidural or subdural spinal hematoma, Vascular malformation, spinal cord ischemia secondary to vascular insufficiency caused by thrombus, embolus, spasm of medullary arteries, direct spinal cord trauma, Psychogenic paraplegic symptoms and Inadvertent intrathecal injection of drug.

Acute injury caused by the Tuohy needle is usually heralded by symptoms of sharp radiating pain or paresthesia of the involved dermatomes. In the absence of the above symptoms and an atraumatic procedure, spinal hematoma and cord injury were ruled out after neurosurgical consult. The next step was to get an MRI done for helping in reaching a conclusive diagnosis.³ MRI study of our patient revealed no significant abnormalities such as cord or nerve oedema, hematoma formation or vascular malformation. Few small air bubbles in the epidural space were the only positive finding. Skin-to-dura distance in median approach was found to be 3 cm.

There are reports of neurologic deficit due to nerve root or spinal cord compression by the air used for LOR during the epidural procedure, but in all these cases, onset of paraplegia was over a period of hours and complete recovery occurred only after 48- 72 hours.⁴ One case reported by Yun Jeong Chae et.al required cervical spinal cord decompression. In our patient although air was detected in the epidural space, but it was not causing compression of the thecal sac. It is possible that this was incidental and not the cause of the clinical picture. Among the reported adverse symptoms resulting from an epidural block using air for LOR, only 2 ml of air for LOR can produce inadequate analgesia or bilateral limited leg mobility with pain at the lumbar epidural injection site.⁵ Although there is still no consensus on whether air or saline would be superior for LOR, it is generally accepted that a small amount of air can be used for the procedure

Successful epidural placement requires good patient counselling and adequate local anaesthesia. We used a 27G hypodermic needle to infiltrate in the skin, subcutaneous tissue, and the ligaments. The length of the 27-gauge needle was 3.8 cm which was longer than the measured skin-to-dura distance. Although the needle was not inserted completely, and the local anaesthetic (2% lidocaine) was administered only after negative aspiration for blood and CSF, but some amount of the drug did find its way into the subarachnoid space causing a symmetrical sensory-motor-sympathetic blockade below T₁₀. The neurological findings, single episode of hypotension in the beginning just after the catheter insertion and the complete recovery of the patient without any residual neurological deficit within 2 hours was suggestive of inadvertent subarachnoid blockade.

Preoperative estimation of the distance from skin to the epidural space⁶ may increase the success rate and decrease the incidence of complications during placement of an epidural catheter both in obese,

very thin patients and those with spine deformity. Magnetic resonance imaging (MRI) and Ultrasound have been used for measuring the distance between skin and ligamentum flavum in nonobese (BMI <25) and morbidly obese patients (BMI >30).

Thus, we recommend a preoperative MRI or ultrasound guided epidural depth measurement especially in thin patients, parturient and patients with large abdominal mass or ascites. Moreover, the use of long needles for local infiltration must be avoided in thin patients as the fine bore of the needle may not result in aspiration of CSF even if the dura is breached. Finally, when the diagnosis is inconclusive, a psychiatric consultancy might reveal interestingly the eventuality, albeit remote, of a malingering.

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