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Case report: Cauda equina syndrome following a single shot spinal administration of 0.5% hyperbaric bupivacaine through a 26-gauge Quincke's needle

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Abstract

Cauda equina syndrome is dreaded complication of spinal anesthesia. Although rare, most of the time it is caused by spinal hematoma. Terminal myelitis and radiculitis due to intrathecal bupivacaine can also lead to cauda equina syndrome following spinal anesthesia.

Keywords: *cauda equina syndrome, spinal anesthesia, bupivacaine*

Introduction

Spinal anesthesia is claimed to be the safe and gaining popularity in lower abdominal surgeries and orthopedic surgeries since ages.1 In spite of the high degree of patient satisfaction following spinal anesthesia it's not free from complications. Apart from the hemodynamic complications like hypotension, bradycardia, cardiac arrest; urinary retention and neurological complications are also reported in literatures which includes transient neurological symptoms, postdural puncture headache, and even cauda equina syndrome. 2 We describe a case of cauda equina syndrome secondary to terminal myelitis and radiculitis that occurred following uneventful spinal anesthesia in young female posted for emergency appendectomy. Written informed consent was taken from patient prior to decision for publication.

Case

23 years old female a housewife from rural areas of Nepal presented to our hospital emergency with complain of acute upper pain abdomen which was gradual in onset over whole upper abdomen, Continuous to intermittent type, Severe at times in intensity with Unpredictable periodicity but shifting to right lower abdomen over one day without any obvious aggravating and relieving factors but associated with loss of appetite, fever and nausea. She took some oral medications in local shop for the same but couldn't get relieved and self-referred to Bharatpur Hospital on next day. There was fever for a day that followed pain abdomen associated with infrequent loose stool. Patient was attended on same day of presentation by the surgery team and a working diagnosis of acute appendicitis was made on background of clinical and laboratory basis. Emergency appendectomy was planned by surgery team due to intense pain. After that the patient was taken to Operating Room (OR) for the surgery. Preanesthetic evaluation done in Emergency reception revealed no significant issues hence proceeded for surgery after consent and necessary formalities to be done. Patient was taken to OR table and Monitors were attached and baseline vital parameters recorded. Under all aseptic precautions spinal anesthesia was given in Right lateral decubitus position at L3/L4 interspace via midline approach with 26 Gauge Quincke's type(B-Braun) spinal needle. 3.2 ml 0.5% Bupivacaine Heavy (Anawin, NEON) and 25 mcg Fentanyl (Fentyl, National Healthcare), total 3.45 ml was injected in first atraumatic lumbar puncture attempt by an experienced anesthesiologist. After achieving Bromage motor scale grade 4 and a sensory level of T4 surgery was proceeded. Surgery

was uneventful except few episodes of hypotension which was managed with mephentermine boluses. A gangrenous appendix was removed and patient was shifted to postoperative ward as a routine. The next day in morning round we noticed weakness of the bilateral lower limbs with power of 2/5 in right limb and 4/5 in left. We suspected Spinal Hematoma leading to cauda equina syndrome and examined for bowel and bladder involvement. We didn't find anal winking and the urinary bladder was catheterized already during surgery. MRI scan was advised with neurosurgical consultation. A bolus of 8 mg Dexamethasone was given. To our surprise there was a small linear focus of hyperintensity on T1 involving the terminal cord which is hypointense on T2, suggestive of hemorrhagic foci. There was evidence of cord edema. On contrast, there is diffuse enhancement of the terminal cord, meninges and exiting roots.

With working diagnosis of non-compressive cauda equina syndrome patient was continued with Dexamethasone and counselled regarding the possible recovery or permanent neurological deficit. No significant improvement was seen in 15 days and patient was discharged with catheter in situ, laxatives and oral prednisolone in tapering doses and followed up weekly via telephone. Patient again complained of pain abdomen after two months and presented to us which revealed low output type fecal fistula. There was partial neurological recovery. Gradually the fistula was closed on conservative management. Patient was discharged again and asked for follow up bi-weekly. Gradual improvement was noticed in neurology and complete recovery was noticed only after completion of five months.

Discussion

There are reports of spinal hematoma following repeated spinal attempts leading to cauda equina syndrome, even single shot spinal can lead to cauda equina due to drug related complications. J.C Gerancher in 1997 presented a case of cauda equina following administration of hyperbaric 5% lignocaine in 74-year-old male.3 Similarly with a single injection of dibucaine, piperocaine, procaine, mepivacaine, and tetracaine cauda equina syndrome is reported. Most cases of cauda equina are associated with lignocaine in cases with limited cephalad extension of sensory block suggesting localized drug concentration and its neurotoxicity. Very few cases of cauda equina with bupivacaine is reported and bupivacaine is considered safe drug. Chabbouh et al presented a case of cauda equina with single shot spinal with 0.5% heavy bupivacaine 12.5 mg in 72-year-old male patient.4 Donald H. Lambert highlighted that spinal stenosis in old age can cause spontaneous cauda equina which can indeed falsely be attributed to bupivacaine after spinal anesthesia.5 But our patient was a young female so spinal stenosis cannot be the cause. So proper reporting of cauda equina due to bupivacaine should be done and its neurotoxicity should be studied further.

Summary of the Pendulum Diagnostic Method

In summary, the entire discussion of the pendulum-diagnostic method, a reversal of spin direction on cancer tissues to a clockwise direction indicates that the current and the corresponding magnetic field, are in the right direction, and those cells once again have the ability to ‘hold charge’. These cells will now in theory be able to accumulate enough voltage (-50mV) in order to properly replicate functional replacement cells, rather than mutated (cancer) cells. Crystals such as perhaps rose quartz or aquamarine, will help to dissipate the negative electro-magnetic charge (emotional trauma) which is likely the root cause of the chronic disease or ‘reverse spin’ state. This allows a practitioner to specifically mark and target reverse spin regions in the body for treatment with the Cellsonic. The Cellsonic VIPP is able to correct cell-polarity and restore cell-voltage in just a few moments using the very intense pressure pulses, VIPP.

Conclusion

We reported a case of terminal myelitis and radiculitis following intrathecal injection of 0.5% bupivacaine, so neurotoxicity of bupivacaine should be studied. It can guide in proper case and management of patients.

Conflict of interest

The author declares no conflict of interest.

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