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Epidural Haematoma Causing Paraplegia in a Patient with Ankylosing Spondylitis: A Case Report

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Abstract

Introduction: We present a case of paraplegia due to cord compression from epidural hematoma following an uneventful epidural catheter insertion in a patient with ankylosing spondylitis.

Case Presentation: A 65-year-old gentleman was scheduled for a major laparotomy for abdominal wall reconstruction. He has a past medical history of mild asthma, ankylosing spondylitis, duodenal ulcer and a superior mesenteric artery thrombosis in the past which led to bowel ischemia and intestinal failure. His drug allergies included Oxycodone. The anaesthetic plan was to do an awake epidural with catheter insertion followed by a general anaesthetic. The insertion of the epidural and the catheter was uneventful with the space identified in first attempt and no bloody tap. Intra-operative analgesia was maintained by a continuous epidural infusion of low dose local anaesthetic and opioid. The total operative time was eight hours and the patient was extubated at the end of the surgery. Following extubation, the motor block was checked in recovery using the modified Bromage scale. A dense block was noted and the epidural infusion was stopped. An MR scan was performed immediately, which showed an epidural hematoma in T5 - T11 segments. An urgent decompressive laminectomy was performed to evacuate the haematoma. However, neurological recovery was minimal with persistent paraplegia.

Conclusions: The increased incidence of epidural haematoma in patients with ankylosing spondylitis is well documented . Earlier detection and decompression can help in preserving neurological function. We recommend being more cautious when the decision for epidural analgesia is made in patients with higher grades of ankylosing spondylitis. If an epidural is considered necessary, use of x-ray guidance and some form of intra-operative neurological monitoring should be considered, particularly in prolonged surgeries which last over several hours.

Keywords: Complications, Epidural, Analgesia, Paraplegia, Spondylitis, Ankylosing, Spinal Epidural Hematoma

1. Introduction

Ankylosing spondylitis is a chronic inflammatory arthritis characterised by inflammation around “enthuses”, the sites of ligament insertion into bone. It typically affects the axial skeleton- spine and sacro-iliac joint. It is an auto-immune disorder associated with HLA B-27 affecting young males. Extra-articular manifestations include uveitis, aortic regurgitation and pulmonary fibrosis.

The progression of the disease varies in different individuals. In 1972, Moll and Wright proposed the New York Criteria which were modified by Van der Linden et al in 1984 (1). Based on these criteria J Braun et al. proposed a radiographic grading system (2).

-Stage I Grade II or higher bilateral radiographic sacroiliitis

-Stage II Minor radiographic evidence of spinal involvement in $\leq$ 1 spinal segment ($\leq$ 3 vertebrae which equals < 15% of the spine)

-Stage III Moderate radiographic evidence of spinal involvement in $\leq$ 2 spinal segments (4 - 12 vertebrae which equals 15% - < 50% of the spine)

-Stage IV Radiographic evidence of spinal involvement in > 2 spinal segments (13 - 19 vertebrae which equals 50% - <80% of the spine)

-Stage V Widespread ($\geq$ 80%) fusion of the spine ($\geq$ 20 vertebrae)

There are several implications for Anaesthesia in a patient with ankylosing spondylitis (3). General anaesthesia is challenging due to the difficulty in airway management caused by the decreased mobility of cervical spine and atlanto-occipital and temporo-mandibular joint involvement.

Central neuraxial blockade is usually complicated both by the difficulty in positioning as well as the progressive fixation of the axial skeleton. It has been shown that there is an increased incidence of haematoma formation in this group both because of difficult insertion as well as NSAID use (4).

2. Case Presentation

A 65-year-old man was scheduled for a major laparotomy for bowel reconstruction. The procedure involved adhesiolysis, small bowel resection, side to side ileo-ileal anastomosis and abdominal wall reconstruction.

His comorbidities included mild asthma, ankylosing spondylitis, duodenal ulcer. He also had a superior mesenteric artery thrombosis in the past which led to bowel ischemia and intestinal failure for which he had a laparotomy and small bowel resection. The postoperative period following the laparotomy was complicated by a pulmonary embolus and he was commenced on treatment dose tinzaparin and aspirin for prophylaxis of arterial thrombosis. His other regular medications included omeprazole, codeine and loperamide. His allergy to oxycodone was rash and pruritus.

He was a high risk for post-operative complications with an anaerobic threshold of 8.4 and VO2 max of 15.3mls/kg/min. His ECG had old ischemic changes. However, dobutamine stress test was negative. His airway was mallampatti grade 2 with limitation of neck movements. He was a Cormack and Lehane Grade 4 from previous laryngoscopy and intubation was with the help of a video laryngoscope. His preoperative investigations were within normal range with INR 1.0 and normal range platelets. Aspirin was stopped seven days before and tinzaparin was stopped 24 hours prior to surgery.

There was a detailed discussion about the options for anaesthesia and pain relief during preoperative visit. Patient controlled analgesia was offered but was declined by the patient.

An awake epidural was inserted at T8/9 level using loss of resistance to saline. The insertion was uncomplicated with the space identified in first attempt and no bloody tap. A test dose of 3 mls of 2% Lidocaine was given and then a continuous infusion of 0.125% Bupivacaine with 2 microg/mL Fentanyl was used intra-operatively at a rate of 10mls per hour. The total operative time was approximately 8 hours. He was extubated towards the end and transferred to recovery. The epidural rate was decreased to 5 mls per hour in recovery and was subsequently turned off due to a dense block. It was restarted within few hours when he started to move his toes. There wasn't any sensory deficit at this point. The dense block persisted on subsequent review and the epidural was turned off. An urgent MR scan was done which showed epidural haematoma with cord compression between T5 - T11. He underwent an urgent T5 - T11 decompressive laminectomy and posterior thoracic instrumentation. Neurological recovery was minimal with persistent paraplegia.

3. Discussion

Effective pain relief is very important after major abdominal surgery to promote recovery. Studies have shown that epidural analgesia reduces postoperative cardiovascular and pulmonary complications in high risk patients (5). Evidence also shows that resolution of post-operative ileus after major abdominal surgery is faster when epidural analgesia is used for pain relief (5). Epidural analgesia has been shown to be superior to patient controlled analgesia in major intra- abdominal surgeries (6).

Although the incidence of serious adverse reactions after neuraxial blockade is very rare, the NAP3 report showed that the incidence of neurological complications is higher in the general perioperative population than in the obstetric setting (7).

There are several factors responsible for neuraxial bleeding after regional anaesthesia (8). In this case, though this patient was on antiplatelet agent and anti-thrombotic agents, they were stopped pre-operatively as per the recommended guidelines (8).

The increased incidence of epidural haematoma in patients with ankylosing spondylitis is well documented. Though rare, such complication can be devastating. Earlier detection and decompression can help in preserving neurological function. However, in prolonged surgeries which last for several hours, the window of opportunity is already lost. The use of a continuous infusion of local anaesthetic further delayed the diagnosis. To avoid similar complications in future, we have adopted a local policy to use intermittent boluses of epidural local anaesthetic instead of a continuous infusion. Immediately after extubation, motor function is tested before starting a continuous infusion. The quality of intraoperative pain relief has remained the same. We also suggest use of spinal cord monitoring intraoperatively in higher grades of ankylosing spondylitis. X-ray guidance for insertion of epidural can also be considered.

In summary, we recommend to be more cautious while inserting epidural catheters in people with higher grades of ankylosing spondylitis. If an epidural is considered necessary, use of x-ray guidance and some form of neurological monitoring should be considered, particularly in prolonged surgeries lasting several hours.

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