



USE OF ULTRASOUND IN DELIVERING SPINAL ANAESTHESIA IN CASE OF ANKYLOSING SPONDYLITIS

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KEYWORDS :

INTRODUCTION

Ankylosing spondylitis (AS) is a chronic inflammatory disease involving the axial skeleton and peripheral joints. It usually affects human leukocyte antigen-B27-positive individuals. Due to ossification of interspinous ligaments there is the formation of a bamboo-like spine. There is limitation of movement of neck when cervical spine is involved, thus making neck extension in general anaesthesia difficult. Involvement of the temporomandibular joint makes mouth opening difficult. Involvement of the cricoarytenoid joints makes oral intubation even more difficult.

Due to the involvement of the lumbar spine, placing a spinal or epidural needle becomes difficult and may require a paramedian approach. Using the ultrasound, we can identify the anatomical landmarks and perform spinal anaesthesia with lesser number of attempts and better rates of success.

CASE REPORT

A 60-year-old female, known case of AS, symptomatic since 2013, was posted for right total hip replacement (THR)[2]. On examination, she had limited mobility of cervical or thoracolumbar spine. Her mouth opening was restricted. Chest expansion was less than 1.5cm.

Her chest X Ray showed classical bamboo spine, her neck is totally stiff with limited neck flexion and extension. Patient is a known case of systemic Hypertension for one year on tablet Telmisartan 40mg and tablet Metoprolol 12.5mg. She is a known case of Coronary Artery Disease for 8 months on tablet Clopidogrel, which was stopped for the week before surgery and Tablet Ecosprin 75mg was asked to be continued till the day of surgery. There was no history of any other comorbidity present. Patient had right sided Total Hip Replacement done in our hospital 4years back, under general anaesthesia using Fiberoptic intubation. There was gross scoliosis towards the right

The primary plan was to go for spinal anaesthesia. The patient was asked to sit on OT table. Under sterile aseptic precautions, patient's back was painted and draped. Subarachnoid block was attempted at L₃-L₄ intervertebral space by median and paramedian approach which failed. A second attempt was made at L₄-L₅ intervertebral space by paramedian approach which also failed. It was then decided to use the ultrasound for identifying the landmarks and proceed with the Taylor's approach. A 3-7 MHz curvilinear ultrasound probe was placed in the paramedian position at L₅-S₁ intervertebral space. Transverse process of L₅ vertebrae was identified. The probe was then tilted slightly oblique from this position, and the L₅-S₁ interspace was identified. The probe was then placed in the transverse plane at the level of L₅-S₁ intervertebral space. Spinous process and lamina of L₅ vertebra were identified. Anterior and posterior complex could also be faintly identified at this level. The midpoint of the probe was identified as the L₅-S₁ intervertebral space. A 23-Gauge Quincke needle was placed in paramedian position at the point marked identified as L₅-S₁ intervertebral space. The needle was angulated at 30° and directed toward the midline. A loss of resistance was felt, Stylet was withdrawn, and free flow of clear cerebrospinal fluid (CSF) was obtained. 2.8 ml of injection hyperbaric 0.5% Bupivacaine [1] and 25 µg of injection fentanyl was given. The patient was made to lie in supine position. After 8 min, the level of anesthesia was fixed at T₈ level. The surgery

lasted for two hours and was completed with patient remaining comfortable and haemodynamically stable throughout the surgery.

Postoperatively, the patient was shifted to the post anaesthesia care unit where the patient remained for around 4 h before being shifted to the ward.



DISCUSSION

AS is a chronic inflammatory disease involving the axial skeleton, starting from the sacroiliac joints, spreading upwards till the cervical spine and the costovertebral joints. This leads to stiff axial skeleton with ossification of axial ligaments leading to decreased intervertebral spaces causing rigidity of the spine. The formation of bony bridges (syndesmophytes) between vertebrae results in a classic "bamboo spine" appearance. Regional anaesthesia may offer certain benefits over general anaesthesia in such patients, but more than often technical difficulties are encountered while doing so because of the pathological process itself. Schelew and Vaghadia planned spinal anaesthesia in only 16 patients out of which they reported success in 10. A paramedian approach may be easier because of the midline ossification of the interspinous ligaments.

Taylor's approach, a paramedian approach to L₅-S₁ interspace, is a good alternative to conventional midline spinal anaesthesia in such cases.

Ultrasound may also be a useful preoperative assessment tool for assessing the feasibility of central neuraxial blockade when the technical difficulty is anticipated. Chin and Chan demonstrated the accurate location of L₅-S₁ intervertebral space with ultrasound when several attempts on lumbar puncture had failed in the same patient. US may also be a useful preoperative assessment tool for assessing the feasibility of central neuraxial blockade when technical difficulty is anticipated. Karmaker et al. could access the epidural space successfully in one attempt in 14 out of 15 cases using realtime US

CONCLUSION

The ultrasound-guided paramedian approach could possibly serve as an alternative blockade in patients with advanced AS where the conventional method fails. A recent study has been conducted which shows a preprocedural ultrasound which has been used to guide central neuraxial blockade in AS. However, there is the scope of more studies in this regard in the future.

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