

Cough during Thoracic Epidural Insertion: What to Do?

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Thoracic epidural analgesia is a well-known option for a wide range of surgical procedures including thoracotomy, thoracoscopy, sternotomy and upper abdominal surgeries for providing perioperative analgesia. Its complications like dural perforation, postdural puncture headache, subdural placement of catheter, direct needle trauma to the nerve routes leading to radiculopathy, epidural hematoma, intravascular injection, venous air embolism, epidural abscess, total spinal/subdural anesthesia, breakage of catheter, backache are well known [1].

Interpleural misplacement of a thoracic epidural catheter, can occur although is a rare complication [2]. To the best of our knowledge, intractable dry cough during the insertion of epidural catheter has not been reported in the literature till date. Authors would like to mention one such case and successful management of the same. An 80-year-old female patient, weighing 50 kg and height 148cms was posted in surgical gastro OT for Common Bile Duct (CBD) exploration in view of CBD stone under GA and thoracic epidural for post op analgesia. Pre-operative assessment was suggestive of moderately severe COPD and chronic hypertension under control.

Patient was hydrated with 500 ml of ringers lactate, pre-medicated with injection midazolam. Epidural catheterization was performed in the sitting position with 18-gauge Tuohy's needle in the T10-T11 interspace through the median approach. During the insertion of epidural catheter at T10 level with 18G Tuohy's needle using loss of resistance technique we faced problem inserting the needle in the median position owing to calcified ligaments. So para median approach at the same level was tried by the same resident, however it was also unsuccessful.

A trail was given by the senior resident by the median approach at the same level. As the needle progressed at 3cm patient started coughing continually which she was not having during median and para-median trial by the first resident. After feeling for the loss of resistance catheter was inserted avoiding the movement during the cough. She did not complain of any complaints of dyspnea, chest pain during epidural needle placement. After LOR epidural catheter was directed cephalad and fixed at 9 cm from skin level. There was no respiratory distress during or immediately after the procedure. Aspiration was done to rule out CSF and blood. Immediately E-FAST was done which showed no signs of pneumothorax. Intra operative period was uneventful. Patient was shifted to post op with an advice of chest x ray PA view which was found to be normal.

Discussion

According to authors the probable causes of cough during epidural insertion could be pain, puncture of dura, intra-pleural direction of epidural needle, formation of false tract with repeated attempts causing pleural irritation. In our case three attempts were taken by the first resident and one attempt of para median approach was taken for epidural insertion.

Very few cases of pleural puncture during thoracic epidural insertion have been mentioned in the literature [3]. The outcome of such a complication is variable. It may go unnoticed and uneventful or may lead to serious complications such as hemothorax [4], or pneumothorax [5]. Although pleural puncture is more common with paramedian approach incidences with the median

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approach has also have been reported [6]. The proposed reasons for the higher incidence of misplacement with paramedian approach are inability to identify skin landmarks, inappropriate angle of insertion of the Tuohy needle very thin individuals, etc [7]. Out of the proposed reasons for the cough during epidural insertion pleural puncture is the one which needs attention immediately. In our case we immediately did E-FAST for the patient to rule out the pneumothorax at the bedside, which however was normal, chest x ray in post-operative period after 6 hours was also done to rule out any delayed complications. Other proposed mechanisms could be pain during placement of epidural needle, which can lead to psychogenic cough in some patients [8].

Other reason could be cough induced because of ossification of ligamentum flavum as suggested by a case report published by Yu Chang et al. [9]. They have suggested that isolated OLF may be associated with degeneration of osseous or ligamentous structures of vertebral column. There is also an association between spinal reflex in respiration and cough. The proposed cough receptors are found in trachea, main carina, branching points of large airways, and more distal smaller airways; also, they are present in the pharynx. Impulses from these cough receptors traverse through vagus nerve to a 'cough center' in the medulla. The efferent pathway signal travels down the vagus, phrenic, and spinal motor nerves to expiratory musculature to produce the cough. Cell bodies of motor neurons controlling the intercostal muscles are located in the thoracic spinal cord. And they receive inputs from controlling centers in the medulla [10]. This would be another cause of cough in our case as we are inserting a thoracic epidural. Bedside knowledge of these things are important for the better management of cases peri-operatively.

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