Airway complication due to retropharyngeal spread of epidural abscess during prone position

Sir,

A 17-year-old male, weighing 55 kg presented with a history of seizures associated with paraparesis, patchy sensory loss in the limbs and urinary incontinence. On evaluation, he was diagnosed having tuberculoma in occipital region with cervical lymphadenitis and multiple cold abscesses in the neck. The magnetic resonance imaging showed lytic lesions involving C7, D2 and D7-D10 vertebral bodies with large pre- and paravertebral abscess. There was an evidence of cord compression by paravertebral abscess extending into epidural space in D7-D9 levels [Figure 1]. Patient was prescribed anti-tubercular treatment since the past 2 months. The surgical plan was to decompress the spinal cord by evacuating the pus and to do a surgical biopsy to exclude lymphoma.

During pre-anesthetic work-up, mild swelling of the neck was noticed, which could be attributed to the cervical lymphadenitis. There was no restriction in neck mobility and mouth opening. Systemic examination did not reveal any other abnormality. The chest X-ray showed mediastinal widening.

During operation, anesthesia was induced with midazolam, fentanyl, thiopentone and rocuronium and airway was secured with 8.5 mm ID endotracheal tube (ETT). Anesthesia was maintained on oxygen-nitrous oxide mixture with sevoflurane and the ventilator settings were adjusted to maintain the end-tidal carbon dioxide between 28 and 32 mmHg. The peak inspiratory pressure (PIP) was always below 20 mmHg in the supine position. When the patient was positioned prone, supported on the bridge and neck resting on horse shoe, the airway pressure started increasing. The peak pressure kept on rising despite efforts to find and treat other causes of increased airway pressure such as bronchospasm, light plane of anesthesia, secretions, endobronchial intubation and external mechanical compression of ETT and anesthesia circuits. Finally, the patient was turned supine and re-examined. The airway pressures gradually reduced and reached the baseline value. However, once the patient was turned prone, the PIP increased up to 45 mmHg. When this event repeated thrice in succession, we presumed the cause of raised airway pressure to be the spread of the epidural abscess into the retropharyngeal space.

The retropharyngeal space is bounded by the buccopharyngeal fascia anteriorly and alar fascia posteriorly. The alar fascia (also known as prevertebral fascia) is the posterior border of the retropharyngeal space, which reaches the D2 vertebra caudally. Since our patient had a multiple epidural abscesses including a large abscess at the level of D2 vertebra, the cause of the increased airway pressure could be explained by anterior extension of the abscess.

Surgery started after the ventilatory settings were adjusted (high frequency, low tidal volume, minimal fresh gas flow) to control the rise in airway pressures as much as possible. The airway pressure came down with the drainage of the pus. The surgery took about 2 h after which the patient was turned supine and extubated without any difficulty.

Although retropharyngeal abscesses are known to cause airway compromise, this is possibly a rare instance that retropharyngeal spread of an epidural abscess caused airway complication in the prone position after induction of anesthesia. Wurtz et al. have reported a case of tuberculous vertebral osteomyelitis of the first and second cervical vertebra with extensive soft-tissue involvement and mediastinal extension. Turgut has also reported a similar case in a 53-year-old woman presented with multifocal spinal tuberculosis affecting cervical, thoracic and lumbar vertebrae. In all the instances, vertebral abscesses extended into the retropharynx, mediastinum and posterior triangles along the epidural space.

The increase in PIP during anesthesia can occur due to underlying inflammation associated with conditions such as bronchial asthma, chronic obstructive airway disease, respiratory tract infection, laryngoscopy, ETT malpositioning, presence of endobronchial foreign body or growth,
anaphylaxis etc. Most of these conditions can be managed barring a few exceptions like this.

The presence of multiple cervical abscesses (vertebral or epidural) during pre-operative examination should prompt the anesthesiologist to anticipate high risk of such complication and devise a prior strategy in consultation with the surgeons to avoid any serious mishap.

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References

1. Kahn JL, Bourjat P. The peripharyngeal space. Anatomy and normal imaging. J Radiol 1996;77:87-9.
2. Ozlugedik S, Ibrahim Acar H, Apaydın N, Firat Esmer A, Tekdemir I, Elhan A, et al. Retropharyngeal space and lymph nodes: An anatomical guide for surgical dissection. Acta Otolaryngol 2005;125:1111-5.
3. Parker GD, Harnsberger HR. Radiologic evaluation of the normal and diseased posterior cervical space. AJR Am J Roentgenol 1991;157:161-5.
4. Wurtz R, Quader Z, Simon D, Langer B. Cervical tuberculous vertebral osteomyelitis: Case report and discussion of the literature. Clin Infect Dis 1993;16:806-8.
5. Turgut M. Multifocal extensive spinal tuberculosis (Pott's disease) involving cervical, thoracic and lumbar vertebrae. Br J Neurosurg 2001;15:142-6.