Intratumoral migration of central venous catheter in a patient with malignant bronchial carcinoid

Sir,

A 66-year-old male patient with bronchial carcinoid of left upper lobe of lung was scheduled for lobectomy. Standard monitors were attached and patients trachea intubated with a 35 Fr left sided double lumen tube. Left internal jugular vein (IJV) was cannulated with a 7 Fr 20 cm triple lumen catheter using anatomical landmark based technique in a single attempt using central approach and catheter was fixed at 13 cm. Central venous pressure (CVP) trace was normal and venous back flow was present in all the ports.

The CVP trace began to dampen after thoracotomy and retraction of ribs. Free flow of intravascular fluids and aspiration of blood was also hampered. Repositioning the catheter over a guidewire was not feasible as patient was in right lateral position. Intratumoral location of the tip of the central venous catheter (CVC) was noted during dissection of the left upper lobe of the lung [Figure 1].

Catheter tip migrations are unavoidable. Change in patient position led to migration of the tip of the CVC into the left brachiocephalic vein in our case; the anterior wall of which was eroded by the malignancy leading to intratumoral placement. Malignant infiltrations in vessels is thus a relative contraindication for catheterisations. Imaging of the central vessels should be performed preoperatively in patients with suspicion of invasion.

Magnitude of displacement of CVC's inserted through IJV with neck flexion and extension is 1.5-3.0 cm in downward and upward direction respectively.[1] Catheter migrations of 3-4 cm have been reported with supine to upright positioning.[2] Hyper abduction of the arm (>180°) also predisposes to the same.[3] Spontaneous migration of a CVC tip into another venous tributary is favoured by jet effect of drug injections, mechanical ventilation, increased intrathoracic and intra-abdominal pressures.[3]

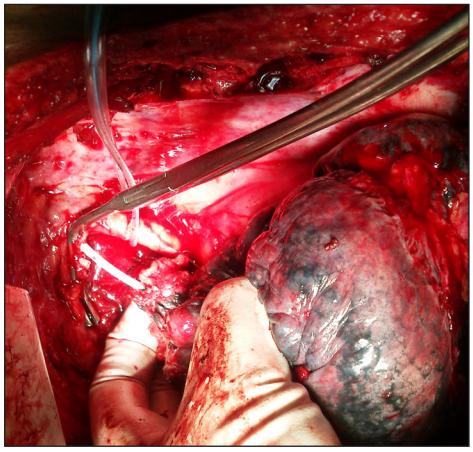

Figure 1: Migration of central venous catheter in bronchial carcinoid

Central venous catheter tips should be placed in distal superior vena cava (SVC), above the pericardial reflection with <40° of impingement angle between the catheter and vessel wall. Visualisation of tip at right tracheobronchial angle in a chest X-ray in a supine patient ensures a minimum distance of 3 cm above the pericardial reflection[4] (median length of SVC is 6.8 cm and maximum distance of right tracheobronchial angle from origin of SVC is 3.8 cm). Catheter placements at right tracheobronchial angle thus permit upto 3 cm of displacements with change in neck, arm and patient positioning.

Periodic radiological visualisations of chest (anterior-posterior and lateral view) can detect malpositions in large venous tributaries; IJV or subclavian vein. But malpositions in smaller tributaries like internal mammary vein (located in the anterior mediastinum), pericardiophrenic vein (middle mediastinum) and superior intercostal vein (posterior mediastinum) can be detected by computed tomography scans and venography only.

Estimations of insertion depth using either the anatomical technique (distance between the needle insertion point and the clavicular notch and the vertical length between the clavicular notch and the carina on the chest radiograph) or the Peres' formula (height 10 cm) should be made in all catheterisations. Insertion depth of 12-13 cm in males and 11-12 cm in females for right IJV and 13-14 cm in males and 12-13 cm in females for left IJV cannulations are optimal.[5]

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