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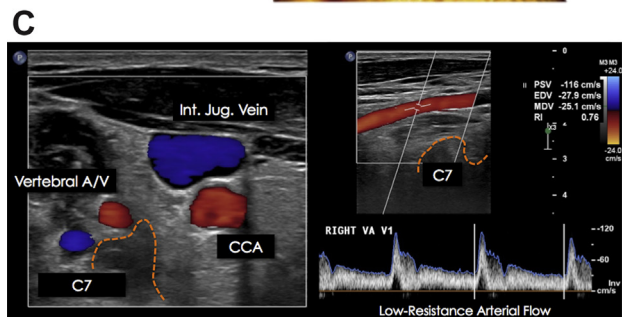
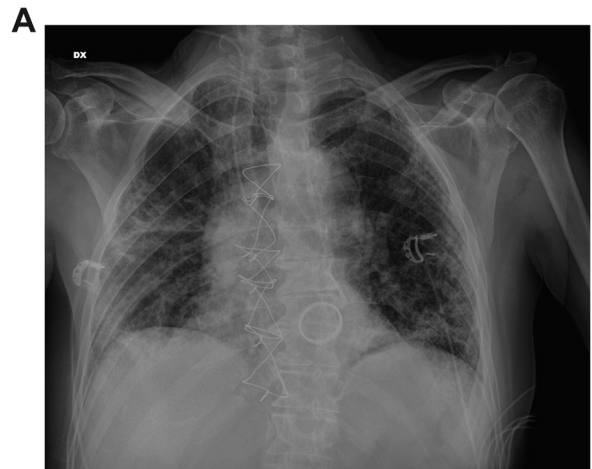
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Accidental vertebral artery injury in a COVID-19 patient

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A 71-year-old man with coronavirus disease-2019 (COVID-19) and a history of cardiac surgery, was admitted to our COVID triage unit with respiratory distress and agitation. An ultrasound-guided central venous puncture via the right internal jugular vein was performed in suboptimal environmental conditions. His chest radiograph was consistent with COVID-19 lesions and showed the catheter position (A). After infusions through the catheter were initiated, the patient experienced transitory right hemiparesis for about 30 minutes. Brain computed tomography (CT) scan was unremarkable; however, chest CT scan, besides the pulmonary findings, showed that the catheter was actually inserted in the first segment (V1) of the right vertebral artery (VA) (B/Cover). With color duplex ultrasound (DUS) guidance, the catheter was carefully removed followed by a 30-minute DUS-guided compression. Control DUS revealed right VA perfusion, with minimal wall thickening and no signs of hematoma or artery thrombosis (C). The patient remained neurologically asymptomatic. He signed the institutional informed consent for the publication of his clinical information and images.

Central venous catheters are essential to manage critically ill patients. Although they are used routinely, the procedure is not hassle free.¹ To prevent life-threatening complications, the American Society of Anesthesiologists practical guidelines for central venous access support the use of real-time US guidance with the patient in the Trendelenburg position when clinically appropriate and feasible.^{2,3} At the cutaneous puncture point, the needle should be angled at 45° from the coronal plane with a maximum insertion depth of 1.0 to 1.5 cm. Needle advancement of more than 2.0 to 2.5 cm increases the risk of VA puncture, which lies at this depth in most patients.^{2,4} Although single radiograph projections may show gross catheters misplacement, it is difficult to distinguish anatomic structures that lie on adjacent planes and a CT chest scan is advisable. Neurologic events, such as transient ischemic attack, can occur possibly owing to air embolism from the infusion line. The management of



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VA injuries aims to maintain vessel's patency, either by open surgical reconstruction or endovascular repair with covered stent.¹⁻⁵ US-guided compression is an available alternative in nonanticoagulated patients and in thin necks where the artery puncture point can be easily visualized by DUS.

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