

An artery other than the carotid artery immediately posterior to the internal jugular vein detected by ultrasound

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To the Editor:

We have detected an artery immediately posterior to the right internal jugular vein (IJV) during ultrasound-guided IJV cannulation. This examination was approved by the patient. A 46-year-old woman (weight 50 kg, height 160 cm) scheduled for whole lung lavage. She had a history of accidental arterial puncture during a right IJV cannulation procedure that had been conducted by an experienced anesthesiologist using the external landmark-guided technique in combination with palpation of the right carotid artery. Consequently, we decided to perform right IJV cannulation under ultrasound guidance. After anesthetic induction and tracheal intubation, the patient was placed in the Trendelenburg position on the operating table, and the patient's head was rotated slightly to the left side. For the preliminary scout scan, the ultrasound transducer was placed parallel and about 3–4 cm cephalad to the clavicle and along the sternocleidomastoid muscle, as described previously [1]. Almost immediately, an artery was detected immediately posterior to the right IJV (Fig. 1a). Slight tilting of the transducer revealed that the artery arose from the subclavian artery and had a branch

coursing anterior to the anterior scalene muscle (Fig. 1b). The artery and its branch were therefore identified as the thyrocervical trunk and the transverse cervical artery or suprascapular artery, respectively. Successful IJV cannulation was achieved under ultrasound guidance.

One of the complications associated with IJV cannulation is carotid artery puncture [2]. In the present case, the IJV was positioned completely lateral to the carotid artery on the image display, suggesting that the carotid artery pulse could have been a landmark for IJV cannulation [3]. It is therefore possible that the artery immediately posterior to the IJV might have been punctured during the previous IJV cannulation procedure. The posterior wall of the IJV could be easily penetrated by a needle during IJV access. The thyrocervical trunk arises from the first portion of the subclavian artery and terminates in the inferior thyroid artery after dividing into branches, such as the suprascapular artery or the transverse cervical artery. Although the subclavian artery is usually detected in the subclavian fossa, it was detected at a more cephalad position our patient, probably due to an anatomical anomaly. The thyrocervical trunk is usually located posterolateral to the carotid artery on the transverse ultrasound image of the neck. Although the branching pattern of the thyrocervical trunk has been reported to be rich in variation [4], the incidence of sonoanatomy observed in the present case, which was likely characterized by the placement of the thyrocervical trunk immediately posterior to the IJV, has not been elucidated. Further investigation of the incidence of arteries other than the carotid artery close to the IJV is required to reduce arterial puncture during IJV cannulation.

In conclusion, we have detected an artery immediately posterior to the IJV. We recommend that attention be paid not only to the carotid artery but also to other arterial structures during ultrasound-guided IJV cannulation.

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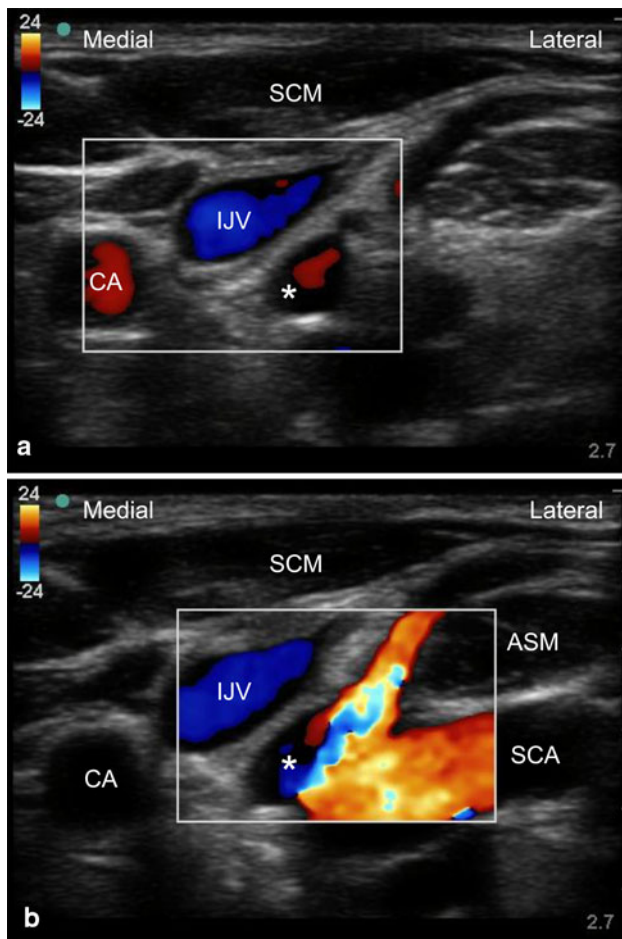


Fig. 1 Transverse color Doppler ultrasound imaging of the internal jugular vein and the carotid artery at a level of about 3–4 cm cephalad to the clavicle (**a**) and slightly caudal to **a** (**b**). CA Carotid artery, IJV internal jugular vein, SCA subclavian artery, SCM sternocleidomastoid muscle, ASM anterior scalene muscle. Asterisk indicates an artery other than the carotid artery immediately posterior to the IJV. The artery immediately posterior to the IJV is derived from the subclavian artery and has a branch running anterior to the anterior scalene muscle (**b**)

Conflict of interest None.

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