



LETTER TO THE EDITOR

Sonoanatomic variation of the vasculature at infraclavicular region

İnfraklavikular bölgede vaskülatürün sonokanatomik varyasyonu

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To the Editor,

Variations in the arrangement and distribution of brachial plexus and its branches at the infraclavicular region are common and have been reported by several investigators.^[1,2] The position of the three cords and veins was found markedly variable with respect to the artery.^[2] But these are expected as small branch vessels from the subclavian artery and subclavian vein, which are frequently evident on ultrasound imaging.^[3]

When performing infraclavicular blocks, the nerves and artery are usually visualized at the deep surface of the pectoralis major and minor muscles. Three bunches of nerve trunk were found cephalic, lateral and posterior to the axillary artery.^[4]

We report an unusual anatomic variation of vasculature at infraclavicular region.

Our case was a 34 years old patient who had a trigger finger at right hand. There was no disease or surgery in his medical history. The Orthopedic Surgery Department planned to perform a release operation. Ultrasound guided infraclavicular block was planned during pre-anesthetic visit for surgical anesthesia.

After mild sedation, the ultrasound transducer was placed at the block site. However we experienced a different image than expected (Fig. 1a). There were four vessels under the pectoralis muscles. We slightly

tilted the transducer and the image did not change remarkably. We tried the pressure, alignment and rotation maneuvers of the transducer. One of the vessels which was a vein, disappeared when slight pressure was applied. There was pulsation in one of the vessels which was at the center of the others. In color doppler imaging, the pulsatile vessel was identified as an artery, and the others were veins (Fig. 1b). One of the veins was lateral to the artery, in front of the route of the needle. The size of all veins were similar to each other and seemed as big as the artery. We inserted the needle under ultrasonic control using in plane technique. When the tip of the needle came closer to the vein, we directed the tip distant to the artery. If the needle had been inserted directly, possibly it would puncture the vein. The needle tip was advanced carefully passing from the lateral side of the vein, than directed medially to reach to the posterior side of the artery. 20 mililiters of local anesthetic drug was given at 8 oclock position, next and posterior to the artery. Local anesthetic distribution was seen as a u shape around and posterior of the artery resulting a successful block without any complications (Fig. 1c).

The block area was examined by a radiologist from Radiology department after the operation. We concluded that the vessels are in an unusual arrangement in this case. In a cadaver case, tributaries of axillary vein were found forming venous circle deep to the pectoral muscles, in the infraclavicular region.^[5] To our knowledge, a big accessory vein placed in the

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Submitted: 18.12.2015 Accepted after revision: 02.06.2016 Available online date: 26.12.2016

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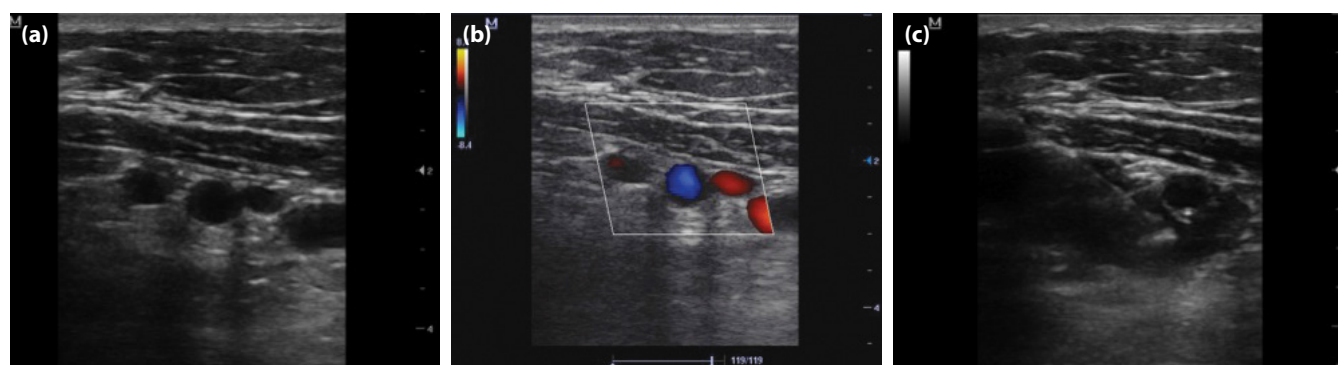


Figure 1. (a) Ultrasonographic view of the vasculature at infraclavicular region. (b) Color doppler image of the vasculature. (c) Needle tip and local anesthetic distribution around the axillary artery.

pathway of the needle regarding an infraclavicular block, was not reported before.

In regard to this case, we would like to reinforce the importance of ultrasound guidance in preventing injuries to vessels from the needle and also the avoidance of local anesthetic toxicity in brachial plexus blocks in which a highly anatomic variability is evident.

References

1. van Geffen GJ, Moayeri N, Bruhn J, Scheffer GJ, Chan VW, Groen GJ. Correlation between ultrasound imaging, cross-sectional anatomy, and histology of the brachial plexus: a review. *Reg Anesth Pain Med* 2009;34(5):490–7.
2. Di Filippo A, Orlando S, Luna A, Giancesello L, Boccaccini A, Campolo MC, et al. Ultrasound identification of nerve cords in the infraclavicular fossa: a clinical study. *Minerva Anesthesiol* 2012;78(4):450–5.
3. Muhly WT, Orebaugh SL. Sonoanatomy of the vasculature at the supraclavicular and interscalene regions relevant for brachial plexus block. *Acta Anaesthesiol Scand* 2011;55(10):1247–53.
4. Li Z, Xia X, Rong X, Tang Y, Xu D. Structure of the brachial plexus root and adjacent regions displayed by ultrasound imaging. *Neural Regen Res* 2012;7(26):2044–50.
5. Nayak BS, Sirasanagandla SR, Aithal PA, Guru A, Sudarshan S. Unusual Infra-Clavicular Venous Circle. A Case Report *J Clin Diagn Res* 2014;8(11):1–2.