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The artery behind the internal jugular vein: vertebral artery or transverse cervical artery?

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Dear Editor,

I read, with great interest, the article by Lamperti et al. [1]. This article seems quite useful for surgeons using ultrasonography for vascular access. However, I have two questions about Fig. 1 in the article.

First, the article states that the artery behind the "vein vertebral artery" (VA) is the thyrocervical trunk (a major branch of the subclavian artery). This assumption appears incorrect. I do not believe that the VA is a branch of thyrocervical trunk, as it originates directly from the subclavian vein.

Second, I believe that the artery behind the internal jugular vein (IJV) is the transverse cervical, or possibly the inferior thyroid, artery. Did the artery disappear near the 5th or 6th vertebra? A recent report described that VAs were observed near, and behind, the IJV in 7 (13 %) of the 55 children who underwent cardiovascular surgery, under endotracheal general anesthesia [2]. However, in older patients, VAs were not observed near, and behind, the IJVs; similarly, we seldom observe the VA near, and behind, the IJVs in adults. One report described the case of an accidental transverse cervical arterial puncture behind the IJV, which led to the placement of an intra-aortic central venous catheter [3]. We have confirmed that the transverse cervical artery is positioned behind the IJV in an adult patient undergoing neck lymphadenectomy. The transverse cervical artery (one-fifth the width of the IJV) appeared from under the IJV and ran approximately 1 cm transversely and 3 cm longitudinally behind the IJV. Therefore, we believe that the artery indicated in the article by Lamperti et al. [1] must be the transverse cervical artery.

It is also essential to recognize the presence of transverse cervical arteries behind the IJVs in infants [4]. A video showing IJV catheterization in an infant is available on the Kyushu Kosei Nenkin Hospital website [5]. The video provides a view of the relationships between the IJV and the subclavian artery, thyrocervical trunk, transverse cervical artery and VA.

References

1. Lamperti M, Bodenham AR, Pittiruti M, Blaivas M, Augoustides JG, Elbarbary M, Pirotte T, Karakitsos D, Ledonne J, Doniger S, Scoppettuolo G, Feller-Kopman D, Schummer W, Biffi R, Desruennes E, Melniker LA, Verghese ST (2012) International evidence-based recommendations on ultrasound-guided vascular access. Intensive Care Med 38:1105–1117. doi:10.1007/s00134-012-2597-x
2. Kayashima K, Ueki M, Kinoshita Y (2012) Ultrasonic analysis of the anatomical relationships between vertebral arteries and internal jugular veins in children. Pediatr Anesth 22:854–858
3. Kayashima K (2011) A case report of an accidental transverse cervical arterial puncture leading to intraaortic placement of a central venous catheter through the internal jugular vein. J Clin Anesth (Jpn) 35:1569–1570
4. Kayashima K, Imai K, Sozen R (2012) Two case reports of the transverse cervical artery description under and below internal jugular veins in securing pediatric central venous catheters by ultrasound echo images. Pediatr Anesth 22:309–310
5. Kayashima K, Sozen R (2012) Internal jugular vein catheterization in an infant under ultrasound guidance (a video). http://www.kyuko-hsp.jp/bumon/shinryou/naika/s142/IJV%20puncture%20with%20small%20arteries.mov

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