

This preclinical study was designed to determine by ultrasound technique relative topographic characteristics in humans of the internal jugular veins and common carotid arteries at different levels on both sides of the neck” Norin et al (2016).

Abstract:

Background: Cannulation of the internal jugular vein may be associated with inadvertent puncture of the common carotid artery. Systematic use of ultrasound guidance has improved clinical success rates and reduced complications, but better knowledge of topographic relationships of the internal jugular vein and common carotid artery is desirable. This preclinical study was designed to determine by ultrasound technique relative topographic characteristics in humans of the internal jugular veins and common carotid arteries at different levels on both sides of the neck.

Methods: One hundred and twenty healthy volunteers were examined bilaterally by ultrasound at three neck levels with and without contralateral rotation of the head. Twelve digital pictures were recorded and used to determine venous diameters and extents of arteriovenous overlapping in each subject.

Results: Venous dimensions and arteriovenous overlapping were larger on the right side ($p = 0.008$) regardless of head rotation at all levels. There was more arteriovenous overlapping with than without rotation at right high- and mid-cervical levels ($p < 0.001$). The only difference between right mid- and low-cervical levels was less arteriovenous overlapping at mid-cervical level without rotation ($p = 0.017$). The smallest venous dimensions and extent of arteriovenous overlapping were recorded at high-cervical level.

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Conclusions: Despite similar venous dimensions, less arteriovenous overlapping regardless of head rotation at mid-cervical level, together with the pleural proximity at low-cervical level, propose the internal jugular vein to be anatomically (other factors disregarded) favorable for vascular access on the right side, at mid-cervical level, close to the angle between the sternocleidomastoid muscle bellies, and with minimal rotation of the head.

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Conflict of interest: None of the authors has financial interest related to this study to disclose.

Reference:

Norin, H., Pikwer, A., Fellert, F. and Åkeson, J. (2016) Internal jugular dimensions and common carotid overlapping assessed in a cross-sectional study by ultrasonography at three neck levels in healthy volunteers. *The Journal of Vascular Access*. November 8th. .



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