The goal of this study was to examine the anatomical relationships of the IJV and CA as a function of the degree of head rotation in order to minimize the risk for CA puncture” Merritt et al (2018).

Abstract:

CONTEXT: Previous studies have shown that safe venous cannulation is difficult when the internal jugular vein (IJV) overlies the carotid artery (CA) as the probability of inadvertent arterial penetration is greatly increased.

AIMS: The goal of this study was to examine the anatomical relationships of the IJV and CA as a function of the degree of head rotation in order to minimize the risk for CA puncture.

SETTINGS AND DESIGN: Our study was a prospective study using a sample of 496 Emergency Department patients.

METHODS AND MATERIAL: The anatomic relationships of the right and left IJVs and CAs were recorded with head rotation at three different positions. Patients who had the IJV in a 45 to 135 degree relationship to the CA were deemed to be in the high-risk zone for arterial puncture.

STATISTICAL ANALYSIS: Chi square, ANOVA.

RESULTS: Right IJVs were in the high risk zone for 39.5%, 47.8% and 60.9% of cases at 0, 45
and 80 degrees of head rotation, respectively (P < 0.001). Left IJVs were in the high risk zone for 59.1%, 69.2% and 80.0% at 0, 45 and 80 degrees of head rotation, respectively. (P < 0.001). CONCLUSIONS: Head rotation should be minimized during IJV cannulation to decrease the overlap of CA by IJV. Cannulation of the left IJV appears to carry a higher degree of risk as compared to the right IJV. Placing the head in neutral position, avoiding rotation, and using ultrasound guidance are recommended to minimize complications during central venous access.

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