Ultrasound-guided supraclavicular in-plane BCV cannulation improved first attempt CVC cannulation success rates and reduced puncture attempts and cannulation time compared to US-guided out-of-plane IJV in critically ill children" Oulego-Erroz et al (2016).

Abstract:

PURPOSE: To determine whether ultrasound (US)-guided longitudinal in-plane supraclavicular cannulation of the brachiocephalic vein (BCV) improves cannulation success rates compared to transverse out-of-plane internal jugular vein (IJV) cannulation in urgent insertion of temporary central venous catheters (CVC) in critically ill children.

MATERIALS AND METHODS: Prospective open pilot (non-randomized) comparative study carried out in a pediatric intensive care unit (PICU) of a university-affiliated hospital. Newborns and children aged 0 to 14 years admitted to the PICU in whom an urgent CVC was clinically indicated and was inserted in the IJV or BCV by US guidance were eligible. First-attempt success rate, overall success rate, number of puncture attempts, and cannulation time were compared between IJV and BCV techniques.

RESULTS: Forty-six procedures (24 IJV and 22 BCV) in 38 patients were included. Full-sample median (range) age and weight were 13 (0.6-160) months and 9.5 (0.94-50) kg. No significant differences between IJV and BCV groups were observed for sex, age, weight, admission diagnosis, intra-procedural mechanical ventilation and sedation protocol. First attempt success rate was higher in the BCV than the IJV group (73 vs 37.5%, P= .017). Overall success rate was slightly higher in the BCV group (95 vs 83%, P = nonsignificant). Median (range) number of cannulation attempts [1 (1-3) vs 2 (1-4)] and cannulation time [66 (25-300) vs 170 (40-500) seconds] were significantly lower in the BCV group (P< .05). Patient's weight was inversely related to the number of cannulation attempts (Pearson coefficient -0.537, P= .007) and cannulation time (Pearson coefficient -0.495, P= .014) in the IJV but not in the BCV group. No major complications were observed.

CONCLUSIONS: Ultrasound-guided supraclavicular in-plane BCV cannulation improved first attempt CVC cannulation success rates and reduced puncture attempts and cannulation time compared to US-guided out-of-plane IJV in critically ill children. A large randomized clinical trial is warranted to confirm our results.

Reference:

Oulego-Erroz, I., Muñoz-Lozón, A., Alonso-Quintela, P. and Rodríguez-Nuñez, A. (2016) Comparison of ultrasound guided brachiocephalic and internal jugular vein cannulation in critically ill children. Journal of Critical Care. 35, p.133-137.

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