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EDITORIAL

Ultrasound-guided arterial cannulation: Is the game over for the palpation technique?

Canulación arterial ecodirigida: ¿se terminó el juego para la técnica palpatoria?

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Ultrasound-guided vascular cannulation is currently the standard in adult critical care medicine, largely replacing the traditional technique for central venous and arterial catheter placement. In addition, it improves the success rate of peripheral venous cannulation in patients with difficult intravenous access. Although international guidelines provide clear statements emphasizing the use of ultrasound guidance for this procedure,[1–4] many of these recommendations are based on studies performed mostly outside the intensive care unit (ICU), particularly in the operating room. While extrapolation is valid, it is noteworthy that patients in the ICU have unique factors that make cannulation challenging, such as shock, edema, or obesity.

The study by Gutte et al.[5] has a very important strength: it was performed entirely in ICU patients. Unsurprisingly, ultrasound-guided cannulation outperformed palpation for arterial line placement in the radial, dorsalis pedis, and femoral arteries.

First and foremost, ultrasound guidance won the battle for first-pass success. This outcome is of pivotal relevance, given that repeated punctures may complicate subsequent cannulation due to vasospasm or acute hematoma formation, incrementing complications and patient discomfort, and ultimately delaying the measurement of arterial pressure. Second, and linked to the high rate of first-pass success, the cannulation time was shorter with ultrasound guidance than with palpation. The efficiency matters, and here, ultrasound guidance won again. Third, interestingly, the authors pointed out the performance of ultrasound guidance in patients with variables common to the ICU population, such as shock and the intensity of pharmacological support (using the vasoactive-inotropic score or VIS), and a body mass index >25 kg/m^2. Again, ultrasound was better than palpation, confirming that in these frequent ICU scenarios, pulse palpation is equivocal.

Readers may highlight the typical limitations of a study that may lead to biased results, such as the sample size, approach used (in-plane vs. out-of-plane) and operator expertise. One may also argue that the performance of ultrasound guidance should be tested on other arteries, such as the ulnar artery (in some patients, it is larger than the radial artery[6]) and the brachial, axillary, or even popliteal arteries. However, based on the findings of this study, which reproduced real-world ICU scenarios, intensivists should consider using ultrasound guidance instead of palpation for arterial line placement.

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In summary, the research by Gutta et al.[5] brings light to practice, providing evidence that palpation seems to have lost most if not all lives in the game of arterial cannulation.

Conflicts of interest

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