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LETTER TO THE EDITOR

Ultrasound for monitoring intraosseous cannulation

Ecografía para el control de la canalización intraósea

Dear Editor:

I have read the article titled ''Controversies in the selection of needle length for intraosseous vascular access cannulation''[1] and want to congratulate the authors for opening up a line of investigation on intraosseous cannulation, as there are currently no reliable methods to determine the length to be inserted. Manufacturers of mechanical insertion devices recommend different needle sizes based on age or weight, but their recommendations are heterogeneous. The results of the study show that these recommendations may not be appropriate and may be among the factors contributing to intraosseous cannulation failure.[2] Its findings are consistent with our own experience, in which we have found that the 15 mm needle may be too short, even in infants with edema or soft tissue enlargement. In consequence, the Spanish Group on Pediatric and Neonatal Cardiopulmonary Resuscitation recommends using the 25 mm needles for the EZ-IO system in infants.[3]

The authors measured the distance between the outer skin surface and the external bony cortex by means of ultrasound and added 5 mm, which corresponds to the extra length of the stylet past the distal point of the needle, as recommended by the manufacturer for the EZ-IO. However, the study did not include data on cortical bone depth or medullary cavity diameter, which vary with age and cannot be estimated by means of ultrasound. The appropriate needle length may be even greater, which would warrant the recommendation to use longer needles. Previous studies have applied radiological techniques, such as CT or MRI, that can be used to measure the bone depth and medullary diameter, but these methods are more invasive and complex.[4]

The study introduces the possibility of using sonography, which is accessible, rapid and noninvasive, to help confirm the correct positioning of the needle.

Once the needle is inserted, it is essential to verify that it is correctly placed. The most reliable sign is the sudden loss of resistance to the exerted pressure felt on perforating the cortex, but this is harder to perceive in young infants, by inexperienced operators or when using mechanical insertion devices. On the other hand, this sign does not exclude the possibility of having gone through the anterior and into the posterior cortical bone. Therefore, to preclude the risk of perforating the posterior cortex, it is more prudent to refrain from inserting the needle completely, and instead to stop halfway through and check whether the needle is stable in the bone and, if not, continue driving it through.

Ultrasound can be a reliable method to rule out intraosseous needle malposition after its insertion, allowing verification that the tip has not failed to reach the cortex or has not gone through the medullary space and into the posterior cortex.

In short, it would be reasonable to recommend avoiding BIG intraosseous needles and using 25 mm EZ-IO needles for cannulation of young children. We encourage the use of sonography to check the placement of the intraosseous needle after insertion in order to obtain data on the usefulness of this approach.

Declaration of competing interest

The authors have no conflicts of interest to declare.

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