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Ultrasound-Guided Vascular Access: An Evolving Standard of Care Clinical Practice, which is Extremely Under-Utilized in Pakistan

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Sir,

Ultrasound application is now evolving to become a standard of care practice in critical care areas for safety and accuracy of central venous and arterial access, especially in developed countries.¹ Unfortunately, its application in developing countries like Pakistan is still lacking. The aim of this letter is to create awareness among the practicing anaesthetists and critical care physicians regarding the critical role of ultrasound guidance for vascular access to achieve best possible patient outcome.

In anaesthesia practice, ultrasound can facilitate cannulation of peripheral and central veins and arteries not only in adults but also in children. In paediatric cardiac surgery cases, where vascular access including arterial and central venous cannulation is mandatory, ultrasound assistance with hockey stick probe increases both accuracy and safety. The conventional landmark technique is getting obsolete in developed countries due to associated inefficiency and more complications, especially in difficult cases like morbidly obese patients, neonates and infants.² The main advantage and safety feature of ultrasound-guided technique is that it facilitates direct visualization of the targeted vessels and the surrounding anatomical structures, and also guides the needle to the target under continuous observation. Moreover, its systematic use can lessen the rate of unsuccessful cannulation attempts, which can be caused by anatomical variations, hypovolemia, shock or thrombi occluding the targeted vessel.

The Aga Khan University is the leading university to introduce ultrasound-guided vascular access in Pakistan in 2012. We are also regularly arranging training courses for the trainees and consultants practicing in anaesthesia, intensive care, and emergency medicine with the aim of creating awareness regarding the safety

and efficiency of ultrasound-guided vascular access. Recently, these training workshops are introduced for the anaesthesia trainee residents at our state-of-the-art, purpose-built Centre for Innovation in Medical Education (CIME) with availability of necessary resources and equipment including ultrasound sensitive manikins, ultrasound machines with high frequency linear probes, phantoms for needling practice, and human volunteers for demonstrating live ultrasound vascular anatomy. At the end of the workshop, direct observation of procedural skill (DOPS) document is filled to assess the practical skill of central venous cannulation via internal jugular vein (IJV) on manikin. Anti-septic measures are also taught to avoid catheter-related blood stream infections.

In order to pass on these potential benefits to the patient and to justify the expenses related to the purchasing of preferably portable ultrasound machine, it is obligatory to offer an appropriate ultrasound training program for physicians using this technique so as to sensitize them to use ultrasound for vascular access. It is likely that, as an "evolving technology," teaching centers will be expected to adopt ultrasound guidance as the standard of care practice to ensure safety and efficiency in patient care.³

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