ULTRASOUND GUIDANCE OF CENTRAL VEIN CATHETERIZATION

Dr. Medhat Hashem,
MD, FCARCSI, FRCA
Professor of Anaesthesia, Cairo University

Central venous catheters are commonly used. Their insertion is associated with significant risks. These risks increase in association with several characteristics, including patient anatomy (e.g., morbid obesity, cachexia, or local scarring from surgery or radiation treatment), patient setting (e.g., patients receiving mechanical ventilation or during emergencies such as cardiac arrest) and co-morbidities (e.g., emphysema or coagulopathy). Central venous catheters are placed by clinicians whose training and experience may vary greatly. The procedure takes place in a variety of hospital settings including intensive care units, emergency departments, operating rooms, pre- and post-anesthesia care units, hemodialysis units, cardiac catheterization units and other inpatient settings. Outpatient placement of central venous catheters has also become commonplace, occurring in hemodialysis centers and oncology centers providing outpatient chemotherapy.

Percutaneous insertions of central venous catheters were usually performed by "blind" techniques that rely on anatomical landmarks. The various approaches to the internal jugular vein require thorough knowledge of this vein’s course in relation to the sternocleidomastoid muscle and carotid artery.

Portable ultrasound machines provide bedside imaging of the central veins during catheter placement. The advantages associated with real time ultrasound-guided central venous catheters placement include detection of anatomical variations and exact vessel location, guidance of both guidewire and catheter placement after initial needle insertion. The technique of ultrasound-guided central venous catheterization will be described in the lecture.