Ultrasound averts inadvertent injury during internal jugular vein cannulation

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Received: 3 October 2008 / Revised: 9 October 2008 / Accepted: 9 October 2008 / Published online: 19 December 2008
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To the Editor,

We report a case where ultrasound imaging (US) was used for internal jugular vein (IJV) cannulation. Not only was US helpful in locating the IJV for central venous catheter (CVC) placement, it also identified a partially occluded IJV.

A 17-year-old female patient with a body mass index of 20.7 kg m^{-2} was scheduled for removal of an osteogenic sarcoma from her T6 vertebra. She had undergone surgery one year previously for removal of an osteogenic sarcoma from her maxillary sinus on the left side. As a part of her anesthetic management, we planned to site a CVC in the right IJV under US guidance. After sterile preparation, the anterior triangle of the neck was scanned at a point halfway between the mastoid process and the sternal notch, with a GE Logic-e unit (GE Medical Systems, Wuxi, Jiangsu, China) using a linear 12 MHz transducer. An initial needle puncture was made over the right IJV where the vein appeared fully patent under real time US guidance. The needle was seen to enter the vein, and after free aspiration of blood, a guide wire was passed into the needle. At approximately 3 cm beyond the needle tip threading of the guide wire encountered resistance, and consequently, both the guide wire and the needle were removed. A repeat US scan caudal to the needle insertion site showed a partially

occluded IJV with the lumen reducing to less the 2 mm (Fig. 1). The procedure was abandoned on the right side and the CVC was eventually placed in the fully patent left IJV, under US guidance in a single attempt.

We are aware of the safety recommendations¹ and studies demonstrating the benefits of US for CVC placement, including rapid vein localization, a reduction in needle attempts, and fewer complications.^{2,3} This case further highlights the importance of US in preventing inadvertent injury to a partially occluded IJV. In this case, the patient had a sarcoma that predisposed to venous thrombosis, and hence, there was significant thrombosis involving IJV, though the patient had no reported symptoms. With a conventional landmark technique, the vascular abnormality would not have been detected, and repeated attempts might have resulted in trauma, or even a tear of the IJV. We would like to emphasize that when US is used for IJV cannulation, it is valuable to scan the course of the IJV in the neck and not a single location before selecting the needle insertion point. Such a preliminary scan can reveal vascular and non-vascular pathology and guide CVC placement. As availability of US units continues to grow in the operating suites, and as practice guidelines are being established, this case highlights how the use of US for central venous cannulation is well justified.

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Fig. 1 Ultrasound images of right and left internal jugular vein. C carotid artery

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