Central venous catheter care for the patients with cancer: ultrasound-guided insertion should be strongly recommended for internal jugular vein catheterization

A central venous catheter (CVC) is essential in patients with cancer, and the need for an intravenous access device for the administration of cancer therapy has increased proportionally with the increasing number of patients diagnosed with cancer.

In a recent article, Schiffer et al. [1] reported the American Society of Clinical Oncology clinical practice guideline for central venous catheter care for the patients with cancer.

The authors confirmed in the recommendation 1.3 that image-guided insertion [e.g. ultrasound (US), fluoroscopy …]
of CVC is recommended; however, they stated that well-trained providers, who use the landmark method regularly, may have a high rate of success and low incidence of acute and/or chronic complications.

Therefore, we would like to discuss data that compare the landmark and image-guided methods.

The National Institute for Clinical Excellence (NICE) guidelines carried out in 2002 and reviewed in 2005 recommended two-dimensional US guidance as the preferred method of both elective and emergency central venous cannulation [2]. A meta-analysis commissioned by NICE, including 18 randomized control trials comparing US with the landmark method for CVC, concluded that US was more effective than landmark for all outcomes for cannulation of the internal jugular vein [3, 4].

Mechanical complications of central venous cannulation include pneumothorax, arterial and/or nerve puncture, neck or mediastinal hematoma and emmothorax.

US has been shown to decrease all of these complications in a series of individual studies and in two meta-analyses. It has also been shown to decrease the time to cannulation and the number of attempts [3, 4].

In 2001, the US Agency for Healthcare research and Quality recommended the use of US for the placement of CVC as one of their 11 practices to improve patient care [5].

In a prospective observational study of 1978 consecutive US-guided catheterization, of internal jugular vein, in cancer patients undergoing active treatment, no pneumothorax, no major bleeding and no nerve puncture were reported [5].

CVC placement without US guidance can be unsafe: the National Confidential Enquiry into perioperative deaths has reported on death resulting from a procedure-induced pneumothorax [5] and the World Marrow Donor Association in August 2011 has been informed of a donor death due to a tension hemo/pneumothorax related to the insertion of a CVC. It must be emphasized that placing central venous catheters, US-guidance gives different results of internal Jugular vein and subclavian-vein catheterization [1–5].

In conclusion, we believe

(i) there is sufficient evidence that US is more effective and safe than the landmark method for cannulation of the internal jugular vein;
(ii) data on fluoroscopy as a guide of CVC are restricted to the placement of Hickman catheters and this technique in the era of US can be considered obsolete, on the contrary chest radiography is useful after CVC placement to evaluate the catheter position and to exclude pneumotorax.
(iii) In old studies [1], no benefits were reported with US guidance for subclavian-vein catheterization.

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disclosure

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references


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