

Category : **Cardiovascular: Monitoring**

A231 - Cvc tip positioning by transthoracic contrast-enhanced echocardiography: a comparison study with two different tte techniques, cxr and tee.

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Introduction:

To determine the usefulness of two different transthoracic echocardiography techniques or chest X-ray, to evaluate central venous catheter misplacements with trans-esophageal echocardiography as reference. After the insertion of a central venous catheter, chest radiograph is usually obtained to ensure correct positioning of the catheter tip.

Methods:

99 consecutive patients undergoing CVC positioning, using a landmark or ultrasound-guided technique. A post-procedural TEE was obtained in all patients and was considered as reference technique. A TTE through the subcostal acoustic window along the short heart axis or through the apical four-chamber view was performed at the end of the procedure in order to infer correct catheter tip position. All patients also underwent CXR.

Results:

Using TEE as a reference standard, and considering intravascular and intracardiac malpositioning altogether, catheter tip malpositions were detected in 27 patients by TTE through the subcostal acoustic window along the short heart axis, in 8 patients by TTE through the apical four-chamber view and in 17 patients by CXR. For the detection of catheter tip malposition, TTE through the subcostal acoustic window has shown to be by far the most accurate method providing 96% sensitivity, 98% specificity and 96% diagnostic accuracy if compared with the apical four-chamber view TTE or CXR. Concordance with TEE was 94% (p<0.001).

Conclusion:

The close concordance between TTE through the subcostal acoustic window and TEE justifies the use of ultrasounds as a standard technique to ensure the correct positioning of the catheter tip after central venous catheter cannulation, in order to optimize use of hospital resources and minimize radiation.

CXR will be necessary when sonographic examination is impossible to perform by technical limitations.

Table:

| | Sensitivity (%) | Specificity (%) | Accuracy (%) | k-Cohen (%) |
|------------------|-----------------|-----------------|--------------|-------------|
| CE-TTE subcostal | 96 | 98 | 96 | 94 |
| CE-TTE apical | 18 | 97 | 69 | 18 |
| CXR | 38 | 94 | 77 | 33 |

Diagnostic Accuracy and Concordance