Ultrasound-guided venipuncture and tip location by intracavitary electrocardiogram have many advantages during the insertion of peripherally inserted central catheters, both in terms of safety and cost-effectiveness” Yin et al (2018).

Abstract:

INTRODUCTION: Ultrasound-guided venipuncture and tip location by intracavitary electrocardiogram have many advantages during the insertion of peripherally inserted central catheters, both in terms of safety and cost-effectiveness. Recently, a new tip-conductive peripherally inserted central catheters and new Doppler ultrasound device integrated with intracavitary electrocardiogram have been introduced into clinical practice in China. A randomized multicenter study (clinical trial no. NCT03230357) was performed to verify the feasibility and accuracy of intracavitary electrocardiogram, as performed with this new peripherally inserted central catheters and device.

METHODS: Our study enrolled a total of 2250 adult patients in 10 different Chinese hospitals. The patients were randomly assigned to either the study group (intracavitary electrocardiogram) or the control group (anatomical landmark guidance) in a 2:1 allocation. Ultrasound was used in both groups for venipuncture and tip navigation. All patients underwent chest X-ray after the procedure to verify the position of the catheter tip.

RESULTS: No insertion-related complications were reported in either group. In the study
group, first-attempt successful tip location was 91.7% (95% confidence interval: 90.3%-93.1%), significantly higher than 78.9% (95% confidence interval: 76.0%-81.9%) observed in the control group (p < 0.001). As evaluated by post-procedural chest X-ray, tip location in the study group had a sensitivity of 99.3% (95% confidence interval: 98.8%-99.7%), significantly higher than 86.8% (95% confidence interval: 84.4%-89.2%) observed in the anatomical landmark group (p < 0.001). CONCLUSION: These results indicated that during peripherally inserted central catheters insertion in adult patients, tip location with intracavitary electrocardiogram guidance, as carried out by a new tip-conductive peripherally inserted central catheters and intracavitary electrocardiogram integrated ultrasound device, was more effective and more accurate than tip location using anatomical landmarks.

You may also be interested in...

Intracavitary ECG guidance for peripherally inserted central catheter placement
Magnetic tracking with ekg PICC tip visualisation and confirmation
ECG PICC tip location accuracy and safety reviewed

Reference: