The aim of this study is to evaluate the influence of arm movements from adduction to abduction on intracavitary electrocardiogram and the position of a catheter tip” Zhu et al (2019).

Abstract:

PURPOSE: The aim of this study is to evaluate the influence of arm movements from adduction to abduction on intracavitary electrocardiogram and the position of a catheter tip.

METHODS: Overall, 192 peripherally inserted central catheter lines were placed under intracavitary electrocardiogram guidance and 188 of them were enrolled in the study. The catheter was first placed at a time point corresponding to the peak P wave with the arm in adduction. The arm was then abducted to 90° without changing catheter insertion length. During the procedure, basal electrocardiogram, intracavitary electrocardiogram, and radiographs with the arm in adduction and abduction were recorded. Amplitude wave changes and catheter movements were measured on electrocardiogram records and radiographs, respectively.

RESULTS: In 188 cases, the P wave displayed typical changes, and 97.8% (184/188) catheters were successfully placed correctly. At the peak P wave, the amplitude of the peak P wave was 8.64 times greater than that of the basal P wave, and the P/R ratio was 0.61. When the arm was abducted to 90°, the amplitude of the P wave dropped to 57% of its peak, P/R decreased from 0.61 to 0.34, and the catheter tip moved cephalad 1.00 and 0.77 vertebral body units in male and female patients, respectively.

CONCLUSION: Peripherally inserted central catheter moves toward the heart when the arm position changes from abduction to adduction. Peripherally inserted central catheter tip placement at the peak P wave with patient’s arm in adduction is accurate and can prevent the catheter from advancing too low. R wave can function as a reference for observing P wave changes during peripherally inserted central catheter placement.

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