Our study investigated the reliability of appearance of rapid atrial swirl flow (RASF) by ultrasonography (US) in the right atrium (RA), which occurred as a result of rapid isotonic saline infusion (RISI) into the central venous catheter (CVC), in predicting catheter tip position” Yesilbas et al (2018).

Abstract:

Our study investigated the reliability of appearance of rapid atrial swirl flow (RASF) by ultrasonography (US) in the right atrium (RA), which occurred as a result of rapid isotonic saline infusion (RISI) into the central venous catheter (CVC), in predicting catheter tip position. This prospective observational study included 95 CVC procedures performed on 77 pediatric patients (41 boys and 36 girls) with a median age of 0.6 (0.29-1.53) years. Seventy-three (76.84%) catheter tips were found to be correctly placed, and 22 (23.15%) catheter tips were misplaced. While ultrasonographic examination revealed RASF in the RA after 93 catheterization procedures, it was not observed after two catheterization procedures. One of these two catheters was an arterial catheter, and the other was a catheter that was directed toward the subclavian vein after curling around itself. There was no significant difference between the groups with incorrect and correct positioned catheter tip in terms of the appearance of RASF by US after RISI. There was no significant difference between the groups with upward (n = 8) and downward (n = 86) positioned catheter tip in terms of the time until the first appearance of RASF after RISI and the phase of RASF (P > 0.05).

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There was a significant difference between these two groups in terms of the disappearance time of RASF in the RA (P < 0.001). The mean disappearance time of RASF was 3 (2-3) s for downward positioned catheters and 5 (4-7) s for upward positioned catheters, respectively. When the cut-off for the disappearance time of RASF was set to 3 s, US had a sensitivity of 85.71% and a specificity of 77.91% for detecting upward positioned catheters. In conclusion, the appearance of RASF in the RA in a short time by US is not a reliable finding for correct positioning of the CVC tip in the pediatric patient group. The fact that the disappearance time of RASF in the RA is longer than 3 s indicates upward positioned CVCs.
These catheters must never be used without radiological confirmation. In CVCs in which the disappearance time of RASF in the RA is shorter than 3 s, we think that the catheter can be used until radiological confirmation in emergency cases. According to the available literature, our study is the first study in children. There is a need for new studies on this subject.

Reference:
