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A268 - The utility of transthoracic echocardiographic measures in prediction of postoperative pulmonary edema development

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Introduction:

Transthoracic ultrasound has been successfully used in intensive care units for many years to observe global cardiac function, valvular apparatus, and pericardial space .

This study aimed to assess changes in the Tricuspid Annular Plane Systolic Excursion (TAPSE) and Inferior Vena Cava(IVC) diameter and IVC collapsibility index (IVC cl) as a predictor for the development of postoperative pulmonary edema.

Methods:

In the period from October 2020 to May 2021, one hundred patients scheduled for the major noncardiac surgical procedures were included in this observational study. Tricuspid Annular Plane Systolic Excursion (TAPSE) and Inferior Vena Cava diameter (IVC) collapsibility index (IVC cl) were measured the day before and the day after the procedure. Development of pulmonary parenchymal opacity, as a sign of pulmonary edema, was monitored by lung ultrasound.

Results:

Changes in preoperative vs postoperative TAPSE measurements were seen : TAPSE 25 mm 2 vs 0 patients, TAPSE 24 mm 22 vs 8 patients, TAPSE 23 mm 21 vs 6 patients, TAPSE 22 mm 28 vs 15 patients, TAPSE 20 mm 20 vs 28 patients, TAPSE 19 mm 7 vs 37 patients and TAPSE 18 mm 0 vs 6 patients. Preoperative measurements showed that 73 patients had IVC diameter ≤ 2 cm with IVCcl $> 50\%$ and 27 patients had IVC diameter ≥ 2 cm with IVCcl $> 50\%$. In the postoperative period, 47 had IVC diameter ≤ 2 cm of which 25 patients had IVCcl $> 50\%$ and 22 IVCcl 35- 50% while 43 patients had IVC diameter ≥ 2 cm of which 31 patient with IVCcl 35-50% and 12 patients with IVCcl $< 35\%$. Patients with a decline in TAPSE also had reduction in IVCcl and B profile on the lung ultrasound .

Conclusion:

A combination of TAPSE decline and IVCcl reduction has a strong predictive value for developing postoperative pulmonary edema due to fluid overload.

References:

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