Correlation between maternal haemodynamic profile and lung interstitial oedema in postpartum patients with severe preeclampsia

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Objective. To assess potential correlation between maternal haemodynamic profile and lung interstitial oedema in postpartum patients with severe preeclampsia.

Materials and Methods. We included 21 patients with severe features of preeclampsia at four days postpartum. Two main parameters, which differentiate haemodynamic profile of preeclampsia, *i.e.* cardiac output (CO) and peripheral vascular resistance (PVR), were assessed by echocardiography. Cardiac output was calculated by multiplying stroke volume by heart rate. Stroke volume was obtained by using pulse-wave Doppler method and calculated as the product of left-ventricular outflow tract area and left-ventricular outflow tract velocity-time integral. Peripheral vascular resistance was calculated by dividing mean arterial blood pressure by CO. Lung ultrasound Echo Comet Score (ECS) was used as a marker of lung interstitial fluid. It was obtained using the 28-rib interspaces technique. Any correlation between ECS and CO or PVR was assessed by Kendall's tau ($p < 0.05$ significant).

Results. Cardiac output ranged from 3.2 to 7.1 L/min (median 4.6 L/min), PVR from 1,178.0 to 2,734.0 dynes × sec/cm^5 (median 1,834.0 dynes × sec/cm^5), and ECS from 0 to 40 (median 7). There was a significant inverse correlation between CO and ECS (Kendall's tau = -0.334, $p = 0.04$). Moreover, higher PVR was significantly associated with higher ECS (Kendall's tau = 0.340, $p = 0.03$).

Conclusions. Increased lung interstitial fluid in early postpartum period in preeclampsia is associated with low CO and high PVR. These results indicate that patients with severe preeclampsia who present with a low CO/high PVR haemodynamic profile are at higher risk of postpartum lung oedema.