Perioperative goal-directed fluid management using noninvasive hemodynamic monitoring in gynecologic oncology

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Background: Intraoperative fluid management is important for the prevention of perioperative morbidity and mortality. Our study aimed to investigate the perioperative feasibility and benefits of Goal-Directed Fluid Management (GDFM) using noninvasive hemodynamic monitoring in gynecologic oncology patients with acute blood loss and severe fluid loss. We assessed the effects of GDFM on hemodynamics, organ perfusion, complications, and mortality outcomes.

Methods: This randomized prospective study included 104 patients over the age of 18 years, including 56 patients with endometrial cancer and 48 patients with ovarian cancer who had open surgery. The anesthetic approach was standardized for all patients. We compared the perioperative results of the subjects who were randomized into GDFM (n = 51) and Liberal Fluid Management (LFM) (n = 53) groups using a computer program.

Results: The median perioperative crystalloid replacement (2000 vs. 2700; $p < 0.001$) and total volume of fluid (2260 vs. 3200; $p < 0.001$) were lower in the GDFM group compared to the LFM group. The hemodynamic findings and the HCO3 and lactate levels of the GDFM group did not significantly change perioperatively. The heart rate, mean arterial pressure, and HCO3 levels of the LFM group decreased and serum lactate levels increased perioperatively. The hospitalization rate in ICU (7.8% vs. 28.3%; $p = 0.010$), rate of patients with comorbidity conditions indicated in ICU (2% vs. 17%; $p = 0.024$), and rate of complications (17.6% vs. 35.8%; $p = 0.047$) were lower in the GDFM group compared to the LFM group.

Conclusion: The amount of intraoperatively administered crystalloid solution and complication rates were significantly lower in gynecologic oncologic surgery patients who received GDFM. Besides, hemodynamic findings, and lactate levels of the GDFM group did not change significantly during the perioperative period.