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Severe Takotsubo Cardiomyopathy in Pregnancy & Role of ECMO

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Introduction

Takotsubo cardiomyopathy (TTC), also known as stress cardiomyopathy or apical ballooning syndrome, is a transient left ventricular dysfunction typically triggered by emotional or physical stress. First described by Dote et al., the syndrome derives its name from the Japanese word "Takotsubo," meaning an octopus trap, due to the characteristic shape of the left ventricle. TTC is rare in pregnancy and poses significant challenges, especially in critically ill patients requiring advanced circulatory and respiratory support.

Objectives

- To highlight the clinical presentation and challenges of diagnosing TTC in pregnancy.
- To discuss the role of extracorporeal membrane oxygenation (ECMO) in refractory cardiogenic shock.
- To emphasize the importance of multidisciplinary critical care in high-risk obstetric patients

Case Report

A 31-year-old woman, 38 weeks pregnant, was diagnosed with pre-eclampsia at 34 weeks. On October 30, 2023, she was found to have an intrauterine fetal demise (IUFD) and was admitted for delivery on November 1, 2023. Given the emotional trauma associated with vaginal delivery of a stillborn, she opted for a cesarean section (CS) under general anesthesia.

Intraoperative Course

- Post-intubation, the patient exhibited ventilation failure, severe hypoxia, and frothy blood from the endotracheal tube, suggestive of acute pulmonary edema.
- Despite endotracheal suctioning and tube exchanges, her condition deteriorated, leading to bradycardia and cardiac arrest.
- Immediate cardiopulmonary resuscitation (CPR) was initiated with adrenaline, leading to the return of spontaneous circulation.

Cardiac Evaluation & Diagnosis

- Bedside echocardiography (ECHO) showed severe global hypokinesia with an ejection fraction (EF) of 15-20%, raising suspicion of stress cardiomyopathy.
- Despite medical therapy, her hemodynamics remained unstable, with persistent pulmonary edema, hypoxia, and worsening metabolic acidosis.
- Intra-aortic balloon pump (IABP) insertion was performed due to severe cardiac dysfunction.
- Extracorporeal membrane oxygenation (ECMO) was initiated due to refractory hypoxia and hemodynamic instability.
- Despite the high risk of bleeding, ECMO was deemed necessary for survival.

Surgical Intervention & Recovery

- The patient developed significant intra-abdominal bleeding, necessitating an exploratory laparotomy, which revealed a massive hematoma that was surgically evacuated.
- Over the next 24 hours, she showed hemodynamic improvement, requiring reduced inotropic support.
- Repeat echocardiography showed improvement in LV function, leading to ECMO decannulation on November 4, 2023, followed by IABP removal on November 5, 2023.
- She was successfully extubated and transitioned to room care, with all drains removed gradually.
- A final 2D ECHO before discharge confirmed complete LV function recovery, consistent with the expected course of Takotsubo cardiomyopathy.

Results & Discussion

Takotsubo cardiomyopathy in pregnancy is rare but life-threatening, often mimicking acute myocardial infarction. Its pathogenesis is linked to catecholamine surge, leading to myocardial stunning. The self-limiting nature of TTC makes early recognition and supportive therapy crucial. ECMO plays a vital role in managing refractory cardiogenic shock, providing circulatory support while allowing myocardial recovery.

Conclusion

Takotsubo cardiomyopathy remains a challenging diagnosis in pregnancy, requiring early detection, hemodynamic monitoring, and supportive therapy. In cases of refractory shock, ECMO can be lifesaving. This case highlights the importance of multidisciplinary critical care in high-risk obstetric emergencies [1].

References

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