

A case of diastolic dysfunction: Role of perioperative care on outcome.

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Introduction

Diastolic Dysfunction (DD) is a frequent finding on echocardiograms and is a significant contributor to Heart Failure, particularly in Patients with Preserved Ejection Fraction (HFpEF). While the clinical features of DD and systolic dysfunction can overlap, the management and prognosis are distinctly different. DD requires careful monitoring and management, particularly during the perioperative period, to avoid complications and optimize outcomes

Case History

A 65-year-old previously healthy female patient underwent an abdominoperineal resection for rectal carcinoma. During the surgery, she required two units of blood transfusion. On the first postoperative day, she was extubated due to clinical stability. However, she quickly experienced respiratory distress, fatigue, and confusion, necessitating re-intubation and mechanical ventilation with inotropic support for four more days. She exhibited signs of heart failure, including an S3 gallop and raised Jugular Venous Pressure (JVP). Careful fluid balance and diuretic therapy helped her recover [1].

Further inquiry revealed that she had received several Liters of normal saline during surgery to maintain blood pressure, which may have contributed to fluid overload. Despite this, she exhibited sinus tachycardia.

Preoperative echocardiography showed a preserved ejection fraction (60%) with Grade I diastolic dysfunction. Valve functions were normal.

Discussion

This patient required re-intubation due to respiratory distress, fatigue, and confusion, necessitating inotropic support for several days. Potential causes include arrhythmias (tachycardia or bradycardia) and myocardial dysfunction (systolic or diastolic), as well as non-cardiac factors such as increased preload (volume overload), afterload (hypertension), or demand (sepsis). DD often remains asymptomatic preoperatively but can manifest with symptoms like breathlessness, orthopnoea, and reduced exercise tolerance when exposed to stressors such as fluid overload. Echocardiography remains a crucial tool for assessing diastolic function, with advanced modalities such as strain imaging and three-dimensional echocardiography providing more precise measurements [2].

Perioperative Management of Diastolic Dysfunction

Patients with DD require meticulous perioperative care to avoid complications and ensure optimal outcomes [3].

1. Preoperative Assessment and Preparation

Comprehensive Evaluation: A thorough evaluation of cardiac risk factors, including hypertension, diabetes, coronary artery disease, and arrhythmias, is essential for identifying asymptomatic DD.

Echocardiography: Conduct preoperative echocardiography to assess diastolic function, ejection fraction, and valve functions. Evaluate left ventricular hypertrophy, atrial size, and other structural abnormalities.

Functional Assessment: Evaluate exercise tolerance and functional capacity, which provide insights into the patient's cardiac reserve.

2. Intraoperative Management

Anaesthetic Technique: Consider regional anaesthesia or a combination of regional and general anaesthesia to minimize hemodynamic fluctuations. Avoiding excessive sedation is important for maintaining stable blood pressure.

Hemodynamic Monitoring: Utilize advanced monitoring techniques such as transoesophageal echocardiography and invasive hemodynamic monitoring to track left ventricular end-diastolic pressure and left atrial pressure, allowing for real-time adjustments in management.

Fluid Management: Utilize goal-directed fluid therapy to maintain adequate cardiac output without fluid overload. Avoid aggressive fluid resuscitation.

Pharmacologic Interventions: Adjust anaesthetic agents and medications cautiously to avoid abrupt changes in blood pressure and heart rate [4].

3. Postoperative Care

Close Monitoring: Vigilant monitoring for signs of heart failure, such as elevated JVP, pulmonary edema, and respiratory distress, is crucial in the immediate postoperative period.

Weaning and Extubation: Weaning and extubation should be gradual and carefully executed to avoid abrupt changes in preload and afterload, which can precipitate heart failure.

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Fluid Management: Continue to monitor fluid balance and avoid excessive diuresis. Use diuretics as needed to manage pulmonary congestion [5].

4. Avoiding Stressors

Tachycardia and Atrial Fibrillation: Monitor heart rate closely and intervene early to prevent arrhythmias, as they can exacerbate DD.

Severe Hypertension: Control blood pressure to avoid sudden changes that can increase afterload and worsen diastolic function.

Respiratory Support: Provide supplemental oxygen and positive airway pressure if needed to improve oxygenation and manage hypoxia.

5. Patient Education

Preoperative Counselling: Educate patients about the potential risks and symptoms of DD and perioperative heart failure. Discuss the importance of medication adherence and lifestyle modifications.

Postoperative Instructions: Provide detailed instructions on medications, follow-up appointments, and symptoms to watch for after discharge [6].

Conclusion

Asymptomatic DD can be unmasked by various perioperative stresses, including uncontrolled hypertension, tachycardia, atrial fibrillation, and fluid overload. Early recognition and optimization of cardiac risk factors are crucial for achieving better outcomes. A gradual approach to extubation and meticulous fluid management is essential to mitigate the risk of heart failure.

References

1. Godfrey GE, Peck MJ. Diastolic dysfunction in anaesthesia and critical care. *BJA Education*. 2016;16(9):287-91.
2. Hussain N, Kayal A. Diastolic dysfunction and perioperative care. *Brit J Anaes*. (2022). 128(4).
3. Parcha V, Arian O, Arbune M. (2021). Management of perioperative complications in patients with diastolic dysfunction. *Brit J Anaes*. 127(3), 457-470.
4. Caputo N, Juthani A. Echocardiography in diastolic dysfunction. *BJA Education*. (2021). 21(1), 22-29.
5. Nixon H, Bates N. Perioperative management of diastolic dysfunction. *Brit J Anaes*. (2019). 123(3), 358-367.
6. Mathru M. Ventilator weaning and diastolic dysfunction. *BJA Education*. (2016). 16(8), 257-262.