



Pulmonary Hypertension: A Strategy for dealing with the Pressures and Failures in the Obstetric Environment



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INTRODUCTION

- **Cardiac disease** is a leading cause of **maternal death**.
- Pulmonary hypertension (PH) accounts for only **one percent** of cardiac cases in pregnancy.
- However, it remains a **high-risk condition** associated with maternal **mortality rates of 10-33%** and increased **foetal/neonatal morbidity** and mortality [1].
- **Right heart failure** is the most common cause of maternal death (Figure 1) in these cases as the physiological changes of pregnancy cause **decompensation** [2].
- We discuss the **management strategies** of this complex case in our tertiary obstetric unit.

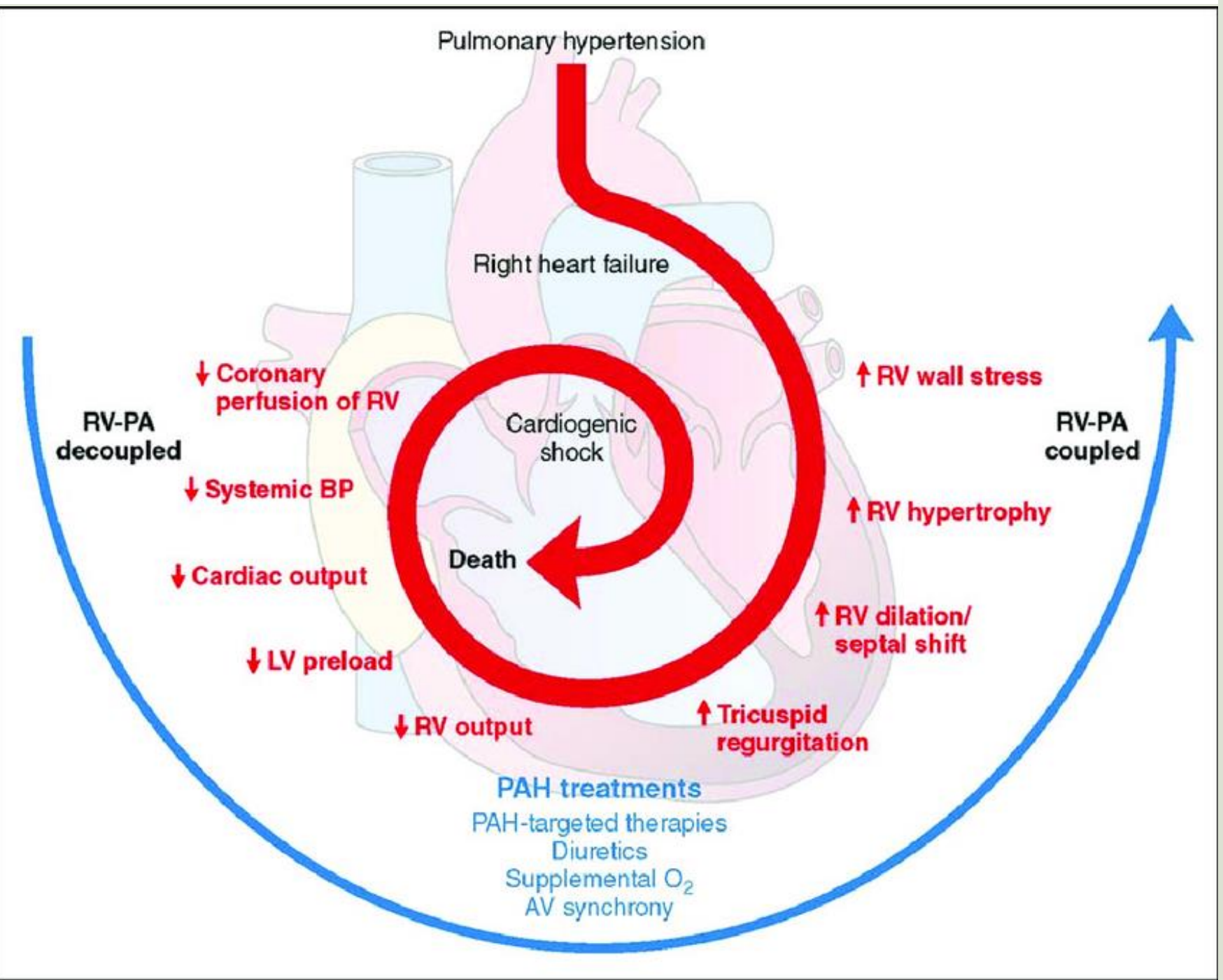
CASE REPORT

- A **29 year-old parturient** with a background of common variable **immunodeficiency (CVID)** presented to a district general hospital (DGH) with **respiratory symptoms** in the **second trimester**.
- She had established **multi-organ granulomatous disease**.
- Given her **medical complexity**, her care was transferred to a **tertiary unit**.
- At 32 weeks, she became **increasingly dyspnoeic**.
- Worsening heart failure was demonstrated on transthoracic echocardiogram (TTE), with **right ventricular dilation, tricuspid regurgitation and a high probability of PH**.
- **Expedited operative delivery** was undertaken for maternal condition following urgent multidisciplinary team (MDT) discussion.
- After placement of **invasive arterial and central venous catheters**, the patient was positioned for a **combined spinal epidural (CSE)** technique.
- A **low dose spinal** using 1.5mls of 0.5% heavy bupivacaine and 150 micrograms of alfentanil was administered.
- Then, **titration via the epidural** of 0.75% ropivacaine (5mls + 2mls), achieved a satisfactory T4 block for surgery.
- Management of postpartum haemorrhage (PPH) was planned using **uterotonic agents**, namely slow diluted oxytocin bolus and infusion (40 units in 500ml of normal saline).
- Ergometrine and carboprost were avoided.
- A low-rate phenylephrine infusion was used intraoperatively.
- Postoperative care was managed in the **High Dependency Unit (HDU)**.

DISCUSSION

- An **MDT approach** was required for safe delivery and **multiple specialties** were consulted.
- The **intraoperative haemodynamic goals** were to **avoid increases in pulmonary vascular resistance (PVR) and right ventricular (RV) afterload**.
- Hence, **avoiding hypoxia, hypercapnia, acidosis and pain** was **crucial**.
- **General anaesthesia** with positive pressure ventilation would be a **high-risk undertaking** [1].
- A low dose spinal with the CSE technique **avoided rapid haemodynamic changes**, including vasodilation that could compromise RV perfusion. **Haemodynamic support** focussed on **minimising pulmonary pressures and supporting the RV**.
- We had a range of vasoactive agents immediately available including dobutamine, milrinone, noradrenaline and nitric oxide.
- These patients are particularly **at risk post-partum**, especially from PPH.
- Further PPH management was planned with misoprostol and Bakri balloon
- This case exemplifies the **increasing incidence** of women presenting with **complex cardiac conditions** in maternity.
- These cases require **leadership and partnership** amongst the MDT.
- **Reflection and learning is important** as they may present to any unit, not just tertiary units.

Figure 1 [2]



ACKNOWLEDGEMENTS

Thanks to the patient who allowed us to present her clinical case for dissemination of knowledge and learning with regards to the management of pulmonary hypertension in the peripartum period

REFERENCES

1. Kariyawasam S, Brown J. Pulmonary arterial hypertension in pregnancy. BJA Education. 2023; 23(1): 24-31
2. Rajagopal et al. Evaluation and Management of Pulmonary Hypertension in Noncardiac Surgery: A Scientific Statement From the American Heart Association. Circulation. 2023;147(17):1317-1343