INFLOW CANNULA MALPOSITION AND LISTERIA SEPSIS: A DOUBLE HIT ON HEMODYNAMICS

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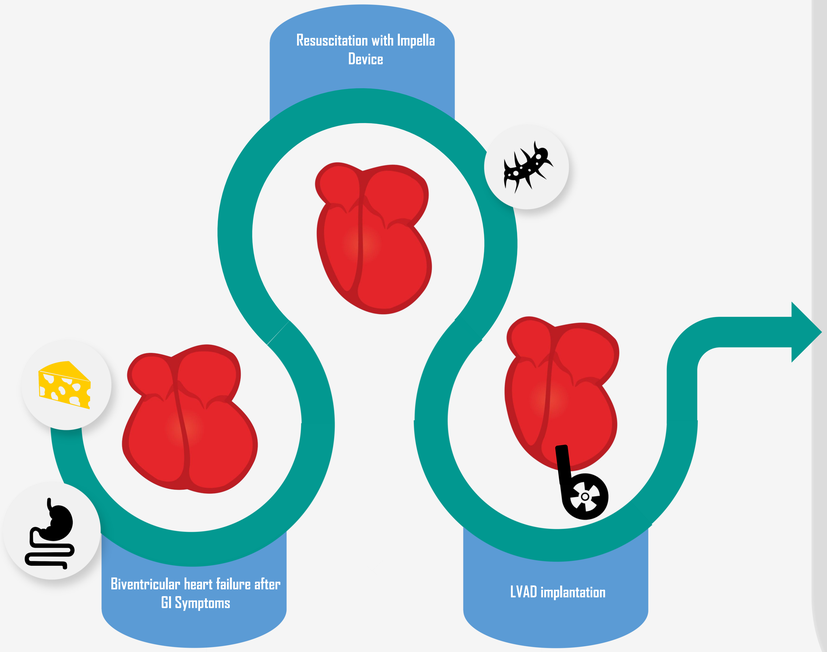
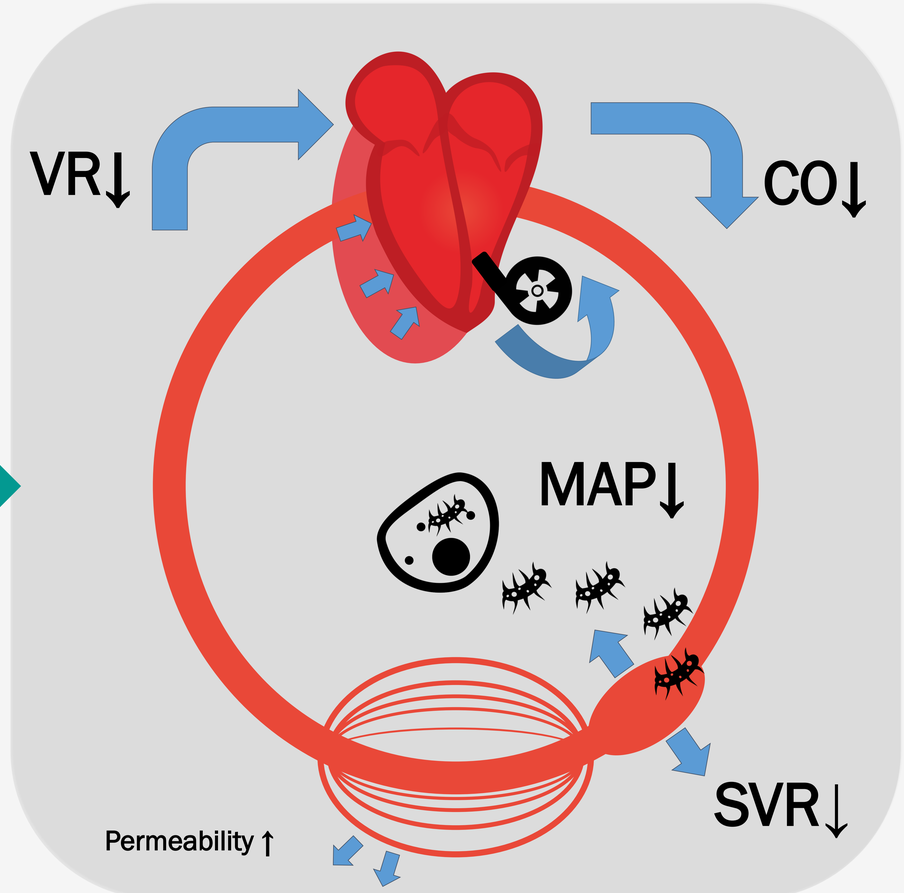
Introduction

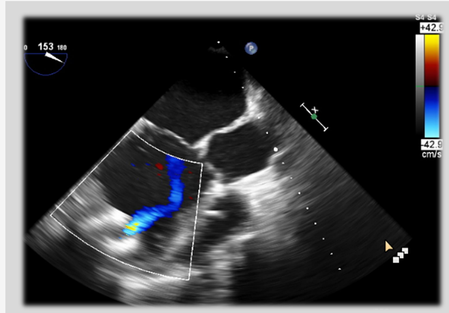
- Left ventricular assist devices (LVAD) usually provide limited flow reserve to respond to exercise and pathological hemodynamic states.
- Interaction of adverse hemodynamic events may precipitate right ventricular and LVAD dysfunction.



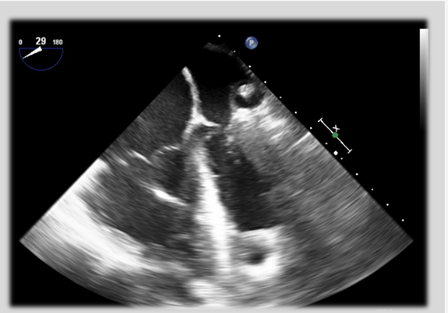
Case

- A 67-year-old male with known non-ischemic DCM presented with gastrointestinal symptoms and worsening exercise tolerance. Echo confirmed biventricular heart failure (LVEF 15%).
- Optimized medical therapy and mechanical circulatory support (Impella®) led to successful compensation, and a cardiac resynchronization device (CRT-D) was inserted.
- Three days after CRT-D insertion the patient became febrile. Blood cultures were positive for *Listeria monozytogenes*, but became negative during a 2-wk course of amoxicillin. The patient recovered and was discharged home after 17 days.
- Readmission became necessary after 18 days due to persistent arrhythmia and worsening LV function (LVEF 10%). A LVAD (HeartMate III) was implanted.





TEE after LVAD implantation



Perioperative TEE during revision

Case

- From POD 4 after LVAD implantation the patient experienced recurrent low-flow alarms. A rise of inflammatory markers was accompanied by pericardial effusion.
- On POD 6, blood cultures returned positive again for *Listeria*, while tamponade required surgical revision. Perioperative TEE showed that the initially well-positioned LVAD inflow cannula now pointed towards the antero-septal LV wall. After delayed chest closure, the patient stabilized during two subsequent weeks.
- On POD 24, hemodynamics and neurological status deteriorated due to a new episode of sepsis, and the patient died from multi-organ failure.

Discussion

- Both pericardial tamponade and infection (22%) are common postoperative complications after LVAD implantation. Nearly 50% of LVAD infections are associated with bloodstream infection, which increases risks of stroke and mortality. [1,2]
- *Listeria* sepsis in an LVAD patient has not been reported to our knowledge. Since *Listeria* had been cultured from the patient`s blood prior to LVAD implantation, postoperative reactivation appears likely. The ability of these foodborne bacteria to invade cells could have helped it evade the patient's immune system.
- A vicious circle was initiated by sepsis-associated hypovolemia, low afterload and pericardial tamponade, while suboptimal angulation of LVAD inflow cannula occurred due to changing LV morphology, impeding LVAD function.[3,4]

References

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