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Rare Complications Associated with Use of Bovine Pericardium

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Background

- Bovine Pericardium (BP), with numerous and improving preparation techniques, is used extensively in repair of simple and complex congenital heart defects.

Case Presentation

Case 1

- A 14-month-old male, with trisomy 21 and complete AV canal (CAVC) repaired with patch closure of atrial septal defect (ASD) with photo-oxidized BP. Ventricular septal defect (VSD) was closed primarily.
- A routine surveillance echocardiogram showed a mass attached to the atrial septum and atrial aspect of the left atrioventricular valve (LAVV) (Figures 1)
- A cardiac MRI and trans-esophageal echocardiogram (TEE) were consistent with thrombus (Figure 2).
- Pathology showed fibrin thrombus.

Case 2

- A 10-month-old girl, with mosaic trisomy 9 and Tetralogy of Fallot underwent a transannular patch repair with photo-fixed BP.
- A follow-up echocardiogram showed fluid collection around right ventricular outflow tract (RVOT) patch with intraluminal compression.
- A CT angiogram (Figure 3) confirmed the suspicion.
- Intraoperatively, purulent appearing fluid within an intact patch was drained.
- Fluid culture showed no growth and pathology revealed fibrous tissue with mixed inflammatory infiltrate including necrotizing granulomas.

Diagnostic Images

Figure 1 (Case 1): Echocardiogram showing thickened echo dense atrial septum (*) and mass on the LAVV (#)



Figure 2 (Case 1): Cardiac MRI and Macroscopic picture of the thrombus removed from ASD patch

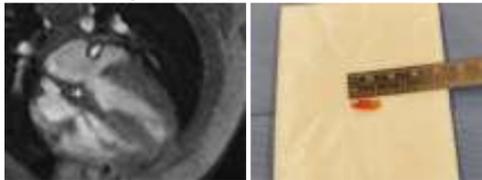
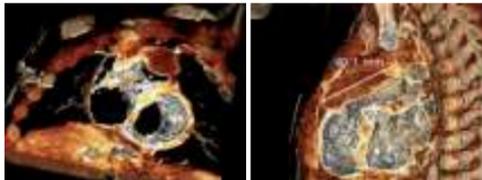


Figure 3 (Case 2): 3D reconstructed CT image shows a fluid collection along the anterior left aspect of the RVOT and MPA with luminal narrowing (*)



Discussion

- Chronic inflammation and calcification are common causes of patch failure.
- We report two rare complications of photo-fixed BP, namely a thrombus and sterile abscess within 6 months of surgical repair.
- Paucity of data in pediatric population regarding range of complications associated with BP.
- Literature regarding complications associated with photo-oxidized BP is limited to a single center experience.

Conclusion

- Exact mechanism causing patch failure is inconclusive and warrants further research.
- Physicians should have a high index of suspicion on surveillance echocardiograms for rare but significant complications in association with BP, even in asymptomatic cases.
- Advanced imaging modalities including cardiac CT, cardiac MRI and TEE, allow for better visualization and definitive diagnosis.
- Surgical re-intervention should be considered if BP associated complications appear to be progressive and unresponsive to medical management.

