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Clinical Case Report: Native right-sided Endocarditis in a Pediatric Patient following Surgical Tetralogy of Fallot Treatment

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Abstract

Endocarditis affecting the right side of the heart is a distinct clinical condition, albeit less common than its left-side counterpart. Managing infective endocarditis in pediatric patients poses various challenges, particularly when congenital heart disease, often associated with increased risk, is present. While a history of congenital heart disease remains the predominant risk factor, new predisposing conditions are gaining significance. In this case report, we detail the clinical manifestation, diagnostic process, and treatment of isolated native pulmonary valve endocarditis in a pediatric patient who underwent surgical intervention for Tetralogy of Fallot a year prior.

1. Introduction

Right-sided endocarditis constitutes approximately 12% of all infective endocarditis (IE) cases, with the tricuspid valve commonly affected. Isolated pulmonary valve (PV) involvement is infrequent, and typically associated with congenital heart disease. Here, we present a case study detailing the clinical presentation, diagnosis, and management of a pediatric patient exhibiting isolated native PV endocarditis a year after undergoing surgical treatment for Tetralogy of Fallot.

2. Case Presentation

Upon admission, a 1.5-year-old female child, weighing 9300g, presented with subfebrile temperature, extreme pallor, lethargy, mild tachypnea, and hypotrophy. A harsh heart murmur was audible on the left sternal border. Blood count revealed indicators of anemia and thrombocytopenia, with elevated C-reactive protein (CRP). Staphylococcus epidermidis was consistently isolated in three blood cultures. Antibiotic therapy commenced with Ampicillin and Amikacin and later transitioned to Meropenem and Vancomycin. During the second week of hospitalization, the patient experienced significant gastrointestinal bleeding, managed through conservative measures.

2.1 Preoperative Echocardiography

Echocardiography revealed balanced ventricles, with an echogenic patch on the peri membranous-outlet region in the interventricular septum. A 3mm residual defect at the upper end of the patch resulted in a left-to-right shunt, accompanied by a 38mmHg gradient between the two ventricles. A large, lobulated, echogenic, and mobile mass, measuring 12-15mm in diameter, was observed in the pulmonary valve. The mass extended towards the right pulmonary artery with a thin 17mm pedicle. A 32mmHg gradient was noted at the valve level, along with mild insufficiency. Tricuspid valve insufficiency was graded as level 2, and flow velocity was measured at 3.8m/s (58mmHg). Right ventricular pressure was estimated at 60-65mmHg. The aortic valve had three cusps with minimal regurgitation, and there was mild (1st degree) regurgitation from the mitral valve. No thrombus/vegetation was detected in other vessel cavities on the tricuspid, mitral, and aortic valves. Coronary artery outputs were within normal range and left ventricular function was normal, with no pericardial effusion observed (Figure 1).

2.2 Surgical Procedure

The surgical intervention involved closure of the ventricular septal defect (VSD), resection of the pulmonary valve, and excision of infected tissues.

2.3 Postoperative Course

Following the procedure, the patient was transferred to the Intensive Care Unit (ICU) with stable hemodynamic findings and moderate inotropic support. Early extubating occurred, and the patient was moved to the regular patient floor on the first postoperative day. No microorganisms were isolated in the tissue cultures taken during the operation. Antibiotic treatment was continued for two weeks postoperatively. The last follow-up after leaving the ICU was uneventful, and the final chest X-ray and laboratory findings were within normal limits.

3. Discussion

Approximately 50–70% of pediatric infective endocarditis (IE) cases occur in patients with congenital heart disease, which is the primary predisposing condition. High-risk variants include cyanotic and complex congenital heart diseases, left-sided defects, or endocardial cushion defects. Recent reconstructive cardiac surgery within six months in congenital heart disease patients is a significant predisposing factor for IE. Causal pathogens vary based on underlying conditions. Despite changes in IE epidemiology,

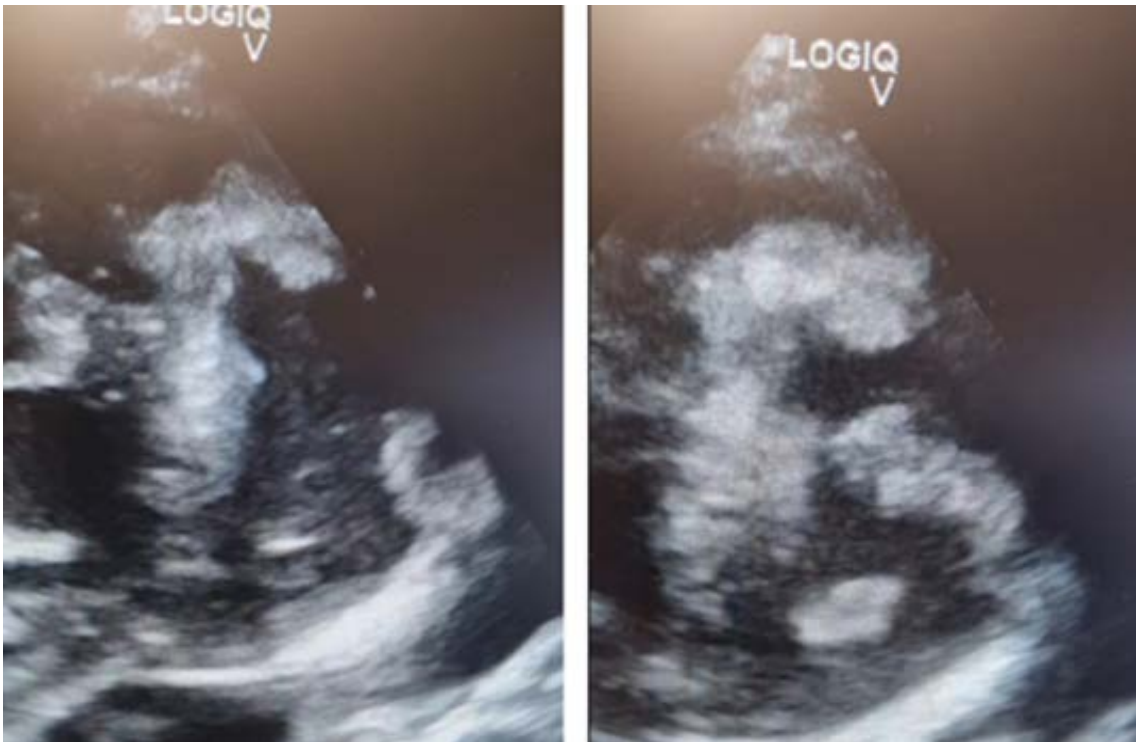

Figure 1: Transthoracic echocardiogram: A parasternal, short-axis view shows a mobile mass consistent with vegetation adjacent to the pulmonary valve.

Staphylococcus aureus remains the predominant causative pathogen in both children and adults. Coagulase-negative Staphylococci are isolated in 10–15% of patients with congenital heart defects. Patients with Tetralogy of Fallot (ToF) are at a heightened risk of IE due to altered hemodynamics and multiple invasive procedures. Although TOF repair outcomes have improved, complications persist, making TOF patients prone to IE. In right-sided endocarditis, surgical indications and timing are less clear than in left-sided infections.

4. Conclusion

Current literature highlights significant morbidity, mortality, and a high likelihood of requiring surgery. Consideration for early surgical intervention is prompted by large vegetation and clinical signs of hemodynamic impact.