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A Challenging Case of Acute Leukemia Complicated by a Ruptured Aortic Root Caused by Catheter-Related Infective Endocarditis

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Background. Bloodstream infection is one of the most important causes of morbidity and mortality among patients with acute leukemia. The risk of infection is increased due to indwelling venous catheters, long-term hospitalization, multidrug-resistant microorganisms, and other predisposing factors. Nevertheless, native valve infective endocarditis (IE) is a rare complication.

Aim. To report a first complicated case of IE due to *S. aureus* in a patient with acute leukemia.

Case presentation. A 21-month-old boy presented with fever, sleep deprivation and appetite loss. Laboratory tests indicated: WBC, $18,2 \times 10^9/l$; NEU, $0,77 \times 10^9/l$; HGB 68 g/l; platelets, $26 \times 10^9/l$, 56% blasts on blood smear. The diagnosis of B-precursor acute lymphoblastic leukemia (ALL) with high hyperdiploidy was based on bone marrow **Results.** After successful induction according to the Nopho ALLTogether protocol, the patient was stratified to the final intermediate-high risk group because of 1,3% MRD by flow cytometry. During consolidation, *S. aureus* caused sepsis occurred twice. After the second sepsis, the central venous line (CVL) was removed. However, the persistence of *S. aureus* was confirmed from blood culture ten days later. Physical examination revealed a continuous murmur and tachycardia. Two-dimensional transthoracic echocardiography (TTE) showed echogenic structures on the aortic valve leaflets. The presence of new moderate-severe aortic valve regurgitation and signs of pericardial effusion were suspected. IE was confirmed and treated according to microbiology test **Results.** Dilatation and dysfunction of the left ventricle progressed during the next few weeks. Aortic root rupture with penetration into the interventricular septum was suspected by TTE and confirmed by computed tomography. Consequently, the patient underwent successful surgical repair of the aortic root and the aortic valve. Intravenous antibiotics were administered for 6 weeks. There were no complications during follow-up. Anti-leukemic treatment was restarted after four weeks with negative flow cytometry for MRD.

Conclusions: Infective endocarditis complicated by an aortic root rupture that penetrates to the interventricular septum is a rarity among children. However, catheter-related bloodstream infections might cause infective endocarditis, especially in patients with underlying conditions like acute lymphoblastic leukemia.