Case report

Infective endocarditis on ventricular septal defect complicated by septic pulmonary embolism, report of a case

Abstract

We report a case of infectious endocarditis in a 20-year-old patient followed for congenital heart disease such as ventricular septal defect (VSD), complicated by septic pulmonary embolism; whose starting point is a vegetation at the expense of the right heart, with a good clinical-biological evolution under medical treatment and a clear regression in the size of the vegetation.

Keywords: Infectious endocarditis; Ventricular septal defect; Pulmonary embolism

Introduction

Infectious endocarditis (IE) is a serious condition causing significant morbidity and mortality. Among its risk factors are congenital heart diseases, with ventricular septal defect (VSD) being the most frequent. Septic pulmonary embolism represents a rare complication, thereby increasing the mortality risk and necessitating appropriate care.

Case Presentation

This is a 20-year-old patient with a history of VSD-type congenital heart disease who consults for dyspnea at rest associated with subacute onset fever that has been ongoing for 2 months.

Hemodynamically stable with a BP: 111/61 mmHg and a temperature of 39.6°C, ecchymotic purpura in the lower limbs, with a holo-systolic murmur in the radius of the wheel on cardiac auscultation, the rest of the clinical examination was unremarkable.

On the ECG: regular sinus rhythm at 107 bpm, fixed PR at 120ms, normal heart axis, fine QRS, without repolarization disorders.

On echocardiography thoracic trance: good bi-ventricular function, fused mitral profile, the atria were not dilated, no mitro-aortic valvulopathy, presence of a peri-membranous VSD of 11mm long axis with low speed left-right shunt (Figure 1), with a maximum gradient across the VSD at 88mmHg, site of a hyperechoic filiform image measuring 23x12 mm on the lower border of the VSD floating in the right ventricle (Figure 2), non-dilated IVC at 11 mm compliant, no effusion pericardial.

Faced with this clinical and echocardiographic picture, the diagnosis of infective endocarditis was made.

Biologically: hyperleukocytosis at 18030 G/L with predominantly PNN (14170 G/L), CRP: 340g/L, renal and hepatic function as well as the hemostasis assessment were correct, 2 blood cultures positive for staphylococcus aureus.

As part of the extension assessment, a chest angio-CT scan was carried out and showed the presence of a bilateral distal pulmonary embolism strongly suggestive of septic emboli (Figure 3), the fundus examination was normal.

The portal of entry was probably dental given the poor oral condition, the patient was put on dual antibiotic therapy based on ceftriaxone 2g/day and gentamycin 160 mg/day with good clinical-biological progress.

A surgical indication for closure of the VSD was retained after disappearance of the ultrasound image of the vegetation given the good response to antibiotic therapy as well as good hemodynamic tolerance. Echocardiographically we note a clear regression in the size of the vegetation to 13x3mm, the patient was declared discharged from the service after 28 days of parenteral treatment, and the normalization of the biological assessment.

Discussion

Patients with left-right shunts such as VSD present a risk of IE. Indeed, several studies have documented this risk of developing IE in particular on the right side (1,2) due to the high pressure gradient between the two cardiac chambers, source of endocardial erosive lesions on the right side, are generally the site of vegetations.

Active search for pulmonary embolism is always recommended in patients with endocarditis, particularly in patients with large (> 10 mm) and mobile vegetations. this link between IE and septic pulmonary emboli is well documented in the literature (3).

Our patient had septic bilateral distal vegetation embolization which persisted despite appropriate antibiotic therapy. (4,5)

Intravenous antibiotic therapy is the mainstay of treatment for IE, and they typically respond to a 4- to 6-week course of parenteral antibiotics (6).

Surgical intervention in right-sided IE is indicated only when caused by difficult-to-eradicate microorganisms, e.g. fungus, bacteremia persisting for more than 7 days despite adequate antibiotic therapy, embolisms recurrent pulmonary heart failure with or without concomitant right heart failure, perivalvular abscess, persistent large tricuspid valve vegetation (>20 mm), or right heart failure secondary to severe tricuspid regurgitation (7,8,9).

Conclusion

Infective endocarditis is a serious condition and must be looked for in the face of any unexplained fever, particularly in patients with congenital heart disease, especially VSD.

Echocardiography plays an essential role in the positive diagnosis, monitoring as well as the search for complications and the study of congenital heart disease.

The search for septic pulmonary embolism must be systematic in patients with right heart endocarditis, especially if the vegetation is large and mobile.

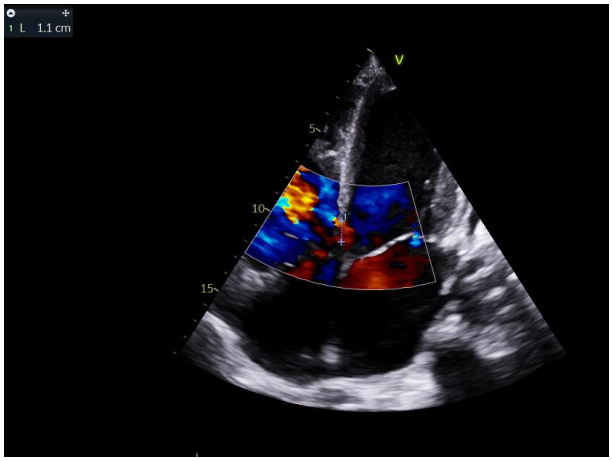

Figure 1 : apical four-cavity cut showing the septal defect (VSD)

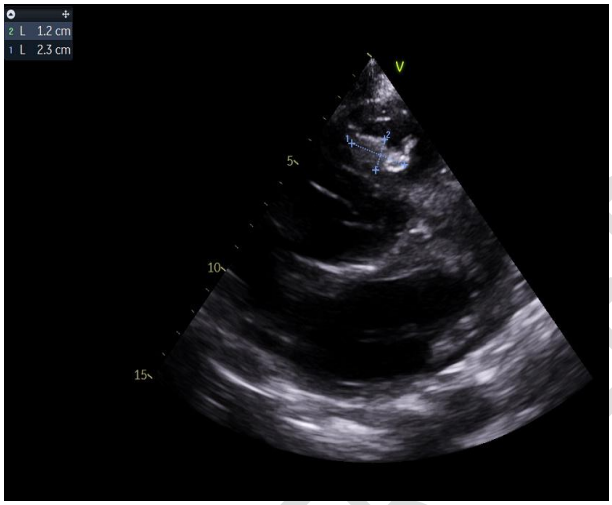

Figure 2 : apical four-cavity section showing a hyperechoic filiform image arising on the IVS and floating in the RV (vegetation image)

Figure 3 : CT image showing distal pulmonary embolization

References

1- Kim YJ, Sohn DW. Pulmonary valve endocarditis with septic pulmonary thromboembolism in a patient with ventricular septal defect. Sohn DW. Pulmonary valve endocarditis with septic pulmonary thromboembolism in a patient with ventricular septal defect. Sohn DW. Pulmonary valve endocarditis with septic pulmonary thromboembolism in a patient with ventricular septal defect. J Cardiovascular ultrasound. 2009; 17 (4): 138 -40

2- Zijlstra F, Fioretti P, Roelandt JR. Echocardiographic evidence of free-wall vegetative endocarditis complicated by pulmonary embolism in a patient with a ventricular septal defect. Br Heart J. 1986; 55 (5): 497 -9

3- Teran CG, Antezana AO, Salvani J, Abaitey D. Group B streptococcal endocarditis associated with multiple septic pulmonary emboli.Group B streptococcal endocarditis associated with multiple septic pulmonary emboli.Group B streptococcal endocarditis associated with multiple septic pulmonary emboli. Practical Clin. 2011; 1 (1)

4- Roodpeyma S. Infective endocarditis complicated by septic pulmonary embolism in a case of ventricular septal defect. J Compr Ped 2015; 6:e29610

5- Aydin MS, Hazar A, Demirkol AH. Massive right main pulmonary embolism caused by infective endocarditis of the tricuspid valve. Heart Asia 2013; 5:128–129.

6- Sutcliffe EC, Terasaki GS, Thompson RE. Tricuspid endocarditis with pulmonary embolism. RespirCare 2006; 51:1471–1474.

7- Shmueli H, Thomas F, Flint N, Setia G, Janjic A, Siegel RJ. Right-sided infective endocarditis 2020: challenges and updates in diagnosis and treatment. J Am Heart Assoc 2020; 9:e017293

8- Park HE, Cho GY, Kim HK, Kim YJ, Sohn DW. Pulmonary valve endocarditis with septic pulmonary thromboembolism in a patient with ventricular septal defect. Cardiovascular ultrasound J 2009; 17:138–140.

9- Saleem M, Ahmed F, Patel K, Munir MB, Ghaffar YA, Mujahid H, Balla S. Isolated pulmonary valve endocarditis: case report and review of existing literature on diagnosis and therapy. CAS (Phila) 2019; 3:227–230.