Case report

Rare case of fungal endocarditis of the right heart

Abstract:

Fungal endocarditis of the right heart constitutes a pathological entity of often delicate diagnosis, associated with a potentially severe prognosis. We report the case of a 37-year-old patient, hospitalized for *Candida Albicans*infective endocarditis of the right heart on a tunneled hemodialysis KT, in whom the clinical history, the means of exploration as well as the therapy deployed are described.

Introduction

Infective endocarditis (IE) of the right heart accounts for 5-10% of IEs. They are most frequently seen in intravenous drug users, including those infected with the human immunodeficiency virus, as well as the immunocompromised. They may also occur in patients with pacemakers or defibrillators, central venous catheters or congenital heart disease [1,2].

They are usually associated with a primary left-sided location (IE on interventricular septal defect or complicated by perforation of the interventricular septum), or exclusively localized to the valve orifices of the right heart, tricuspid more often than pulmonary[3].

The microorganism most often involved is *Staphylococcus aureus*[4], with an increase in the prevalence of methicillin-resistant strains for both this germ and polymicrobial infections[5,6].

Because of the anterior location of the valve and the often large size of the vegetations, transthoracic echocardiography usually allows the diagnosis of tricuspid IE. In parallel, transesophageal echocardiography is more efficient for the analysis of the pulmonary valve, abscesses and left heart lesions [7].

The prognosis of right IE is relatively good, with an initial hospital phase mortality of less than 10%.Thus, factors with a poorer prognosis are very large vegetations (>20 mm), fungal infection, and, in human immunodeficiency virus-infected patients, a CD4 count < 200/ mm3[2,8].

MEDICAL OBSERVATION

We report the case of a 37-year-old patient, type 1 diabetic on insulin, at the stage of diabetic retinopathy causing blindness, followed for CKD for 3 months on hemodialysis, at a rate of 2 sessions per week. He was admitted for a definite infectious endocarditis of the right heart, at the level of the septal leaflet of the tricuspid valve on a tunneled hemodialysis KT, with LVEF at 60%. Cardiovascular and pleuropulmonary auscultation was strictly normal. The clinical examination revealed a rectal mass. On trans-thoracic echography, a vegetation was found at the level of the tricuspid valve

measuring 22x20mm (Figure 1). Biological findings included a predominantly neutrophilichyperleukocytosis of 22,000/mm3 with a CRP of 323mg/L and a PCT of 100ng/ml and isolation of *Candida albicans* from blood cultures and ECBU. An extension workup was performed: a cerebral angioscanner finding no paradoxical emboli, a thoracic angioscanner finding multiple septic emboli with left basal pulmonary infarction, an abdominal echo highlighting a parietal invasion of the bladder with abundant ascites and a vesicular sludge, a colonoscopy + biopsy confirming a rectal process, and a bone scan, with a cervical MRI do not objectify spondylodiscitis.

The initial therapeutic approach was to put the patient on a probabilistic biologic therapy based on gentamycin and vancomycin, then to switch to antifungal agents after the results of the blood cultures.

Discussion

Invasive mycoses are severe pathologies whose incidence is increasing, due to the increase in populations at risk, such as patients who are seropositive for the human immunodeficiency virus (HIV), treated with immunosuppressants or antimitotic chemotherapy, or transplanted with organs or hematopoietic stem cells.

The incidence of candidemia is 0.2 to 0.4 per 1000 admissions and up to two per 1000 admissions in intensive care units [9], representing the seventh most common cause of hematogenous infection in Europe [10]

Tricuspid fungal endocarditis is a rare, severe and difficult to diagnose condition, occurring at any age. In this patient with several identified risk factors (tuned KT from hemodialysis, immunodepression, polyantibiotic therapy), trans-thoracic echography has demonstrated its value in identifying the vegetation as well as its location, measurement and characteristics, thus allowing the diagnosis of endocarditis and the choice of a better management.

The role of the combination of *Amphoterocin B* plus 5-FC in *cryptococcosis* is established by numerous in vitro and experimental studies and clinical trials in humans. However, these are much rarer for the evaluation of first-line treatment of candidiasis and *aspergillosis*, with only one published prospective study in candidiasis [13].

The choice of antibiotic therapy depends on the suspected microorganism and the location of the cardiac involvement [6]. At entry, in IE on native right heart valve, antibiotic therapy should always be directed against *Staphylococcus.aureus*. Treatment includes penicillinase-resistant penicillin or vancomycin or daptomycin, depending on the local prevalence of methicillin resistance in *Staphylococcus. aureus*, combined with gentamicin [6]. Once the microorganism has been identified, antibiotic therapy must be adapted.

In our study, *Candida Albicans* was isolated in the blood cultures and in the ECBU, which allowed us to start the patient on antifungal agents after a probabilistic antibiotic therapy based on vancomycin and gentamycin.

Despite the expansion of the antifungal therapeutic arsenal, the overall mortality of these infections remains high: 20% for *cryptococcosis*[13], more than 35% for *aspergillosis*and candidiasis [14,15,16].

Conclusion

This observation raises the question of the management of candidiasis in patients with right heart infective endocarditis. It is necessary to treat effectively and appropriately in order to improve the survival of the affected subject

References

- [1] Cooper HL, Brady JE, Ciccarone D, Tempalski B, Gostnell K, Friedman SR. National increase in the number of hospitalizations for infective endocarditis related to illicit injection drug use. Clin Infect Dis 2017;45:1200-3.

-[2] Gebo KA, Burkey MD, Lucas GM, Moore RD, Wilson LE. Incidence, risk factors for clinical presentation, and one-year outcomes of infective endocarditis in an urban HIV cohort. J Acquir Immune DeficSyndr 2016;43:426-32.

- [3] Carozza A, De Santo LS, Romano G, Della CA, Ursomando F, Scardone M, et al. Infectious endocarditis in intravenous drug abusers: presentation patterns and long-term results of surgical treatment. J Heart Valve Dis 2016;15:125-31.

- [4] Miro JM, del Rio A, Mestres CA. Infectious endocarditis and cardiac surgery in intravenous drug abusers and HIV-1 infected persons.

- [5] Saydain G, Singh J, Dalal B, Yoo W, Levine DP. Outcome of patients with endocarditis associated with injection drug use admitted to an intensive care unit. J Crit Care 2010;25:248-53.

- [6] Sousa C, Botelho C, Rodrigues D, Azeredo J, Oliveira R. Infective endocarditis in intravenous drug abusers: an update. Eur J Clin Micro

- [7] San Roman JA, Vilacosta I, Lopez J, Revilla A, Arnold R, Sevilla T, et al. Role of transthoracic and transesophageal echocardiography in right-sided endocarditis: one echocardiographic modality does not fit all. J Am SocEchocardiogr 2012;25:807-14.

- [8] Gaca JG, Sheng S, Daneshmand M, Rankin JS, Williams ML, O'Brien SM, et al. Current outcomes for infective tricuspid valve endocarditis surgery in North America. Ann ThoracSurg 2013;96:1374-81

- [9] Tortorano AM, Kibbler C, Peman J, Bernhardt H, Klingspor L, Grillot R. Candidaemia in Europe: epidemiology and resistance. Int J Antimicrob Agents 2016;27:359-66.

- [10] Leroy OGJ, Montravers P, Mira JP, Gouin F, Sollet JP, Carlet J, et al. Epidemiology, management and risk factors for death from invasive Candida infections in intensive care: a multicentre, prospective and observational study in France (2015-2016). Crit Care Med 2017, revised.

- [11] Regnier BAM, Bezie Y, Blanc V, Buzyn A, Choutet P, Mimoz O, et al. Management of invasive aspergillosis and candidiasis in adults. SFAR, SPILF, SRLF joint consensus conference. Ann FrAnesthReanim 2014:5-13 [special issue].

- [12] Pappas PG, Kauffman CA, Andes D, Benjamin Jr DK, Calandra TF, Edwards J, et al. Clinical practice guidelines for the management of candidiasis: 2019 update from the Infectious Diseases Society of America. Clin Infect Dis 2019;48:503-35.

- [13] Lortholary O, Poizat G, Zeller V, Neuville S, Boibieux A, Alvarez M, et al. Long-term outcome of AIDS-associated cryptococcosis in the era of combination antiretroviral therapy. AIDS 2016;20:2183-91.

- [14] Cornillet A, Camus C, Nimubona S, Gandemer V, Tattevin P, Belleguic C, et al. Comparison of epidemiological, clinical and biological characteristics of invasive aspergillosis in neutropenic and non-neutropenic patients: a 6-year survey. Clin Infect Dis 2016;43:577-84.

- [15] Herbrecht R, Denning DW, Patterson TF, Bennett JE, Greene RE, Oestmann JW, et al. Voriconazole versus amphotericin B for the primary treatment of invasive aspergillosis. N Engl J Med 2012;347:408-15.

- [16] Rex JH, Pappas PG, Karchmer AW, Sobel J, Edwards JE, Hadley S, et al. A randomized, blinded, multicenter trial of high-dose fluconazole plus placebo versus fluconazole plus amphotericin B as a treatment for candidemia and its consequences in non-neutropenic subjects. Clin Infect Dis 2013;36:1221-8.

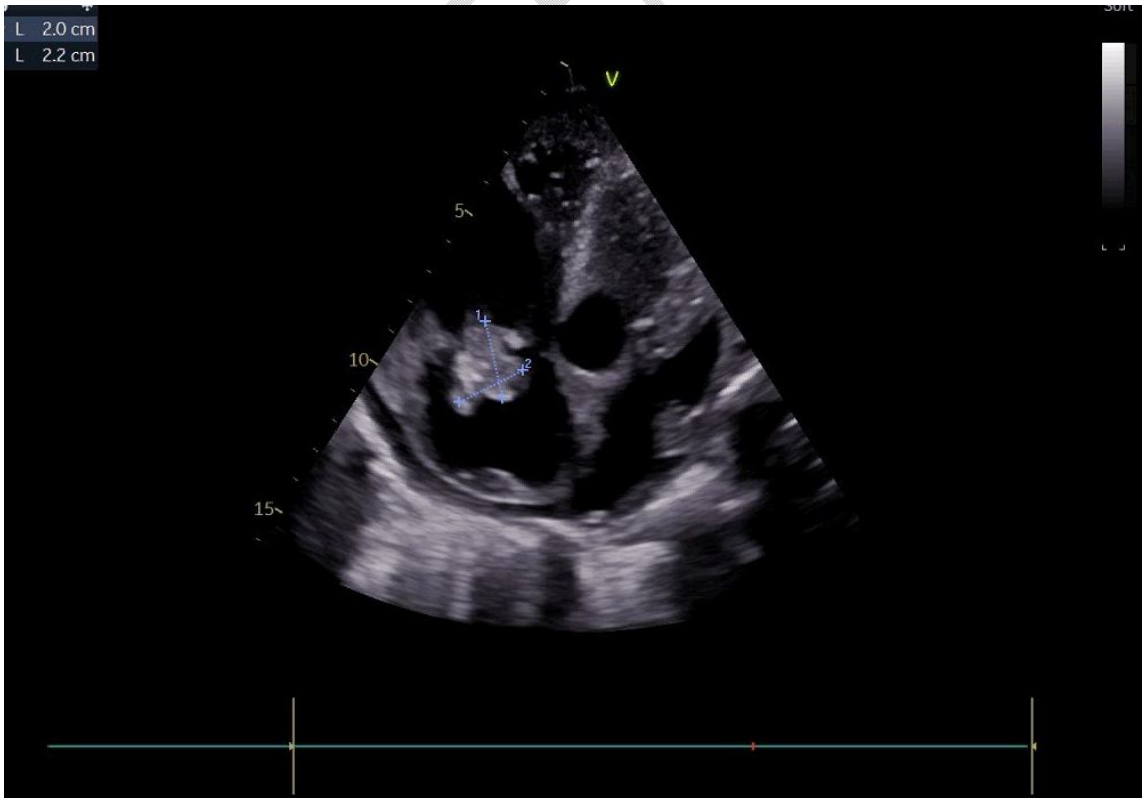

Figure 1: **Trans-aortic ultrasound showing vegetation on the tricuspid valve measuring 22x20mm**