

Candida parapsilosis prosthetic valve endocarditis



André Silva-Pinto^{a,b,*}, Rita Ferraz^{a,b}, Jorge Casanova^c, António Sarmento^{a,b},
Lurdes Santos^{a,b}

^a Infectious Diseases Department, Centro Hospitalar São João, Alameda Professor Hernâni Monteiro, Porto 4200, Portugal

^b Instituto de Inovação e Investigação em Saúde (I3S), Grupo de I&D em Nefrologia e Doenças Infecciosas, Instituto Nacional de Engenharia Biomédica (INEB), Portugal

^c Cardiac Surgery Department, Centro Hospitalar São João, Alameda Professor Hernâni Monteiro, Porto 4200, Portugal

ARTICLE INFO

Article history:

Received 24 July 2015

Received in revised form

27 July 2015

Accepted 29 July 2015

Available online 3 August 2015

Keywords:

Infective endocarditis

Candida parapsilosis

Candida endocarditis

Cardiac surgery

ABSTRACT

Candida endocarditis is a rare infection associated with high mortality and morbidity. There are still some controversies about *Candida* endocarditis treatment, especially about the treatment duration. We report a case of a *Candida parapsilosis* endocarditis that presented as a lower limb ischemia. The patient was surgically treated with a cryopreserved homograft aortic replacement. We used intravenous fluconazole 800 mg as initial treatment, followed with 12 months of 400 mg fluconazole per os. The patient outcome was good.

© 2015 International Society for Human and Animal Mycology. International Society for Human and Animal Mycology Published by Elsevier B.V. All rights reserved.

1. Introduction

Fungal endocarditis is a rare infection responsible for about 2–5% of infectious endocarditis [1,2]. Moreover it is associated with high mortality and morbidity and its incidence is increasing [3]. The first cause of fungal endocarditis is *Candida albicans*, being *Candida parapsilosis* the second most frequent [2]. Treatment is, whenever possible, the combination of surgery and antimycotic agents. The duration of the antimycotic therapy is necessarily long but the complete course is not well defined [1,3–5]. The majority of the reported cases was treated with amphotericin B, flucytosine and azoles. The use of new drugs such as echinocandins could be a promising alternative but is still rare [6].

We present a case of a *C. parapsilosis* prosthetic endocarditis and discuss the antimycotic therapy, its duration and surgical approach.

2. Case

A 47-year-old Caucasian man presented to the Emergency Department of our tertiary care University hospital (day 0). He had left lower limb intermittent claudication since day –10 with progressive worsening.

He was in the past an intravenous drug user with a history, two

years earlier, of an aortic valve *Streptococcus oralis* endocarditis, complicated with brain abscesses. Valve replacement with a biological valve was performed, and he received a Penicillin G regimen. No further drug abuse was noticed.

On the Emergency Department, he had decreased amplitude of left distal pulses. The physical examination was otherwise unremarkable. From the exams performed at the Emergency Department, we highlight the following: arterial Doppler echography with left adductor canal occlusion, normal transthoracic echocardiography and elevated C-reactive protein (136 mg/dL). He was admitted to the Vascular Surgery Ward with the diagnosis of a left lower limb acute ischemia.

On day 1, a thrombectomy was performed. Due to treatment failure, thrombolysis with alteplase was started. However, after an initial improvement there was a re-occlusion. On day 5, a transeophageal echocardiography was performed.

The transesophageal echocardiography (Fig. 1) showed a left coronary cuspid vegetation (aortic prosthetic valve) with a paravalvular abscess without fistulisation. There was no prosthetic dysfunction. Three blood culture sets were taken and vancomycin, gentamycin and rifampin were started. There were no other signs of peripheral embolization (head and abdominal CT scan were normal). On day 8 yeast was identified in all three blood cultures. Liposomal amphotericin B 5 mg/kg/day (300 mg/day) and flucytosine 150 mg/kg/day (9 g/day) were started and the antibacterial drugs were stopped. A *Candida parapsilosis* was identified in all blood cultures on day 10 by Matrix-assisted laser desorption ionization-time of flight mass spectrometry

* Corresponding author.

E-mail address: pintoandre@gmail.com (A. Silva-Pinto).

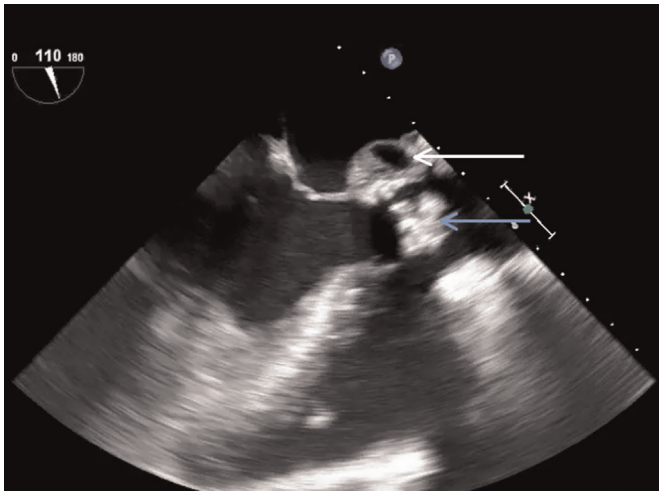


Fig. 1. Transesophageal echocardiography; blue arrow: vegetation; white arrow: paravalvular abscess. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

(MALDI TOF-MS®). No susceptibility tests were performed (not available in our hospital). Nevertheless, *Candida parapsilosis* is generally susceptible to amphotericin B, flucytosine and azole. Echinocandin resistance among *C. parapsilosis* isolates is possible but uncommon [5]. Liposomal amphotericin B was replaced by micafungin 100 mg daily on day 10. The patient was transferred on the same day to the Cardiac Surgery Department and was submitted to surgery. The biological valve and the ascending aorta were substituted by a cryopreserved homograft. No unexpected events were reported on postoperative period. After surgery the patient was transferred to the Infectious Diseases Ward (day 17).

All blood cultures taken before the surgery (three at day 5 and two at day 8) and also valve culture showed *C. parapsilosis*. Due to possible resistance of the *C. parapsilosis* to the echinocandins [5], we replaced micafungin for intravenous fluconazole (400 mg bid) on day 17. Intravenous fluconazole was administered for 1 month after surgery (day 40). All blood cultures collected after surgery (two at day 10 and two at day 17) were negative. The transesophageal echocardiogram (1 month after surgery, day 40) was unremarkable. The patient was discharged with fluconazole 400 mg id per os.

We followed the patient first monthly and later quarterly for one year. All the blood cultures were persistently negative. One year after the surgery (day 375), a transthoracic echocardiography was normal. Given all this facts we have decided to hold the suppressive therapy with fluconazole (one year of antimycotic after surgery). There was no evidence of relapse (nor clinical neither microbiological).

3. Discussion

In the literature, we have found 84 cases of *Candida parapsilosis* endocarditis. However, only 15 cases were published in the last 10 years [7–19]. The most frequently used treatment was amphotericin B in 55 cases (65%). Azoles were used in 30 cases (35%) and echinocandins in 6 cases (7%). This highlights the lack of consensus on the best medical treatment and on its duration. Surgery is mandatory in the majority of cases and it is agreed that it should be performed as early as possible [4]. The surgery was performed concomitantly with the medical treatment in 50 cases (61%). Despite the application of these measures, the mortality rate of *C. parapsilosis* endocarditis is still very high: around 40%.

We believe that our case report is important not only because it highlights the possibility of using intravenous fluconazole 800 mg

as medical therapy, but also that fluconazole can be used as suppressive therapy for 12 months.

A different surgical approach (using cryopreserved homograft) also merits attention.

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- [1] F.K. Gould, D.W. Denning, T.S. Elliott, J. Fowleraker, J.D. Perry, B.D. Prendergast, J.A. Sandoe, M.J. Spry, R.W. Watkin, Guidelines for the diagnosis and antibiotic treatment of endocarditis in adults: a report of the Working Party of the British Society for Antimicrobial Chemotherapy, *J. Antimicrob. Chemother.* 67 (2012) 269–289.
- [2] M.E. Ellis, H. Al-Abdely, A. Sandridge, W. Greer, W. Ventura, Fungal endocarditis: evidence in the world literature, 1965–1995, *Clin. Infect. Dis.* 32 (2001) 50–62.
- [3] G. Habib, B. Hoen, P. Tornos, F. Thuny, B. Prendergast, I. Vilacosta, P. Moreillon, M. de Jesus Antunes, U. Thilen, J. Lekakis, M. Lengyel, L. Muller, C.K. Naber, P. Nihoyannopoulos, A. Moritz, J.L. Zamorano, Guidelines on the prevention, diagnosis, and treatment of infective endocarditis (new version 2009): the Task Force on the Prevention, Diagnosis, and Treatment of Infective Endocarditis of the European Society of Cardiology (ESC). Endorsed by the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) and the International Society of Chemotherapy (ISC) for Infection and Cancer, *Eur. Heart J.* 30 (2009) 2369–2413.
- [4] O.A. Cornely, M. Bassetti, T. Calandra, J. Garbino, B.J. Kullberg, O. Lortholary, W. Meersseman, M. Akova, M.C. Arendrup, S. Arkan-Akdagli, J. Bille, E. Castagnola, M. Cuenca-Estrella, J.P. Donnelly, A.H. Groll, R. Herbrecht, W. W. Hope, H.E. Jensen, C. Lass-Flörl, G. Petrikos, M.D. Richardson, E. Roilides, P. E. Verweij, C. Viscoli, A.J. Ullmann, ESCMID* guideline for the diagnosis and management of *Candida* diseases 2012: non-neutropenic adult patients, *Clin. Microbiol. Infect.* 18 (Suppl. 7) (2012) 19–37.
- [5] P.G. Pappas, C.A. Kauffman, D. Andes, D.K. Benjamin Jr., T.F. Calandra, Edwards JE Jr., S.G. Filler, J.F. Fisher, B.J. Kullberg, L. Ostrosky-Zeichner, A. C. Reboli, J.H. Rex, T.J. Walsh, J.D. Sobel, Clinical practice guidelines for the management of candidiasis: 2009 update by the Infectious Diseases Society of America, *Clin. Infect. Dis.* 48 (2009) 503–535.
- [6] P. Tattévin, M. Revest, A. Lefort, C. Michelet, O. Lortholary, Fungal endocarditis: current challenges, *Int. J. Antimicrob. Agents* 44 (2014) 290–294.
- [7] A.A. Gilani, C.S. Barr, Recurrent *Candida parapsilosis* infective endocarditis aortic root replacement, *Br. J. Hosp. Med. (Lond.)* 73 (2012) 468–469.
- [8] A.U. Gullu, M. Akcar, A. Arnaz, M. Kizilay, *Candida parapsilosis* tricuspid native valve endocarditis: 3-year follow-up after surgical treatment, *Interact. Cardiovasc. Thorac. Surg.* 7 (2008) 513–514.
- [9] M.U. Khan, S. Ali, M.A. Baig, M.A. Rafiq, B.C. Vasavada, I.A. Khan, *Candida parapsilosis* endocarditis 8 months after transient candidemia, *Int. J. Cardiol.* 118 (2007) e58–e59.
- [10] J. Kumar, D. Fish, H. Burger, B. Weiser, J.S. Ross, D. Jones, K. Robstad, X. Li, V. Chaturvedi, Successful surgical intervention for the management of endocarditis due to multidrug resistant *Candida parapsilosis*: case report and literature review, *Mycopathologia* 172 (2011) 287–292.
- [11] C.S. Lee, J.B. Choi, K.H. Kim, *Candida parapsilosis* bioprosthetic valve endocarditis inducing aortic valve stenosis, *Tex Heart Inst. J.* 40 (2013) 502–504.
- [12] V. Lopez-Ciudad, M.J. Castro-Orjales, C. Leon, C. Sanz-Rodriguez, M.J. de la Torre-Fernandez, M.A. Perez de Juan-Romero, M.D. Collell-Llach, M.D. Diaz-Lopez, Successful treatment of *Candida parapsilosis* mural endocarditis with combined caspofungin and voriconazole, *BMC Infect. Dis.* 6 (2006) 73.
- [13] J. Marti, *Candida parapsilosis* endocarditis in aged patient, *Eur. J. Intern. Med.* 20 (2009) e15.
- [14] C.M. Mvondo, F. D’Auria, P. Sordillo, A. Pellegrino, M. Adreoni, L. Chiariello, *Candida parapsilosis* endocarditis on a prosthetic aortic valve with unclear echocardiographic features, *Cardiovasc. J. Afr.* 24 (2013) e7–e8.
- [15] M. Pelemis, G. Stevanovic, L. Lavadinovic, S. Matic, I. Milosevic, M. Korac, S. Pelemis, M. Nedeljkovic, M. Prostran, A rare case of *Candida parapsilosis* endocarditis in a young healthy woman—case report, *J. Cardiothorac. Surg.* 8 (2013) 29.
- [16] S. Toyoda, E. Tajima, R. Fukuda, T. Masawa, S. Inami, H. Amano, T. Arikawa, A. Yoshida, A. Hishinuma, T. Inoue, Early surgical intervention and optimal medical treatment for *Candida parapsilosis* endocarditis, *Intern. Med.* 54 (2015) 411–413.
- [17] W. Uchida, Y. Hirate, H. Ito, O. Kawaguchi, Two-stage operation for isolated pulmonary valve infectious endocarditis with *Candida parapsilosis*, *Interact. Cardiovasc. Thorac. Surg.* 17 (2013) 426–427.
- [18] M. Wallner, G. Steyer, R. Krause, C. Gstettner, D. Von Lewinski, Fungal endocarditis of a bioprosthetic aortic valve. Pharmacological treatment of a *Candida parapsilosis* endocarditis, *Herz* 38 (2013) 431–434.