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CASE REPORT

Tricuspid valve fungal endocarditis in a patient with breast cancer and an implantable chemotherapy venous access port

Petros Fountoulakis,[1] Aikaterini Siama,[1] Aimilianos Kalogeris,[1] Marianthi Iliopoulou,[2] Athanasios Tsoukas,[1] Athanasios Manolis[1]

[1]Cardiac Echocardiography Department, Asklepeion Voulas General Hospital, Voula, Athens; [2]7th Respiratory Medicine Department and Asthma Center, Athens Chest Hospital "Sotiria", Athens, Greece

Abstract

Fungal endocarditis, a rare and lethal infection, is etiologically connected with *Candida* and *Aspergillus* species. Among these two agents, *Candida* is a common nosocomial infection with increasing rates over the last years and mortality up to 40% in cases of systemic candidiasis. In the present paper, we describe the case of a 58-year-old woman with metastatic breast cancer under palliative chemotherapy who was hospitalized for recurrent episodes of fever due to fungal endocarditis of the implantable venous access port. Such cases may elude the attention of the physician and need to be taken into account especially in oncologic patients with implantable devices under chemotherapy regimens. The treatment of *Candida* endocarditis can be difficult because of the formation of biofilms on prosthetic devices. The prognosis of these patients may be ameliorated with the combination of fungal and invasive treatment.

Key words: cardiooncology, right sided infective endocarditis, fungal endocarditis, intraport catheter, breast cancer.

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**Correspondence to: Petros Fountoulakis, Vas. Pavlou Ave. 1 Voula 16673, Athens, Greece. Tel.: +30.2132163221. E-mail: pfountou@yahoo.gr*

Case Report

Right sided infective endocarditis (IE) accounts for less than 10% of all IE cases. Predisposing factors include portal of entry, implanted foreign material and unrepaired congenital heart disease with conduit.[1]

Fungal endocarditis (FE) constitutes the most severe form of IE and is etiologically connected predominantly to *Candida* and *Aspergillus* species. Among these two agents, *Candida* species is a common nosocomial infection with increasing prevalence and mortality rates up to 40% in cases of systemic candidiasis.[2]

Individuals with different forms of solid or hematological malignancies, under chemotherapy regimens or bone marrow transplantation comprise a particularly susceptible patient population.[3]

A 58-year-old woman with personal history of triple negative breast adenocarcinoma stage IV under palliative chemotherapy, administered for metastatic mass shrinkage in the gastrointestinal tract, was admitted to the Emergency Department of our Hospital due to persistent fever, malaise and dyspnea on effort (MMRC 2-3). Chemotherapy was infused via an implantable venous access port (intraport catheter). Her heart auscultation revealed a holosystolic ejection type murmur of 3/6 located in the third intercostal space of changing quality. *Candida tropicalis* was isolated in three separate blood cultures.

Transthoracic echocardiography demonstrated a good overall left ventricular systolic function. The right cavities were moderately dilated with moderate tricuspid regurgitation and a pulmonary pressure estimated at 45 mmHg. A large vegetation (approximately 2 cm maximal diameter) at the atrial surface of the posterior and diaphragmatic leaflets of the tricuspid valve with parts of the vegetation periodically apparent in the right ventricle was observed.

Trans-oesophageal echocardiography confirmed the findings of the transthoracic study and elucidated in the bicaval view the connection of the vegetation in the tricuspid valve with the edge of the intraport catheter (Figure 1).

The computed tomography scan revealed pulmonary embolism in the segmental branches of the bronchial tree and a circumscribed peripheral pulmonary infarct of the left inferior lobe (Figure 2).

A multidisciplinary team concluded that the best treatment strategy would require aggressive intravenous combined antifungal therapy until eradication followed by removal of the implantable venous access port. The invasive approach was preferred despite the risk of vegetation dissemination and further embolism since preservation of the intraport was considered detrimental for the patient. Intraport removal was uncomplicated, and the patient was discharged in an improved state.

It is noteworthy that the culture of the end of this device was negative for fungal or another pathogen. Thus, an additional likely mechanism of FE in our patient could be the translocation of fungi from the site of the intestinal occlusion due to immunosuppression caused by the chemotherapy, prolonged antimicrobial use and parenteral nutrition. The patient was initially treated with intravenous administration of micafungin for six weeks and then *per os* fluconazole as chemoprophylaxis.

Discussion

Numerous studies have shown the increasing rates of implantable access port infections in oncologic patients and their elevated mortality rates.[4] The subset of patients with prosthetic devices represents a population with increased vulnerability to FE as demonstrated by the multicenter cohort study of Fernadez-Cruz *et al.*[5]

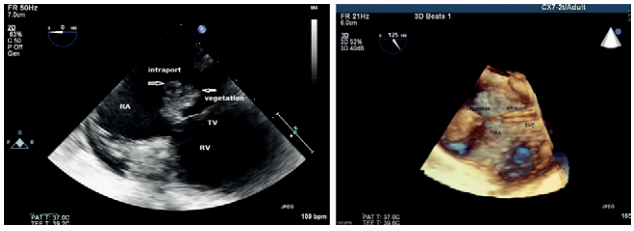

Figure 1. Transesophageal echocardiogram. RA, right atrium; RV, right ventricle; TV, tricuspid valve; SVC, superior vena cava.

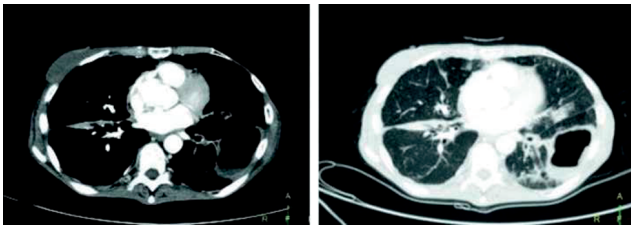

Figure 2. Computed tomography scan.

Candida endocarditis has the specific ability to create biofilms on prosthetic devices leading to the reduction of the effect of antifungal agents. As a result, combination treatment with echinocandins and azoles can lead to important benefits.[6] The decision of the appropriate antimicrobial agent is difficult as it is necessary to balance the benefits and side effects of this treatment as well as take into account possible drug interactions.[7,8] Septic pulmonary embolism with multiple loci is a frequent complication in right sided infective endocarditis. Furthermore, surgical removal of the prosthetic device if feasible in addition to antifungal treatment is linked to a more favorable prognosis.[9]

In our case, the prolonged antibiotic therapy due to recurrent bronchial pneumonia and ileus and was also an important risk factor for systemic candidiasis due to disruption of the intestinal microflora and subsequent colonization by *Candida* species. Thus, a positive blood culture for *Candida* spp. in the setting of protracted antibiotic regimens should never be overlooked. Currently the rates of candidemia have significantly increased because of the rising number of patients being at risk. The great majority of fungal endocarditis episodes represented healthcare-associated infections (94%), caused most frequently by *Candida* species (mainly non-albicans *Candida*), with high rates of mortality and recurrence. These findings are in line with previously published observational studies on fungal endocarditis.[10]

For these reasons, in patients with several risk factors, the possibility of fungal endocarditis should always be considered. Consequently, the physicians should be alert for early detection and initiation of treatment since the prognosis of these patients may be ameliorated.

Contributions

All the authors made a substantive intellectual contribution, read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

Conflict of interest

The authors declare no conflicts of interest.

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