SUBACUTE FUNGAL ENDOCARDITIS DUE TO ACREMONIUM SPP: A CASE STUDY AND REVIEW OF THE LITERATURE

Carmen Pânzaru¹, Maria Dan³, M. O. Balasanian², Geanina Coadă³, Gr. Tinică³, E.R. Dabija³
University of Medicine and Pharmacy “Grigore T. Popa” - Iasi
Faculty of Medicine
1. Microbiology Discipline
2. Clinical Cardiology
3. Institute of Cardiovascular Diseases Iasi

SUBACUTE FUNGAL ENDOCARDITIS DUE TO ACREMONIUM SPP: A CASE STUDY AND REVIEW OF THE LITERATURE (Abstract): A 52 years old patient is hospitalized in June 2007 in the Cardiology Clinic of Cardiovascular Diseases Medical Institute in Iasi with suspected subacute infectious endocarditis. Echocardiography shows mobile vegetation on the pulmonary valve. Acremonium spp is isolated from blood cultures after 2 weeks of incubation. The patient was treated with fluconazole, but died after 3 months due to renal failure.

Keywords: SUBACUTE FUNGAL ENDOCARDITIS, ACREMONIUM SPP, ECHOCARDIOGRAPHY.

Acremonium species are widespread in soil and are recognized as plant and insect pathogens rarely cited in humans and other mammals infections. Human infections typically occur after penetrating skin injuries, so infections are mostly in the extremities, especially mycetomas after traumatic inoculations (1).

Other sites of infection include eye, lung and gastrointestinal tract colonization, osteomyelitis, sinusitis, arthritis and peritonitis. Disseminated infections (meningitis, endocarditis, brain abscess) were rarely reported before, especially after valve replacement, dialysis, transplantation and hematologic malignancies in patients with other types of cancer (2, 3, 4, 5). In recent years the number of infections caused by Acremonium spp increased considerably due to predisposing conditions: invasive medical techniques, new impaired immune system conditions (6).

In what follows we will describe a case of native valve endocarditis in an immunocompetent patient.

CASE REPORT
Patient BV of 51 years without cardiopulmonary history, was admitted the Tecuci Hospital in 29.06.2007 with febrile syndrome, chest pain, cough with mucopurulent expectoration, dyspnea. The patient was diagnosed with lobar pneumonia; septic status and congestive heart failure according to NYHA class III. He received treatment with ampicillin + gentamicin, but the fever and congestive heart failure phenomena persisted. The patient was transferred to the hospital in Galati where a transthoracic echocardiography (TTE) was
performed. The echocardiography revealed:

- Increasing right heart cavities;
- Moderate pulmonary hypertension, dilatation of the aortic ring with second degree aortic insufficiency.

For further investigation the patient was transferred to the Departament of Medical Cardiology of our institute on 2.08.2007. The patient underwent CT examination with the following results:

- On right lower lung: echodense formation, non-homogeneous, with invasive character;
- Pleural effusion in average quantity. These elements raise the suspicion of lung cancer.

Because of persistent febrile syndrome and the congestive heart failure, the patient is still investigated for suspected endocarditis, which is why he performed a transoesophageal echocardiography (TEE) highlighting a new set of issues:

- Aortic valve: mild calcification;
- Mitral valve: normal morphology, first degree mitral insufficiency;
- Pulmonary valve: destroyed by two oscillating vegetations of 2.3 cm and 2.4 cm, third degree pulmonary valve insufficiency;
- Tricuspid valve: abnormal, modified, possible vegetation on the septal cusp, third degree tricuspid valve insufficiency.

Four sets of blood cultures were drawn (each set included one aerobic and one anaerobic bottle). Blood cultures remain negative at 9 days, but because of suspected endocarditis, we prolonged the cultures up to 3 weeks.

Early consultation with a cardiac surgeon was recommended in order to determine the best therapeutic approach. The cardiovascular surgeon decided that the surgical intervention could be postponed to allow the antibiotic treatment to take effect and avoid contamination of the prosthesis.

The patient was discharged with instructions to make fibrobronchoscopy and admission to Infectious Diseases Hospital for treatment: vancomycin 1g x 2/day + gentamicin 80mg x 2/day for 1 week and nistatin for 2 weeks.

After 14 days of incubation *Acremonium* spp was isolated from all 4 cultures and the patient received treatment with fluconazole 400mg x 2 / day intravenously for 30 days. At the beginning of treatment the patient had a second episode of pulmonary embolism.

On 10.12.2007 the patient returned for a review, in a state of afebrility but symptomatic for fatigue and dyspnea on moderate physical effort. TEE shows non oscillating vegetations on pulmonary and tricuspid valves. Blood cultures collected at that moment were negative.

In December 2007 the patient was admitted for a new episode of endocarditis, initially interpreted as acute renal failure, but blood cultures were positive for methicillin-sensitive *Staphylococcus aureus*. He received treatment with oxacillin + ciprofloxacin, but renal function (oliguria <0.5 L / day and creatinine 4 mg %) cannot be improved and the patient dies.

**DISCUSSION**

We found very few (only 10 studies) reporting endocarditis caused by *Acremonium* spp (7, 8, 9, 10, 11), most of them prosthetic valve endocarditis (mechanical prosthesis St. Jude no. 27, infective endocarditis on pacemaker, dura mater prosthesis). Infection in our patient affected native valve (pulmonary valve and tricuspid valve). We could not identify the gate of entry (mycetoma or trauma history). Note
that the patient was a professional driver and had a flaky lesion on the right foot, but no mycological examination was performed at the level of the injury.

Infection developed slowly over 2 months with prolonged febrile syndrome and pulmonary embolism, due to the vegetation being located in the right heart. Diagnosis of infective endocarditis was made based on TEE, blood cultures were positive after 10 days of incubation; identification of the fungus was performed after another 4 days.

*Acremonium* gender diagnosis is quite easy to make based on the microscopic and culture characteristics: growing moderately fast (but not more than 3 cm in 10 days), yellowish-white colonies, fasciculate (spiky), glabrous or moist. Conidiogenous cells solitary, slender (ca, 2μm wide), mostly unbranched, awl (needle-shaped) phialides. Conidia one celled, straight or curved, in slimy masses (fig.1, 2).

![Fig 1: Appearance of culture on Sabouraud medium after 7 days of incubation (obverse and reverse)](image1)

![Fig 2: Microscopic Appearance - wet preparation, 400x](image2)

*Acremonium* species are morphologically very similar so that their identification is extremely difficult; therefore in most clinical cases etiologic agents are confused with *Acremonium* spp. This is the main reason why the actual incidence of *Acremonium* species is still unknown.

Identification of clinical isolates of *Acremonium* spp based on modern molecular methods are difficult to perform mainly due the absence of a public database of reference nucleotide sequences required for comparison for great genetic diversity of *Acremonium* spp, means that it suffers from a yearly taxonomic reshuffle. (13). We have sent our isolate to a reference laboratory, but it could not be identified to species level.
According to CLSI (M38-A2) (Clinical Laboratory Standard Institute) antifungal susceptibility should be made by the plate dilution method, a method that could not be done in our laboratory. Although, the literature data (13, 14) describes a decreased susceptibility to fluconazole (and imidazoles in general) in isolates of Acremonium spp. The literature generally recommends the use of amphotericin B. Because the lack of availability of this drug, the patient received i.v. fluconazole 400 mg x 2/daily for 30 days. Following this treatment, the clinical condition improved and the trans-esophageal echocardiography performed for control showed decreasing vegetation.

CONCLUSION

Acremonium spp can cause native valve endocarditis in immunocompetent persons. Fluconazole given intravenously for 30 days, two weeks more than the short-term therapy described in the literature (14), may improve the clinical condition of the patient with endocarditis.

REFERENCES