İnönü Üniversitesi Tıp Fakültesi Dergisi
12(2) 129-131 (2005)

An Early Detection of Silent *Aspergillus flavus* Infection in a Patient with Calcific Mitral and Aortic Valve Stenosis

Mehmet Sait Tekerekoğlu,* Mehmet Refik Bayraktar*, Gülay Yetkin*, Ayşegül Çiçek*, Vedat Nisanoğlu**

*Inonu University School of Medicine, Department of Medical Microbiology, Malatya, Turkey
** Inonu University School of Medicine, Department of Cardiovascular Surgery, Malatya, Turkey

We present a case of infective endocarditis due to *Aspergillus Flavus* in a 61 years old man with calcific valvular stenosis. This is the first case of *Aspergillus* endocarditis in absence of overt clinical manifestations and lack of predisposing factors. Patient recovered after cardiac surgery and amphotericin therapy.

Key Words: Endocarditis, *Aspergillus flavus*

Kalsifik Mitral ve Aortik Kapak Darlığı olan Hastada *Aspergillus flavus* İnfeksiyonu

61 yaşında kalsifiye kapak darlığı olan hastada infektif endokardit tesbit edilmiş ve post operatif kapak materyalinde *Aspergillus Flavus* üremiştir. Predispozan faktörleri ve belirgin spesifik klinik bulguları olmayan literatürdeki ilk *Aspergillus* endokarditidir.Hasta kardiyak cerrahi ve amphotericin tedavisini takiben iyileşmiştir.

Anhtar Kelimeler: Endokardit, *Aspergillus flavus*

Fungi rarely cause native valve endocarditis in persons who do not abuse intravenous drugs. *Aspergillus* cardiovascular infection usually presents as endocarditis, which is difficult to diagnose and has a high mortality.[1] *Aspergillus* endocarditis can occur in patients with intravascular catheters who frequently have received glucucorticoids, broad-spectrum antimicrobial drugs, or cytotoxic agents. The course is usually subacute. In almost all reported cases, diagnosis has been made at necropsy because of late recognition or non-recognition.[2-5]

CASE REPORT

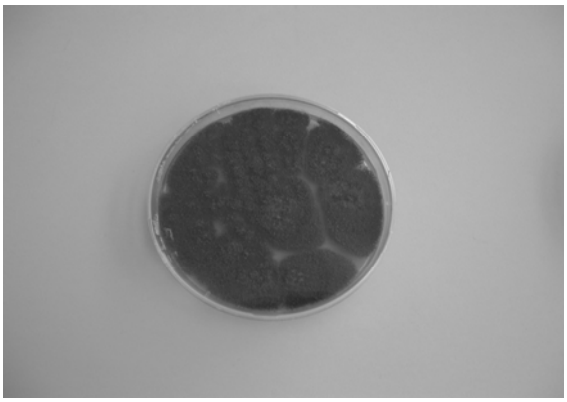
A 61 year old man with the complaints of dyspnea and palpitation was admitted to our cardiology department for further evaluation and treatment. He had been suffering from dyspnea and palpitation for 3 months. He had no other complaints such as fever, sweating, weight loss. His electrocardiogram showed left ventricular hypertrophy and atrial fibrillation. Echocardiographic examination demonstrated a calcific aortic valve with a mean gradient of 55 mmHg, and a fibrocalcific mitral valve with a mean diastolic gradient of 15 mmHg and valve area of 1.1 cm^2. There was no high suspicious of vegetation on echocardiography. Cardiac catheterization confirmed the diagnosis of valvular stenosis and coronary angiography revealed normal coronary arteries. The patient underwent a successful cardiac valve replacement operation for both mitral and aortic valves. On operation both valves were heavily calcific and there was a smooth tissue covering the ventricular surface of the aortic valve without any protruding mobile mass. Routine pre-operative laboratory analysis showed; erythrocyte sedimentation rate: 24 mm/h, C-reactive protein: 4 mg/dl, white blood cell: 10.000/mm^3.

Biopsies from aorta and heart mitral valves were submitted to our laboratory in sterile condition. Specimens were well homogenized in sterile grinder containing 0.5 ml thioglycolate broth. The homogenized samples were cultured aerobically into chocolate agar, sheep blood agar, eosin methylene agar, brain heart infusion agar and Sabaroud dextrose agar and

anaerobically into Brucella blood agar and cooked meat medium. Cultured plated of brain heart infusion agar and Sabaroud dextrose agar were incubated at 37° C and 25° C for detecting fungal growth. Others were incubated only at 37° C for detecting bacterial growth. Culture yielded no bacterial growth but mold growth was seen after 72 hours in all cultured media incubated aerobically.

The grown mold colonies were at first yellowish to yellow brown and granular to wooly in texture. The reversed surface of colonies was goldish to red brown in color (Figure-I and II). Microscopic examination in lacto-phenol cotton blue mount revealed branched hyphae with flask shaped vesicles having two rows of phialids (biseriate) covering the entire surface of vesicle. In further incubation, the colony morphology was changed to green velvety appearance. According to these characteristics, the mold was identified as *A. flavus*.[6,7] Direct microscopic evaluation also demonstrated hyphae structure on both valves.

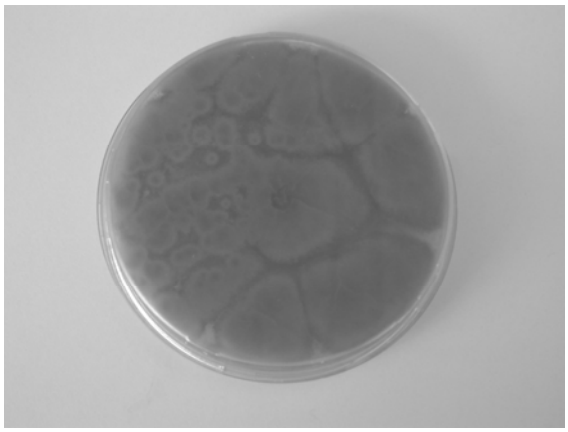
Figure I. *Aspergillus flavus*, front view of plate at Saboraud Dextrose agar on 10th day of inoculation



After isolation of *A. flavus*, the patient was reevaluated for risk factors associated with fungal endocarditis. There was no history of broad-spectrum antimicrobial or immunesupressive drug use, prior to operation or suspicion of IV drug abuse.

Although the patient had no clinical manifestation of infective endocarditis, on the basis of Duke Criteria,[8] demonstration of microorganism in vegetation is definite pathologic criteria for diagnosis of infective endocarditis. So the patient was given to amphotericin B treatment for 2 weeks. Two months after the cardiac operation, the patient did not have any complaints and sign of infective endocarditis.

Figure II. *Aspergillus flavus*, underview of plate at Saboraud Dextrose agar on 10th day of inoculation



DISCUSSION

Mycotic cardiovascular invasion is uncommon infectious disease that generally follows cardiopulmonary bypass surgery. Its prevalence nevertheless, has grown in the last decade due to wider use of this type of surgery and to the increased number of patients who are immunocompromised or treated with long-term antibiotics.[1,9-11] In contrast to other fungal infections such as candidiasis, fungal blood cultures for *Aspergillus* are negative in 75% of cases. By the time infection with *Aspergillus* is discovered, it may be disseminated and difficult to cure.[12] Histological examination of biopsy specimen can detect *Aspergillus* more easily than culture.

When regarding the usual course of fungal infection and predisposing factors of the host, there are two conflicting issues; first, our patient had no clinical signs and symptoms of fungal infection, second the host was not immunocompromised and had no predisposing factor for fungal infection. It is difficult to explain these controversies. Since the fungal infection usually occurs in immunocompromised patients and they present clinical manifestations in these patients. Absence of clinical manifestations can be explained by the response of normal host defense mechanism. Although the patient had no predisposing factor for invasive fungal

infection, calcific aortic and mitral valve which are a vascular and cause turbulent flow across the valve and post stenotic stasis seem to lead *Aspergillus* growth on valvular tissue. Latent *Aspergillus* infection at the time of cardiac surgery may be another explanation for this atypical situation. According to our knowledge this is the first case of *Aspergillus* endocarditis without any clinical manifestation in a patient who had no predisposing risk factors for fungal infection.

In summary we experienced an extremely rare case of *Aspergillus* endocarditis which presented any clinical manifestation in a patient who had no risk factors for fungal infection. This case underlines that it is also possible for a non immunocompromised patient to have aspergillosis.

REFERENCES

1- Kammer RB, Utz JP. *Aspergillus* species endocarditis: the new face of not so rare disease. Am J Med 1974; 56: 506-21.
2- Rose HD, Stuart JL. Mycotic aneurysm of the thoracic aorta caused by *Aspergillus fumigatus*. Chest 1976; 70: 81-4.
3- Jenckes GA. Aspergillus aortitis. J Thorac Cardiovasc Surg 1990; 99: 375-6.
4- Gray R, Kaplan L, Matloff J, et al. Aortic pseudo aneurysm with *Aspergillus aortitis*: an unusual complication of coronary bypass surgery. Chest 1986; 89: 306-8.
5- Aguado JM, Valle R, Arjona R, Ferreres JC, Gutierrez JA. Aortic bypass graft infection due to *Aspergillus*: a report of case and review. Clin Infect Dis 1992; 14: 916-21.
6- Larone DH. Medically important fungi. A guide to identification. 2nd ed. Washington: American Society for Microbiology 1993; 88-91.
7- Koneman EW, Allen SD, Janda WM, Schreckbenger PC, Winn WC. Mycology. In Color Atlas and Textbook of Diagnostic Microbiology. 5th Ed. New York: Lipincott. 1997:1002-6.
8- Durack D, Lukes A, Bright D, the Duke Endocarditis Service. New criteria for diagnosis of infective endocarditis: utilization of specific echocardiographic findings. Am J Med 1994; 96: 200-9.
9- Manuel RJ, Kibbler CC. The epidemiology and prevention of invasive *aspergillosis*. J Hosp Infect 1998; 39: 95-09.
10- Follis F, Paone RF, Wernly JA. Mycotic aneurysm of the ascending aorta after coronary revascularization. Ann Thorac Surg 1994; 58: 236-8.
11- Blakemore WS, McGarrity GJ, Thurer RJ, Wallace HW, MacVaugh H 3rd, Coriell LL. Infection with air-born bacteria with cardiopulmonary bypass. Surgery 1971; 70: 830-8.
12- Herron MD, Wanderhooft SL, Byington C, King JD. Aspergillosis in a 24-week newborn: a case report. J Perinatol 2003; 23: 256-59.

Yazıma Adresi
Yrd. Doç. Dr. Gülay Yetkin
İnönü Üniversitesi Tıp Fakültesi
Tıbbi Mikrobiyoloji AD.Malatya
E-Posta : gyetkin@inonu.edu.tr