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## Pulmonary Nodular Lesions in a Heart Transplant Recipient

Majid Marjani<sup>1</sup>, Payam Tabarsi<sup>1,2</sup>, Parvaneh Baghaei<sup>1</sup>, Hossein Zargham Ahmadi<sup>3,4</sup>, Babak Sharif Kashani<sup>3,5</sup>, Masoud Shamaei<sup>1</sup>, Seyed Davood Mansouri<sup>1,4</sup>

<sup>1</sup> Department of Infectious Disease, <sup>2</sup> Mycobacteriology Research Center, <sup>3</sup> Department of Cardiology and Cardiac Surgery, <sup>3</sup> Lung Transplantation Research Center, <sup>4</sup> Lung Transplantation Research Center, <sup>5</sup> Tobacco Prevention and Control Research Center, NRITLD, Shahid Beheshti University M.C. TEHRAN-IRAN.

### WHAT IS YOUR DIAGNOSIS?

*A diabetic 51-year-old man, recipient of a heart transplant due to cardio-myopathy was referred to our center. HCV, HIV, HBV, toxoplasma serology and PPD test were negative and CMV and EBV IgG were positive before transplantation.*

*His immunosuppressive regimen consisted of prednisolone, cyclosporine and azathioprine; the last was changed to cellcept on the 4<sup>th</sup> day. The patient was febrile for 2 days after transplantation. He was treated empirically with vancomycin, piperacillin- tazobactam and ciprofloxacin and received prophylactic ganciclovir and co-trimoxazole. An episode of acute renal failure with increased BUN and creatinine occurred. Renal replacement therapy was initiated from the 2<sup>nd</sup> day till the 6<sup>th</sup> day after transplantation. Coagulase negative *Staphylococcus aureus* was isolated from chest tube secretions ( $10^7$  colony count). On the 7<sup>th</sup> day, due to bloody left pleural effusion a chest tube was inserted until the 16<sup>th</sup> day after transplantation. He received vancomycin and piperacillin- tazobactam when multiple nodular lesions were seen on the lung CT-Scan (Figure 1). A bronchoscopy was performed and itraconazole and high-dose co- trimoxazole were added to his drug regimen empirically. Pathological study of transbronchial lung biopsy (TBLB) revealed alveolar hemorrhage and hemosiderin-laden macrophages. Immunohistochemistry staining for pneumocystis was negative. On 21<sup>st</sup> day after transplantation, the patient was doing well and ready for discharge but nodular lesions had increased in size on the follow-up lung CT-Scan (Fig. 2). (*Tanaffos 2008; 7(4): 69-71*)*



Figure 1. Lung CT-Scan 16<sup>th</sup> day after transplantation



Figure 2. Lung CT-Scan 21<sup>st</sup> day after transplantation

Correspondence to: Mansoori SD

Address: NRITLD, Shaheed Bahonar Ave, Darabad, TEHRAN 19569, P.O.:19575/154, IRAN

Email address: dmansouree@yahoo.com

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### Diagnosis: Pulmonary Aspergillosis

Serum level of Galactomannan for *Aspergillus* was strongly positive (1.8 ng/ml). Invasive pulmonary aspergillosis was suspected and itraconazole was replaced by voriconazole. Three days later, bronchoalveolar lavage sample revealed heavy growth of *Aspergillus fumigatus*. Brain CT-scan showed no abnormality. Twelve days after antifungal therapy, the size of nodular lesions decreased significantly.

Invasive aspergillosis occurs in 3.3 to 14% of heart transplant recipients. Nearly 75% of the cases develop this condition 90 days after the transplantation, and mortality rate is high between 53 to 78%. Post transplant hemodialysis is an independent risk factor as in the presented case (1). Multiple pulmonary nodules are the most common radiological manifestation (2) with an upper lobe predilection and cavitation (3).

Galactomannan, a polysaccharide component in the cell wall of *Aspergillus* species is released into the circulation during the course of invasive disease(4). The galactomannan assay of serum has moderate accuracy for diagnosis of invasive aspergillosis, but it is more useful in neutropenic patients due to hematologic malignancy or hematopoietic cell transplantation than solid organ recipients (5). False positive results have been reported, related to the administration of piperacillin-tazobactam and amoxicillin-clavulanate (4, 6).

The value used as index cut-off for serum galactomannan EIA, has historically been 1.0 ng/ml but more recent studies suggest lower thresholds such as 0.5 or 0.7 (7).

Early initiation of antifungal therapy in highly suggestive cases of invasive aspergillosis is warranted while more investigation is conducted. For primary treatment of invasive pulmonary

aspergillosis, intravenous or oral voriconazole is the preferred antifungal agent in most studies. (8)

The patient was treated with oral voriconazole for three months with excellent clinical response and improvement of lung lesions. (Fig. 3) He experienced a serious soft tissue infection and sepsis with *Pseudomonas* three months later that was treated early in the course of infection and was completely cured. He is in good condition now (18 months after transplantation).

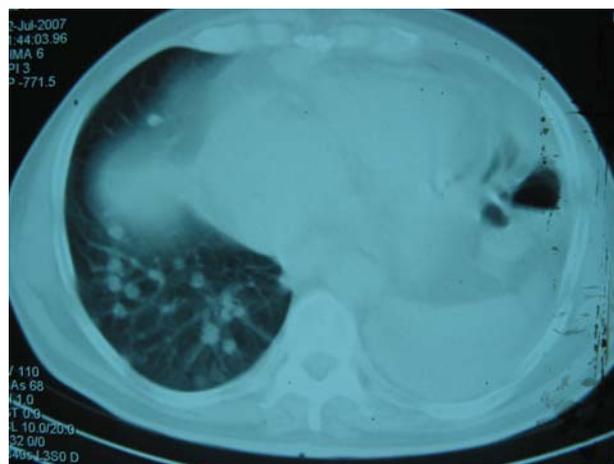


Figure 2. Lung CT-Scan 21<sup>st</sup> day after transplantation



Figure 3. Lung CT-Scan one month after treatment

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