Epidemiology and clinical characteristics of lower respiratory tract infections among kidney transplant recipients

Oguzhan Sitki Dizdar*, Alparslan Ersoy**, Halis Akalin***

*Department of Internal Medicine in Afşin State Hospital, Kahramanmaraş, Turkey
**Department of Internal Medicine Division of Nephrology, Uludag University Medical School, Bursa, Turkey
***Departments of Microbiology and Infectious Diseases, Uludag University Medical School, Bursa, Turkey

Introduction:
Infections, especially pneumonia, continue to be an important cause of disability and death in renal transplant recipients. An appropriate empirical treatment of post transplant pulmonary infections requires knowledge of the spectrum of the microorganisms involved in causing these infections. We investigated the epidemiology and outcome of pulmonary infections in transplant patients over an 24-year period.

Methods:
This is a retrospective study of kidney transplant recipients who were transplanted at our center between December 1988 and April 2011. Data for this study were obtained from our transplant database and review of electronic and paper-based medical records. Subjects were included if they developed radiological (X-ray chest and/or CT chest) features suggestive of pulmonary infection, with one or more of the following respiratory manifestations: cough with or without expectoration, dyspnea, pleuritic chest pain and reduced partial pressure of oxygen in arterial blood.

Results:
We reviewed the clinical records of 406 consecutive kidney transplant recipients, of whom 248 (61%) was male. Approximately 37.4% (152) of the cohort received a deceased donor kidney. The most common causes leading to renal failure were hypertensive nephropathy (56 cases, 16.8%) and glomerulonephritis (39 cases, 11.7%). Eighty-two recipients had 111 episodes of pneumonia throughout the study period, an incidence of %20. The mean interval from transplantation to the onset of pneumonia was 22.2±32.7 months. Fifty-six percent of the pneumonias were community acquired. Twenty-eight patients (25.2%) died due to pneumonia. Bacterial infections were the most common cause (30.6%), especially Haemophilus influenza, Stenotrophomonas maltophilia and Pseudomonas aeruginosa. Among 38%, there was no positive microbiologic isolation. Of the total number of episodes, fungal infections, especially Aspergillus fumigatus, represented 22.5% and viral 9%. Diagnosis was achieved in 35 episodes by only physical examination and chest radiography (Table 1). Bronchoscopy was the diagnostic procedure most commonly used for obtaining respiratory samples and was performed in 23 episodes, giving a final overall diagnostic yield of 12 patients (52.2%). The most common presenting symptom was fever with or followed by cough (n=81) or sputum (n=51). There were 24 instances of shortness of breath, eight hemoptysis, five chest pain, and four pleuritic chest pain. Physical examination findings were given in table 2. At least one complication developed in 40 (%36) pneumonia episodes during treatment of pneumonia. Hematologic complications developed (leukopenia, trombocytopenia or pancitopenia) in 22 epiodes, renal impairment in 14 episodes and hepatotoxicity in 7 episodes. Nosocomial pneumonias accounted for 71.4% of pneumonia episodes resulting in mortality (p=0.001).

Pneumonia occuring time was significantly earlier in nosocomial pneumonia than in community acquired (15 and 27.9 month, respectively). Two well defined patterns of pneumonia were identified in renal transplant patients. Nosocomial pneumonia episodes had higher procalcitonin, urea and LDH values and lower hemoglobin and albumin values. Community-acquired pneumonia was more common, but it showed a more benign clinical course.

Conclusions:
In our cohort, bacterial pneumonia was the most common cause, but it is necessary to rule out other pathogens that affect immunosuppressed hosts. Fungal infections were significantly more frequent in the interval of 1-6 month after transplantation. Early diagnosis of pneumonia in renal transplant recipients reduces morbidity and mortality.

Table 1. Diagnostic procedures of pneumonia

	Number of episodes (%)
PE plus CR	35 (31.5)
PE plus CR plus CCT	29 (26.1)
PE plus CR plus CCT plus microbiology[1]	20 (18)
Bronchoalveolary lavage plus microbiology	12 (10.8)
Only microbiology[1]	5 (4.5)
Only CCT	4 (3.6)
Only PE	3 (2.7)
Lung biopsy	2 (1.8)
CR plus microbiology[1]	1 (0.9)

PE: Physical examination, CR: Chest radiography, CCT: Computerized chest tomography, 1: that means positive lower respiratory tract culture

Table 2. Physical examination findings

Systolic blood pressure, mmHg	129.5 ± 23.5 (70 – 220)
Diastolic blood pressure, mmHg	78.5 ± 12.9 (40 – 110)
Pulse, beat/minute	96 ± 15.1 (70 – 144)
Temperature, °C	37.9 ± 0.93 (36 – 40.5)
CURB-65 score	1.19 ± 0.67 (0 – 4)
Early inspiratory crackles, n(%)	47 (42.3)
Coarse crackles, n(%)	30 (27)
Rhonchi, n(%)	19 (17.1)
Decreased breath sounds, n(%)	11 (9.9)
Pleural friction rub, n(%)	1 (0.9)
Tuber sufl, n(%)	2 (1.8)

DOI: 10.3252/pso.eu.50era.2013