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An interdisciplinary approach for renal transplant recipients with severe pneumonia: a single ICU experience

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Dear Editor,

Severe pneumonia is an entity requiring admission to the intensive care unit (ICU) or carrying a high risk of death [1]. It is also regarded as a serious complication after renal transplantation, which frequently needs comprehensive management. The 28-day mortality of acute respiratory distress syndrome (ARDS) due to severe pneumonia in our center prior 2009 was as high as 50 % which was consistent with a literature report [2]. Accordingly, we have implemented an interdisciplinary approach for renal transplant recipients with severe pneumonia involving the intensivists and transplant surgeons since 2009 in order to improve the outcome of these patients.

Fifty-three renal recipients who fulfilled the criteria of severe pneumonia [3] were admitted to the ICU from 2009 to 2012. Thirty patients were diagnosed with ARDS [4] on ICU admission or during the course of treatment in the ICU. All patients received oxygen therapy via face mask on admission, of which 33 (62.3 %) patients received non-

invasive ventilation (NIV) for progressive hypoxia. Only one patient underwent endotracheal intubation immediately because of severe hypoxia and dyspnea. The main characteristics of the 53 patients are shown in Table 1.

All immunosuppressants were discontinued at admission to ICU and methylprednisolone (1 mg/kg every 12 h) was initiated followed by a gradual tapering. Empirical antibiotic therapy included moxifloxacin, ganciclovir, and trimethoprim/sulfamethoxazole (TMP-SMX). Antifungal drug was administered in cases with suspected or confirmed fungal infection [5]. Fourteen (7.5 %) patients had a definitive microbial diagnosis by non-invasive diagnostic tests. In the remaining 39 patients, bronchoalveolar lavage (BAL) was

performed in 35 (66 %) patients, but only 10 patients had positive findings. All the patients received high-resolution computed tomography examinations before ICU admission and during the ICU treatment.

The overall hospital mortality in this cohort was 15.1 % (8 of 53) and in the subgroup of ARDS it was 26.7 % (8 of 30). The estimated glomerular filtration rate (GFR) at the time of ICU discharge was 65 ± 14 mL/min, which was close to mean renal function on ICU admission (63 ± 12 mL/min, $P = 0.138$). Three patients required hemofiltration or hemodialysis during ICU stay and only one patient depended on dialysis at ICU discharge. Despite the aggressive withdrawal or reduction of the immunosuppressants, none of them were reported to experience any

Table 1 Clinical characteristic of 53 renal transplant recipients with severe pneumonia

Variables	
Time of onset post renal transplant (months)	43 (3–62)
PaO ₂ /FiO ₂ at admission (mmHg)	193 (137–210)
APACHE II	20 (12–21)
SAPS II	34 (19–39)
ARDS cases <i>n</i> (%)	30 (56.6 %)
Mild (<i>n</i>)	5
Moderate (<i>n</i>)	16
Severe (<i>n</i>)	9
PaO ₂ /FiO ₂ at ARDS diagnosis (mmHg)	163 (147–194)
Mechanical ventilation support	
NIV required <i>n</i> (%)	33 (62.3 %)
NIV success <i>n</i> (%)	19 (57.6 %)
Intubation required <i>n</i> (%)	15 (28.3 %)
Duration of mechanical ventilation (days)	8 (4–10)
Renal replacement therapy required, <i>n</i> (%)	3 (5.7 %)
Duration of IS withdrawal (days)	9 (4–11)
Cases with definite microbiological findings, <i>n</i> (%)	24 (45.3 %)
Co-infection <i>n</i> (%)	6 (11.3 %)
Microbiological isolates	
Bacteria (<i>n</i>)	10
Virus (<i>n</i>)	9
Fungi (<i>n</i>)	8
Mycoplasma (<i>n</i>)	3
Length of stay in ICU (days)	10 (5–12)
Length of stay in hospital (days)	18 (10–22)
ICU mortality, <i>n</i> (%)	6 (11.3 %)
Hospital mortality <i>n</i> (%)	8 (15.1 %)

Values are given as median (25–75 % interquartile range) or *n* (%)

APACHE II Acute Physiology and Chronic Health Evaluation II, SAPS II Simplified Acute Physiology Score II, ARDS acute respiratory distress syndrome, NIV non-invasive ventilation, IS immunosuppression, ICU intensive care unit

evident acute rejection episodes during the 6 months follow-up.

Our work identified timely admission to ICU, aggressive investigations of microbial ecology, and early empirical treatment as the elements we should focus on to save lives. Depending on our preliminary experience, aggressive immunosuppressant dosage reduction and glucocorticoids (GCs) replacement was safe and associated with minimal risk of acute graft loss. However, the relatively small sample size of the study and lack of a control group prevented us from drawing definite conclusions on the effectiveness and safety of the interdisciplinary approach.

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