

Immediate postoperative complications in kidney transplant patients requiring ICU admission: A 20-year study

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ABSTRACT

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This study was undertaken to evaluate the immediate postoperative complications in renal transplant recipients requiring Intensive Care Unit (ICU) admission. All renal transplant recipients with immediate post-transplantation complications (<1 week) admitted to our ICU from 1992 to 2012 were studied. Patients' characteristics, transplant variables and prognosis were evaluated and data were analyzed to identify factors of outcome. Over the study period 13 men and 3 women, (26.2 % of renal transplant recipients requiring ICU admission) aged 45.4±10 years, were included in the study. APACHE II and SOFA scores on ICU admission were 17.8±4.6 and 8.4±3.6 respectively. The main immediate post-transplantation complications requiring ICU management were the surgical procedure in five patients and acute respiratory failure in four. Seven patients required catecholamines on ICU admission and six patients required hemodialysis. The mortality rate was 25% vs 51.1% of other renal transplant recipients requiring ICU admission and 30% of the general ICU population. No studied factor was independently related to the mortality. Renal transplant recipients with severe immediate postoperative complications requiring ICU admission had a lower mortality

rate than that of the other renal transplant recipients requiring ICU management and that of the general ICU population.

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INTRODUCTION

Successful renal transplantation improves the quality of life and increases survival compared with long term hemodialysis¹. Immediate post-transplantation complications in renal transplant recipients requiring ICU admission include surgical procedures requiring mechanical ventilation². The aim of this study was to evaluate patient characteristics, transplant variables, prognosis of renal transplant recipients with immediate postoperative complications requiring ICU admission and to analyze the factors contributing to outcome.

MATERIAL AND METHODS

This study was conducted in a tertiary teaching hospital in Greece. We performed a 15-year retrospective and a 5-year prospective study of all kidney transplant recipients with immediate post-transplantation complications requiring ICU admission from 01/01/1992 to 1/1/2012. Demographic data, admission characteristics, ICU management and mortality factors were analyzed. In this study univariate analysis was first performed and data were analyzed by Student's t test. Multivariate analysis was performed using logistic regression. Statistical analyses were executed with SPSS 11.0 (SPSS Inc. Chicago, IL).

RESULTS

Among 61 renal transplant recipients requiring ICU admission during the study period, 16

(26.2%) were admitted in the immediate post-transplantation period (<1 week). The immediate postoperative complications on ICU admission were surgical procedures in 5 patients leading to graft dysfunction (acute rejection of the graft in 2 patients, graft infarction in 1, venous thrombosis in 1 and ureter necrosis in 1), acute respiratory failure in 4 patients, pulmonary edema in 2, hemorrhagic shock in 2, acute heart attack in 2 and allergic reaction with shock in 1. Patient characteristics and the ICU course and outcome are reported in Table 1.

Table 1. Patients characteristics and the ICU Course and Outcome

Characteristic	Values
Age (years)	45.4±10
Female (%)	3 (1.7)
APACHE II score	17.8±4.6
SOFA score	8.4±3.6
Use of Mechanical ventilation (%)	16 (100)
Catecholamine use (shock) (%)	7 (43.7)
Need for dialysis (%)	6 (37.5)
ICU Length-Of-Stay (days) (median-range)	6.9 (range:1-50)
ICU mortality (%)	4 (25)

Renal transplant recipients during ICU stay were complicated with 2 episodes of Ventilator-Associated Pneumonia, 1 of candidemia and 1 episode of urosepsis. The mortality rate was 25% vs 51.1% for other renal transplant

recipients needed ICU admission and 30% for the general ICU population. Demographic features of early versus late admissions to ICU of transplant recipients versus other ICU patients (6203 patients during the study period) are reported in table 2. No studied factor was independently related to the mortality.

Table 2. Demographic features of early (<1 week) versus late admissions to ICU of transplant recipients versus other ICU patients.

Demographic features	Early admissions transplant recipients (16 pts)	Late admissions transplant recipients (45 pts)	Other ICU patients (6203pts)
Age (years)	45.5±10	45.5±13.1	54.7±18.8
Female (%)	3 (18.7)	8 (17.7)	2282 (36.8)
APACHE II Score	17.8±4.6	20.8±6	18.3±8.6
ICU Length-of stay (days) (Median-range)	6.9 (1-50)	15.6 (8-62)	9.71 (1-273)

DISCUSSION

The main reason for ICU admission of renal transplant recipients admitted to ICU was sepsis^{3,4}. Our study confirms that immediate post transplantation complications in renal transplant recipients requiring ICU admission have a lower mortality rate than the other renal transplant recipients and the general ICU population. The most common reason for immediate post transplantation complications were

procedures leading to graft dysfunction and acute rejection episodes requiring mechanical ventilation.

Kidney transplantation has become the treatment of choice for most patients with end stage renal disease³ but comprehensive data are lacking concerning immediate post transplantation complications treated in an ICU.

ICU mortality in our study was 25%. Mortality rate for renal transplant recipients requiring ICU admission have been reported in different studies varying from 10% to 67%²⁻¹⁰.

However, taking into account the degree of severity of the patients admitted to an ICU and the complications of early or long-term post-transplant period, the mortality rate in our study may indicate that these patients carry a high risk of multiorgan dysfunction due mainly to surgery and preexisting medical problems and that infections due to long-term immunosuppression treatment may lead to higher mortality rates. APACHE II Score, required dialysis and sepsis as a reason for ICU admission in renal transplant recipients requiring ICU management were independently related to the mortality in previous studies^{3,5-7}. In our study no factor was independently related to the mortality.

Our study has several limitations as it is a small single center study and retrospective for the first 15 years, but in our knowledge, it is the first study that evaluates immediate post

transplantation complications requiring ICU management for so long a period of time.

In summary, better management of early post-operative complications and the prevention of acute rejection episodes may result in a significant improvement of the short-term outcome of renal transplant recipients requiring ICU admission.

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