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Long-Term Graft Survival in Underweight Patients Following Renal Transplantation - A Ten-Year Experience

Banan Osman* and Andrew Ready

Department of Renal Surgery, Queen Elizabeth Hospital -University hospitals Birmingham, United Kingdom

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***Corresponding author:** Banan Osman, Department of Renal Surgery, Queen Elizabeth Hospital -University Hospitals Birmingham, Birmingham B15 2TH, United Kingdom

Abstract

Introduction/Objectives: Kidney transplantation is the treatment of choice for end stage renal failure (ESRD). Several studies have investigated factors that may affect kidney function at 1 year. The aim of this study is to compare the long-term graft outcomes for underweight recipients with an age and sex matched cohort of patients with ideal body mass index (BMI).

Methods: A retrospective single center paired analysis of 1095 consecutive kidney transplant recipients over 10 years in one transplant Centre. Pair analysis underweight with age and sex matched patients from ideal weight counterpart's data analyzed. Data was censored at death, re-initiation of dialysis or an end point of data collection. Statistical assessment was performed using Kaplan-Meier analysis for 2 groups.

Result: 33 of 1095 (3.0%) patients were underweight of which 60.6% were females with mean age of 27.0. There was no difference in one-year graft or patient survival between the underweight and matched ideal weight groups (P 1.00). Kaplan-Meier analysis demonstrated no difference in dialysis free patient survival between the two groups (P 0.955)

Conclusion: Graft outcomes for underweight patients undergoing renal transplantation in this study were comparable to a matched ideal weight cohort. No significant difference in one-year graft or patient survival between the groups. Therefore, low BMI should not be a barrier to renal transplantation.

Keywords: Renal transplant; Low BMI; Graft outcome

Introduction

Kidney transplantation is the treatment of choice for end stage renal failure (ESRD). Several studies have investigated factors that may affect kidney function at 1 year. Low preoperative Body Mass Index (BMI) is considered a strong marker of poor nutritional status with inferior outcomes in such patients demonstrated across multiple surgical disciplines [1]. Despite this, there is a relative lack of evidence concerning the outcome of underweight recipients following renal transplantation, which contrasts with the great interest in the effect of obesity [2]. The aim of this study is to compare the long-term graft outcomes for underweight recipients with an age and sex matched cohort of patients with ideal body mass index (BMI).

Methods

A retrospective single center paired analysis of 1095 consecutive kidney transplant recipients over 10 years in one transplant center , the measurements of body mass and height were performed during 3 consecutive, routine control visits (every 2 months) and the mean values were analyzed. BMI was calculated as weight in kilograms divided by the square of height in meters (kg/m^2). BMI values were further categorized into 4 categories in line with World Health Organization guidelines: low <18.5kg/m^2, normal 18.5-24.9kg/m^2, overweight 25.0-29.9kg/m^2, and obesity over 30 kg/m^2. The patients were divided into 4 groups accordingly. All kidney transplant (KTx) patients with low BMI were included (n=33). Those patients (BMI <18.5kg/m^2) were age and sex matched with ideal weight (BMI 18.5-25kg/m^2) counterparts. Data was censored at death, re-initiation of dialysis or an end point of data collection. Statistical assessment was performed using Kaplan-Meier analysis for 2 groups. P value was significant at the 0.05 levels.

Result

33 of 1095 (3.0%) patients were underweight of which 60.6% were females with mean age of 27.0. There was no difference in one-year graft or patient survival between the underweight and

matched ideal weight groups (P 1.00). Kaplan-Meier analysis demonstrated no difference in dialysis free patient survival between the two groups (P 0.955).

Discussion

World Health Organization guidelines label low BMI as below 18.5 kg/m^2 and normal as weight between 18.5-24.9kg/m^2. Many studies investigated the effect of obese or overweight patient when the compared low BMI they used 23kg/m^2 or 20kg/m^2 as their label 3. [3] while investigating obese kidney transplant recipients. Their results concluded greater graft loss in underweight (BMI less than 18.5kg/ m^2) patient after 5 years (n=218). [4] concluded regardless to BMI there were no differences in patient or graft survivals at 6, 12, 36, or 60 months (n=68). [5] demonstrated underweight and obese recipients have higher incidence of early graft loss in comparison to normal weight (n=31). This is the first study to pair analysis underweight with age and sex matched patients from ideal weight counterparts. Graft outcomes for underweight patients undergoing renal transplantation in this study were comparable to a matched ideal weight cohort. No significant difference in one-year graft or patient survival between the groups. Therefore, low BMI should not be a barrier to renal transplantation [6-8].

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