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Low serum mannose-binding lectin are associated with inflammation, new-onset diabetes mellitus and subclinical rejection after renal transplantation

Francesc Moreso[1*], Meritxell Ibernon[2], José M Fernández-Real[3], Wifredo Ricart[3], Daniel Seron[1]

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Background

Infections, new onset diabetes mellitus (NODAT) and rejection are frequent complications after renal transplantation and may be related to innate immunity alterations. We evaluate the relationship between serum mannose-binding lectin (MBL) levels, chronic inflammation, infection, NODAT and subclinical rejection after renal transplantation.

Patients and methods

Between March 2005 and October 2006 consecutive non-diabetic renal transplant recipients were recruited. Serum levels of MBL, soluble tumor necrosis factor receptor 2 (sTNFR2) and neutrophil gelatinase associated lipocalin (NGAL) were determined before transplant and at 1 and 3 months. An oral glucose tolerance test was performed at 3 months. A surveillance 3-month renal biopsy was performed in a subset of 60 patients with stable renal function.

Results

A total of 125 patients were recruited and 111 had a functioning graft at 3 months. MBL serum levels remained unchanged following transplantation. Subjects with low MBL (lower tertile) had higher pretransplant sTNFR2 (40 ± 13 vs. 35 ± 11 ng/ml, p=0.05) and NGAL (638 ± 114 vs. 553 ± 185 ng/ml, p=0.03), an increased incidence of bacterial/fungal infection (p=0.021) and an increased prevalence of NODAT at 3 months (44.4 vs 22.6%, p=0.01). Multivariate analysis confirmed that MBL was a risk factor for NODAT (relative risk: 3.04, 95% confidence interval: 1.18-7.81; p=0.021) adjusting for age, pre-transplant impaired fasting glucose and body mass index. Subclinical rejection in the 3-month surveillance biopsy was observed in 7 of 18 (38.9%) low MBL patients and in 3 of 42 (7.1%) high MBL patients (p=0.005). Induction and maintenance immunosuppression was not different in patients with low and high MBL levels.

Conclusion

Low MBL serum levels in renal transplants are associated with major outcome variable after renal transplantation such as bacterial/fungal infections, NODAT and subclinical rejection. These results suggest that alterations of the innate immunity may play an important role in renal transplantation.

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Author details

[1]Nephrology Dept., Hospital Universitari Vall d'Hebron, Barcelona, Spain. [2]Nephrology Dept., Hospital Germans Trias i Pujol, Badalona, Spain. [3]Dept. of Diabetes, Endocrinology and Nutrition, Institut d'Investigació Biomèdica de Girona, Girona, Spain.

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[1]Nephrology Dept., Hospital Universitari Vall d'Hebron, Barcelona, Spain
Full list of author information is available at the end of the article