

Cardiovascular Mortality in Renal Transplant Patients

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Introduction

Cardiovascular disease (defined as coronary disease, cerebrovascular disease and peripheral vascular disease) after renal transplantation is very common. According to the European best practice guidelines for renal transplantation 2002 specific factors for developing post-transplant cardiovascular disease include pre-transplant cardiovascular disease, arterial hypertension, uremia (graft dysfunction), hyperlipidemia, diabetes mellitus, smoking and immunosuppressive treatment.

According to the literature data cardiovascular mortality is the main cause of death and the main cause of graft loss in renal transplant patients (Tx pts). The epidemic of cardiovascular disease (CVD) in Tx patients may be explained by a unique accumulation of risk factors for atherosclerosis. Pre-transplant disease is mirrored in vessel changes which are due to an acceleration of atherosclerosis promoted by end stage renal disease, increased oxidative stress during haemodialysis procedure, elevated homocysteine levels and microinflammatory state. The weight of these risk factors in comparison with classical risk factors is still undefined although there are such opinions that such risk factors specifically related to uraemic milieu play a major role. (1,2) The problems that cardiovascular disease is sometimes asymptomatic, so pre-evaluation and selection of patients with clinically silent disease by stratification based on the level of risk using non invasive test such as thallium scintigraphy and dopamine echocardiography is mandatory (3). General consensus has made for the treatment of modifiable risk factors such as: smoking, obesity, diabetes mellitus, hyperlipidemia, oxidative stress, post-menopausal hormone deficiency.

To make better improvement in treatment risk factor management should begin early in the course of chronic renal disease.

Survival after renal transplantation improved significantly, but it has been observed significance influence of patient characteristics, transplantation era, and the immunosuppressive regimen on patient survival. In a study Arend and co-workers patient survival after more than 25 years follow-up shows that cardiovascular events were the single most frequent cause of death with participation of 40%. (6) Long term follow up trials suggest that this problem still exist particularly after the first year. Ischemic heart disease is still a major cause of death and graft loss after renal

transplantation in Scandinavia (6). More grafts are lost from patient mortality than rejection during early post-transplant period mostly with cardiovascular cause of death (8).

Aim

The aim of a study was to evaluate a cardiovascular mortality in 12 years follow up (1986 - 1998).

Patients and Methods

The group consisted of 116 patients (82 male and 34 female) mean age 36 +/- 16 years on the time of transplantation mostly (64%) with triple drug immunosuppressant (CY A, Aza, Pred) and with cadaver organ donation (61%). The underlying renal disease mostly presented as end stage renal disease (52, 5%). All patients were divided in groups according to the median serum creatinine concentrations respecting Opelz classification. Statistics: Student's t-test, MANOVA, ANOVA, Kaplan-Meier analysis.

Results

During the follow up period 52/116 pts died. Cardiovascular mortality was present in 35 Tx pts (28 M 7 W). Cardiac arrest was present in 3 Tx pts (6%), brain hemorrhage 3 (6%), rupture of aorta 1 pt (2%), cardiomyopathy with heart failure 19 pts (36%), myocardial infarct 9 pts (17%). The group where with high prevalence of hypertension (88%), hyperlipidemia 81% diabetic 9,5%, obesity 28%, smoking 27%, sedentary pts.11%, and graft dysfunction 28%. Echocardiography investigations of our patients show high prevalence of left ventricular hypertrophy (58%). In Holter 24h ECG monitoring in our 60 survivors after 12 years of transplantation we found high prevalence of rhythm disturbances: supraventricular (59, 5%), ventricular (42, 8%), and ischemic abnormalities (23, 8%). According to the graft function cardiac arrest, heart failure, and rhythm disturbances are more prevalent in group with highest level sera creatinine concentration with statistical significance. There were no statistical significance in prevalence of myocardial infarction, rupture of aorta and brain hemorrhage according to the graft function. The group of patients with CV death where with high prevalence of male sex, hypertension, and classical risk factors for CVD. We found statistical high prevalence of KV events in smokers. Ten years patient survival according to

Kaplan – Meier analysis was 60%. Survival was better in women. Observing a sex significant difference was found for man toward women died from CV event. Man had highest systolic blood pressure and hematocrit and lowest value of HDL cholesterol.

No difference has found in age, duration of dialysis treatment, diastolic pressure, total cholesterol level and graft function.

Conclusion

Cardiomyopathy with heart failure and ischemic heart disease are the major cause of mortality in our group of renal transplant patients. This cardiovascular mortality reflects high prevalence of risk factors such as hypertension, hyperlipidemia and left ventricular hypertrophy.

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