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Metabolic Syndrome in Transplant Patients: An Academic or a Health Burden?

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ABSTRACT

Metabolic syndrome is a cluster of risk factors that predispose to major cardiovascular diseases, liver steatosis and fibrosis, as well as reduced renal function. Metabolic syndrome and its early hepatic manifestation, non-alcoholic fatty liver disease, are prevalent both among the general population and in pre- and posttransplantation settings. Because indications for solid-organ transplantation are gradually increasing, attention should focus on the incidence of metabolic syndrome among transplanted patients, defined as post-transplant metabolic syndrome (PTMS). Subjects with worse metabolic profiles with two or more criteria of the syndrome show lower survival rates and greater co-morbidities.

However, it is still unclear whether the pathophysiology of posttransplantation metabolic syndrome differ from that of the general population and may be determined by the primary disease affecting the liver or kidney, or amplified or altered by the immunosuppressive treatment, as it has already been established that corticosteroids and calcineurin inhibitors cause metabolic disarrangements. Although there is controversy regarding the definition and the impact of PTMS on overall survival rates following transplantation, these patients are at increased risk for cardiovascular morbidity and mortality. Early recognition, prevention, and treatment of these conditions may impact long-term survival after transplantation. Thus, even if metabolic syndrome in transplant patients remains an unclear definition, an insulin resistance is present in these patients. The treatment of this condition represents a health problem that requires intervention by clinicians before and after transplantation.

Metabolic syndrome (MS) is a cluster of known cardiovascular risk factors that are interrelated by a common pathophysiological defect, ie, the insulin resistance. The syndrome is not a disease itself but rather a marker of a metabolic disturbance that serves as a potential risk assessment tool for the development of diabetes mellitus and cardiovascular disease. MS was defined by the Adult Treatment Panel III (ATP III) as the presence of three or more of the following conditions: abdominal obesity (waist circumference ≥102 cm in men and ≥88 cm in women), hypertriglyceridemia (≥150 mg/dL, 1.69 mmol/L), low high-density lipoprotein levels (HDL; ≤40 mg/dL, 1.04 mmol/L) in men and ≤50 mg/dL (1.29 mmol/L) in women, high blood pressure (≥130/85 mm Hg), and high fasting glucose levels (≥110 mg/dL, ≥6.1 mmol/L).[1] Its prevalence in the general population is dramatically increasing: the Third National Health and Nutrition Examination Survey in 1999–2000 estimated the prevalence of MS in the adult US population to be 24%.[1] The increased prevalence of components of MS is of particular concern because of the increased incidence of cardiovascular mortality, diabetes mellitus and other co-morbidities, including fatty liver disease, hyperuricemia, cholelithiasis, polycystic ovary disease, and sleep disorders.[2] According to the Framingham Study, MS alone can predict at least 25% of all new-onset cardiovascular diseases.[3]

DISCUSSION

With transplantation as an effective therapy for chronic and end-stage renal and hepatic diseases achieving over 90% survival at 1 year and over 70% survival at 5 years, the

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