

Early diagnosis of acute kidney injury in adult patients after allogenic hematopoietic cell transplantation – what is the utility of novel biomarkers?

Hematopoietic cell transplantation, also known as bone marrow transplantation is a treatment for malignant neoplasms, mostly leukemia and lymphoma and some rare nonmalignant diseases. Special cells are collected from a healthy donor (allogenic) or a patient once the disease is in remission (autologous). They are transfused to a patient as an intravenous infusion. This gives the chance for survival even in case of very bad prognosis. Before the cells are infused to a patient, their immune system needs to almost completely destroyed. This is done by treatment with high dose chemotherapy and in some patients whole body irradiation.

These procedures cause numerous side effects. Kidney injury is particularly common and may lead to serious consequences. Once kidneys are injured, the toxic products of metabolism, medicines and even water are not expelled properly. What os more, kidneys regulate important functions of blood, bones and immunity. This is crucial specially in the initial phase after hematopoietic cell transplantation when the body is in danger of serious infections and the transfused cells are not fully functional. Patients who develop kidney dysfunction have higher risk of death caused by treatment complications. Initially kidney injury may be asymptomatic and it is impossible to recognize it even in the laboratory tests of blood and urine. Meanwhile at this stage it is possible to prevent further dysfunction.

The aim of this study is to investigate if we can find abnormal levels of specific substances in the urine and blood of patients with early stage of kidney injury after hematopoietic cell transplantation. This may allow to recognize the threat to kidneys earlier than currently. Also urinary tract ultrasound – a painless imaging test may serve to assess the condition of kidneys before the abnormalities in blood tests are apparent. These tests may be helpful not only in diagnosing kidney dysfunction but also its etiology and even other complications. Further perspective is a chance for better health after treatment with hematopoietic cells.