still no consensus for the time frame to diagnose NODAT. Many cases of NODAT are missed due to the usage of fasting blood sugar as the diagnostic investigation as hyperglycemia tends to occur postpradially. HbA1c is also an erratic marker as hemoglobin level tends to be unstable during the early post transplant period. Oral glucose tolerance test captures abnormalities of hyperglycemia more accurately.

There are modifiable and non modifiable risk factors for NODAT such as age, ethnicity and family history. Among the modifiable risk factors immunosuppressant medications play a major role in the causation of NODAT. Calcineurine inhibitors (CNI) cause pancreatic beta cell exhaustion and reduced uptake of glucose by muscles and adipocytes. Tacrolimus when compared with cyclosporine is a better immunosuppressant as well as a drug with potent diabetogenic properties (2).mTOR inhibitors are also recognized as diabetogenic in studies involving RTR. Corticosteroids contribute to causation of NODAT by inducing peripheral insulin resistance. As a result there had been attempts at rapid withdrawal of steroids, the process of which was hindered by the increase in acute rejection episodes(3).

The traditional approach to management of NODAT has been to modify lifestyle factors, add OHA and then escalate to Insulin in a stepwise fashion. But nearly 50% of the pancreatic beta cells are dysfunctional by the time impaired glucose tolerance manifests (4).Thus by approaching above stepwise manner in the treatment, we may lose the opportunity to reverse the damage to pancreatic beta cells. It is well established that severe hyperglycemia in itself is toxic to pancreatic beta cells (5,6).Therefore by normalizing plasma glucose early in the post transplant period, beta cells can be spared from the vicious cycle of glycotoxic injury and ultimately development of NODAT. Beta cell sparing with the usage of intensive insulin therapy was employed in post transplant hyperglycemia. It is proven in studies that treatment with insulin on patients who develop NODAT has made them become independent of insulin therapy while those who have been on OHA required ongoing anti diabetic treatment (7). Beta cell function can be preserved for at least 3.5 years with early and intensive therapy for 3 months with insulin and metformin. After 3 months of intensive therapy the subjects on continued insulin or OHA showed excellent glycemic control and retained beta cell function as measured by c peptide levels(8). Exogenous insulin has shown pathophysiological basis of resting the pancreatic beta cells in the prevention of NODAT. There is no evidence to suggest satisfactory and efficacious use of OHA alone in the treatment or prevention of NODAT (9). Lifestyle modifications should be started pre transplant in overweight patients in parallel with increased physical activity. Early and intense life style intervention in patients listed for transplant, rapid steroid withdrawal in low risk patients, dividing the daily dose of prednisolone, and changing from tacrolimus to cyclosporine when appropriate, could minimize the risk and impact of NODAT. Perhaps a very important step will be the early institution of insulin to rest the pancreatic beta cells. The transplant community and treating physicians have to brace itself to the changing paradigms in the prevention and management of NODAT.

CONCLUSION:

NODAT is a common occurrence among renal transplant recipients. As the development of this dampens the benefits of transplant it is of utmost importance for the treating physicians to be aware of the pathogenesis and the basis for treatment of this entity. The development of NODAT is mainly caused by the transplant medications in susceptible patients with risk factors. It should be understood that conventional stepwise approach to therapy in NODAT would be detrimental as beta cell exhaustion and apoptosis will make the patient dependent on anti diabetic treatment for the life time unless intensive therapy with exogenous insulin is used in the outset. It is proven in studies involving patients with renal transplants that early institution of Insulin rests the beta cells and prevents further damage by eliminating the glycotoxic effect. Such patients have been found to be independent of Insulin therapy after considerable periods of time and some can be completely taken off anti diabetic medication for the rest of their lives. Therefore exogenous Insulin should be the choice in treatment of post transplant hyperglycaemia in order to prevent development and continuity of NODAT.

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