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Evaluation of Factors Causing Delayed Graft Function in Live Related Donor Renal Transplantation.

Urology

KEYWORDS:

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ABSTRACT

Aims and Objectives: To know the incidence and various factors responsible for delayed graft function due to post-transplant acute tubular necrosis in live related donor renal transplantation. **MATERIALS AND METHOD:** retrospective study done in 99 patients who underwent live related renal transplantation in NIMS between october 2014 and feb 2016, all the recipients irrespective of the etiology of end stage renal disease. And patients with delayed graft function due to other complications like rejection,vascular catastrophes and urological complications are not taken into the study. All the recipients received kidney from ABO compatible donors with negative tissue cross match and followed the same selection criteria and practically same surgical and medical staff were involved .All the recipients were given intravenous methyl prednisolone intraoperatively. Other immunosuppressive drugs used were tacrolimus,mycophenolate mofetil and basiliximab induction if the donor is spouse. Recipient and donor surgeries were performed simultaneously following standard procedures Donor nephrectomy was done by open method.In the recepient donor renal vein anastamosed to extenal iliac vein and renal artery to internal iliac artery or external iliac Artery. Ureteroneocystostomy was done by Lich Gregoir technique .Total ischemia time, i.e., the time between clamping of renal artery in the donor and the time of release of clamps in recipient was recorded in all the patients. All the recipients requiring dialysis in the first week post-transplant were subjected to ultrasonography, renal doppler studies, renogram and renal biopsy .Acute tubular necrosis (ATN)was diagnosed using standard clinical, biochemical and histopathological criteria. Statistical analysis done by using t-test for numerical variables and chi square test for ordinal variables.P values < 0.05 were considered significant. **RESULTS:** Total live transplantations done during study period was99 cases. Causes of ESRD are CGN-28,CIN-16,IgA Nephropathy-10, Diabetic Nephropathy-4,VUR-2,Others-39cases. Delayed graft function seen in 12cases, in that ATN-8, AMR-2, ACR-2 cases. ATN group patient characteristics were compared with non ATN group. Mean age of recipients was similar in the two groups (ATN group 40.7 ± 8.3, non-ATN group 39.3 ± 7.5, P= 0.43). No significant difference in the the base line systolic BP of two groups 146(ATN) vs142(non ATN) p value-0.077, But there is significant difference in baseline diastolic BP 90(ATN) vs 86 (non ATN)) p value-0.041. Baseline diastolic BP is significantly greater in ATN group than in non ATN group. In ATN group as compared with non-ATN group the donor age was significantly greater (58 ± 5.5 vs 42 ± 6.5 years, P< 0.001). The Total ischemia time was significantly greater in ATN group (63.3 ± 6.2 min) as compared to non-ATN group(45.5 ± 5.7 min, P= 0.042). Duration of hospital stay was significantly more in ATN group When compared with non ATN group (16.9 ± 6.7 ATN vs. 10.8 ± 8.4days, non ATN P= 0.01). **CONCLUSION:**This study shows that greater donor age,high baseline diastolic BP and greater ischemia time are major determinants of delayed graft function due to acute tubular necrosis after live related donor renal transplantation.Prevention of DGF will shorten the hospital stay and reduces the overall cost.

INTRODUCTION: after kidney transplantation most commonly [1]seen complication is DGF but there is no effective treatment for that however early diagnosis and treatment may improves out come. After kidney perfusion starts ,DGF results from immuno-logic and nonimmunologic events.[1]DGF varies from 2 to 50%.[2] in different centers. In few centers it is seen in 16% of cases[3]. DGF results from acute kidney injury (AKI)develops after transplantation, that means DGF is a manifestation of AKI. AKI is defined as raised serum creatinine with in 48hrs,[4] where as DGF is defined as use of dialysis with in 7 days of transplant. There are 10 definitions for DGF recorded in literature.[4] Etiology of DGF are ,Prolonged periods of cold and warm ischaemia, greater age of the donor, brain death of the donor, haemodynamic instability of the cadaveric donor prior to kidney removal, greater body mass of recipient, the use of nephrotoxic drugs, etc.[5]

MATERIALS AND METHOD:

retrospective study done in 99 patients who underwent live related renal transplantation in NIMS between october 2014 and feb 2016, all the recipients irrespective of the etiology of end stage renal disease. And patients with delayed graft function due to other complications like rejection, vascular catastrophes and urological complications are not taken into the study.All the recipients received kidney from ABO compatible donors with negative tissue cross match and followed the same selection criteria and practically same surgical and medical staff were involved .All the recipients were given intravenous methyl prednisolone intraoperatively. Other immuno-suppressive drugs used were tacrolimus,mycophenolate mofetil and basiliximab induction if the donor is spouse.

Recipient and donor surgeries were performed simultaneously following standard procedures Donor nephrectomy was done by open method.In the recepient donor renal vein anastamosed to extenal iliac vein and renal artery to internal iliac artery or external iliac Artery. Ureteroneocystostomy was done by Lich Gregoir technique .Total ischemia time, i.e., the time between clamping of renal artery in the donor and the time of release of clamps in recipient was recorded in all the patients. All the recipients requiring dialysis in

the first week post-transplant were subjected to ultrasonography, renal doppler studies, renogram and renal biopsy .Acute tubular necrosis (ATN)was diagnosed using standard clinical, biochemical and histopathological criteria. Statistical analysis done by using t-test for numerical variables and chi square test for ordinal variables.P values < 0.05 were considered significant.

RESULTS:

Total live transplantations done during study period was99 cases. Causes of ESRD are CGN-28,CIN-16,IgA Nephropathy-10, Diabetic Nephropathy-4,VUR-2,Others-39cases.

Delayed graft function seen in 12cases, in that ATN-8, AMR-2, ACR-2 cases. ATN group patient characteristics were compared with non ATN group. Mean age of recipients was similar in the two groups (ATN group 40.7 ± 8.3, non-ATN group 39.3 ± 7.5, P= 0.43). No significant difference in the the base line systolic BP of two groups 146(ATN) vs142(non ATN) p value-0.077, But there is significant difference in baseline diastolic BP 90(ATN) vs 86 (non ATN)) p value-0.041. Baseline diastolic BP is significantly greater in ATN group than in non ATN group. In ATN group as compared with non-ATN group the donor age was significantly greater (58 ± 5.5 vs 42 ± 6.5 years, P< 0.001). The Total ischemia time was significantly greater in ATN group (63.3 ± 6.2 min) as compared to non-ATN group(45.5 ± 5.7 min, P= 0.042). Duration of hospital stay was significantly more in ATN group When compared with non ATN group (16.9 ± 6.7 ATN vs. 10.8 ± 8.4days, non ATN P= 0.01).

DISCUSSION: Delayed graft function is a form of post-transplant acute renal failure. DGF varies from 2 to 50%.[2] in different studies.Where as in few studies it is seen in 16% of cases.[3]In our study it is 12.1%. Different studies have used different criteria to define delayed graft function, so results are not consistent and it may varies. pre operative factors such as donor age, prolonged anastamosis time which leads to increased ischemic time, pelvic atherosclerosis promotes ATN. DGF is seen in almost 40% cases when its cold ischeamic time is over 24hrs[5]. The anastamosis time(warm ischaemic time) was identified as predictor of delayed graft function in some studies.[6] In our study the total ischemia time was significantly greater in ATN group as compared to the non-ATN group.Duration of ischemia time is a significant risk factor in the etiology of ATN. If the donar age is >60 yrs graft survival decreases.[7] Greater Donor age has been found to be important in the development of delayed graft function in many studies[8], which is also observed in our study. Greater diastolic blood pressure is inversly related to the graft outcome[9] and similar findings has been noted in our study. Sevel et al study showed that female gender and high receipient-donor weight ratio were important causes of DGF. [10] this was not seen in our study. Ragagopalan study stated that receipient hydartion is also an important factor In causing DGF.[11] Presence of ATN had no effect on long term transplant survival according to Troppmann et all study.[12].

CONCLUSION: This study shows that greater donor age, high baseline diastolic BP and greater ischemia time are major determinants of delayed graft function due to acute tubular necrosis after live related donor renal transplantation. Prevention of DGF will shorten the hospital stay and reduces the overall cost.

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