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Evaluation of pulmonary artery pressure variations in end stage renal disease patients before and after renal transplantation

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Introduction: Pulmonary hypertension (HT) is sorely common in patients suffering from chronic kidney disease (CKD). Currently, its prevalence has been noted between 12.5- 58.6 %, in chronic hemodialysis and peritoneal dialysis population and in these patients, pulmonary HT is recognized as an independent morbidity and mortality factor. The present study is aimed at prospectively evaluating systolic pulmonary artery pressure (sPAP) values of end stage renal disease patients before and after renal transplantation, pulmonary hypertension (HT) presence, factors affecting PAP values, posttransplant sPAP and pulmonary HT and the relationship between these changes and renal transplantation.

Method: 87 end stage renal disease patients undergoing renal transplantation at Ankara University Medical School, Division of Nephrology were prospectively followed up. Demographics, pretransplant, early posttransplant (third month) and late posttransplant (twelfth month) routine serum tests of the participants were reviewed along with echocardiographic data. Patients with a probable pulmonary HT due to pulmonary or cardiac origin and those who refused to participate were excluded from the study.

Findings: 40 participants were male and 47 were females. Mean age of our group was 42.6 ± 11.7 years. Mean preoperative systolic pulmonary artery pressure (sPAP) was 36.6 ± 7.97 mmHg which decreased to 31.7 ± 5.5 mmHg at early and 30.1 ± 6.2 mmHg at late posttransplant period ($p < 0.05$). Pretransplant pulmonary HT frequency was 72.4 % which decreased to 36.7% in early posttransplant (3rd month) and to 22.9% in late posttransplant (12th month) periods. sPAP was found to correlate with preoperative triglyceride and parathormone levels ($p < 0.05$). Pretransplant duration of CKD positively correlated positively with the presence of pulmonary HT, AV fistula and serum triglyceride values ($p < 0.05$) and inversely correlated with hemoglobin value and serum albumin concentration ($p < 0.05$). Renal functions of cadaveric or living donor kidney recipients with pulmonary HT or normal sPAP values, remained stable for 1 whole year after transplantation. Although, cadaveric kidney recipients whose preoperative sPAP value was higher than or equal to 40 mmHg had statistically significant early postoperative graft dysfunction ($p < 0.05$).

Conclusion: Prevalence of pulmonary HT and sPAP value is increased in ESRD; but after transplantation, sPAP decreases significantly and progressively in kidney transplantation recipients. As early graft dysfunction was established in cadaveric kidney recipients with sPAP ≥ 40 mmHg; it is emphasized that all renal transplantation candidates -esp. cadaveric kidney recipients- should be examined for pulmonary HT due to its importance in early graft dysfunction, morbidity and mortality risk. It is also emphasized that pulmonary HT should be recognized, treated and -whenever possible- averted by physicians in ESRD patients and renal transplantation should be favored in ESRD patients with pulmonary HT.

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