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EFFECT OF OBESITY-INDUCED HYPERFILTRATION ON RENAL PERITUBULAR CAPILLARY ONCOTIC PRESSURE

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Studies in animals and humans have shown that salt retention may be involved in the pathogenesis of obesity-induced hypertension. One of the factors which may theoretically promote renal salt reabsorption is an elevated peritubular capillary oncotic pressure. Obesity is associated with elevated filtration fraction (FF) and high glomerular filtration rate (GFR). An increased FF is predicted to elevate the renal peritubular capillary oncotic pressure (ΠPT), thus promoting salt reabsorption.

We have previously reported the effects of weight loss on GFR and RPF in subjects with severe obesity (Chagnac et al, J Am Soc Nephrol, 2003). The aim of the present study is to estimate the effect of weight loss on the ΠPT of obese subjects.

Eight subjects with severe obesity (BMI 38 to 61) underwent renal function tests before and after weight loss. GFR and renal plasma flow (RPF) were measured as inulin and amino-hippurate clearance respectively. FF was calculated as GFR/RPF. The afferent arteriolar oncotic pressure (RPF) was estimated from the plasma protein concentration. ΠPT was calculated as ΠPT = ΠG / (1-FF).

Following weight loss, BMI decreased from 48±2.4 to 32±1±5 (P=0.001). Systolic blood pressure decreased from 143±6 to 133±6 mm Hg (P<0.005). GFR decreased from 145±14 to 110±7 ml/min (P=0.01). RPF decreased from 732±35 to 628±37 ml/min (P<0.002). FF was 0.18±0.01 before and 0.16±0.01 after weight loss (P=0.07). ΠG was 25.8±1.1 mm Hg before and 24.5±1.0 mm Hg after weight loss (P NS). ΠPT decreased from 31.5±1.4 to 29.2±1.3 mm Hg following weight loss (P<0.05).

This study shows that ΠPT decreases following weight loss. This finding supports that obesity-induced hyperfiltration results in an increased ΠPT. The increased ΠPT may play a role in the pathogenesis of obesity-associated hypertension.

Key Words: Obesity Induced Hyperfiltration, Peritubular Oncotic Pressure, Weight Loss

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BLOOD PRESSURE CONTROL BY 24-HOUR AMBULATORY MONITORING IN CHRONIC RENAL FAILURE

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In 148 patients, having mild-moderate CRF associated with arterial hypertension, clinic and 24-h mean ambulatory BP (ABPM) were evaluated.

Out of the 148 patients 33 did not ever receive any antihypertensive drug. The remaining 115 patients were studied while taking their usual antihypertensive therapy. Well-controlled hypertension was defined as clinic BP ≤130/80 mmHg.

The prevalence of well-controlled BP among treated patients was 6% for systolic and 40.8% for diastolic BP. The examination of 24-hour ABPM also demonstrated poor controlled hypertension. The analysis of the different groups (four) of treatment, demonstrated by both clinic BP and ABPM, that CRF hypertensives had not adequately controlled hypertension independently of agents used. Our findings demonstrate that CRF non dialysed patients have poorly controlled hypertension. It is conceivable that in CRF crucial mechanisms underlying hypertension are not adequately focused on by standard therapies. A better selection and dosage of drugs would provide optimal blood pressure reduction.

Key Words: Antihypertensive Therapy, Blood Pressure Control, Hypertension in Renal Failure

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DOES A SIROLIMUS - BASED IMMUNOSUPPRESSION IN CALCINEURIN INHIBITOR-FREE REGIME IMPROVE CHRONIC RENAL FAILURE IN CARDIAC TRANSPLANT RECIPIENTS INDEPENDENT FROM BLOOD PRESSURE?

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Objective: The standard immunosuppression in cardiac transplantation (CTX) includes calcineurin inhibitors (CNI) to prevent allograft vasculopathy as limiting factor of graft survival. The most important side effect of CNI is the multifactorial pathogenesis of chronic renal failure after HTX. Progression to end-stage renal failure is worsening the cardiac transplant outcome.

To prevent of further nephrotoxicity, immunosuppression in cardiac transplant recipients has been changed to a CNI-free immunosuppressive regime with sirolimus. Sirolimus (SIR) is one of the new powerful immunosuppressants with antiproliferative and antimigratory properties on cells by binding to FK 506-binding protein.

Methods: In our prospective observational study 26 patients (1 female, 25 male) with chronic renal failure, grade II-III, 2 to 13 years after cardiac transplantation have been included and switched overlapping from a former triple drug CNI-containing regime containing mycophenolate mofetil or azathioprine and prednisolone to a drug regime with sirolimus instead of CNI. The blood pressure, s-creatinine and creatinine clearance were measured regularly before and after CNI withdrawal and switch to SIR. During the 17- to 27-month follow-up cardiac transplant status including blood pressure and renal function was examined every 1-3 months. No acute CTX-rejection occured during follow-up.

Results: Prior to conversion the serum-creatinine ranged from 1.9 – 3.9 mg/dl. Without significant changing of the blood pressure after withdrawal of CNI to SIR, CTX patients with CNI-induced renal failure showed a recovery of the renal function within the first months. The decrease of s-creatinine was up to 1.1 mg/dl. Nevertheless, in the following month, an increase in s-creatinine was observed again.

Conclusions: In CTX-recipients with CNI-induced chronic renal failure, conversion from CNI to SIR is safe, shows no significant effect to the blood pressure and anticipates cardiac graft rejection. CNI withdrawal and SIR introduction can slow progression of renal failure. To prevent CNI nephrotoxicity after CTX, SIR-based immunosuppression should be considered in earlier stages of renal failure.

Key Words: Heart Transplant Recipient, Renal Failure, Sirolimus

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PLASMA LEVELS OF C-REACTIVE PROTEIN ARE ASSOCIATED WITH EARLY RENAL DYSFUNCTION IN NEWLY DIAGNOSED ESSENTIAL HYPERTENSIVE PATIENTS

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Elevated urinary albumin excretion (UAE) and low-grade inflammatory processes are both markers of subclinical atherosclerotic disease. In this study we examined whether high-sensitivity C-reactive protein (hs-CRP), is correlated with UAE, in essential hypertensive patients.