PROLACTIN, GROWTH HORMONE, THYROTROPIN, INSULIN, C-PEPTIDE, GLUCOSE TOLERANCE AND PITUITARY-GONADAL AXIS IN PATIENTS WITH COMPENSATED RENAL FAILURE

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Information regarding disturbances in the endocrine system in patients with compensated renal failure (CRF) is inconclusive. Therefore we studied concentrations of prolactin (PRL), growth hormone (GH), and thyrotropin (TSH) following TRH (200μg) administration, as well as the response of follicle stimulating hormone (FSH) and luteinising hormone (LH) after LH-RH (50μg) injection in 12 male patients with CRF (mean age 38.6 years, mean serum creatinine 4.6mg/dl) in comparison with 18 age matched healthy men. In addition concentrations of immune-reactive C-peptide (IRCP), immune reactive insulin (IRI), GH and glucose were measured after a 100g oral glucose load in all patients and controls.

Results and Discussion

The basal concentrations of LH, FSH, PRL and IRCP were significantly increased in the patients, basal levels of testosterone were significantly decreased, whereas basal values of TSH, GH, IRI and 17-β-oestradiol were within normal range. The maximal response (peak values) of LH, FSH, PRL and GH following 50μg LH-RH and 200μg TRH did not differ between patients and controls (Figures 1a and 1b). The TRH-induced TSH release was significantly diminished (Figure 1b). Glucose concentrations were significantly increased in the patients following an oral glucose load (Figure 1c). IRI levels were elevated (p < 0.05) only in the late phase of the oral glucose tolerance test, whereas IRCP-concentrations as well as the molar IRCP/IRI/ratio were significantly increased at all times of the glucose tolerance test (GTT), (Figure 1c and 1d). In addition, growth hormone levels could not be suppressed by oral GTT in the patients (Figure 1c).

These data show disturbance of various endocrine and metabolic functions even in patients with compensated chronic renal failure not on haemodialysis.
Figure 1. (a) Release of luteinising hormone (LH) and follicle stimulating hormone (FSH) following LH-RH (50µg) in patients with CRF.

Figure 1. (b) Release of prolactin (hPRL), growth hormone (hGH) and thyrotropin (hTSH) following 200µg TRH in patients with CRF.
Figure 1. (c) Blood glucose, immunoreactive insulin, C-peptide and growth hormone following oral glucose load (100g) in patients with CRF

Figure 1. (d) Molar ratio of immunoreactive C-peptide (IRCP)/immunoreactive insulin (IRI) following oral glucose load in patients with CRF