53. LEYDIG CELL RESPONSE TO HCG IN AGEING MEN

C.A. Allan[1,2], E.A. Forbes[1], H.G. Burger[1] and R.I. McLachlan[1,2]

[1]Prince Henry's Institute of Medical Research, Monash Medical Centre, Clayton; [2]Dept of Obstetrics and Gynaecology, Monash University, Clayton, Victoria, Australia, 3168.

Serum total testosterone (TT) levels decline by ~1% per year from the third decade. The associated rise in serum LH suggests an underlying primary testicular defect, but changes in the hypothalamo-pituitary axis have also been suggested. In this study we aimed to characterise further the effects of ageing on testosterone production in 108 non-obese men aged ≥55 years, and with symptoms suggestive of androgen deficiency, taking part in studies of testicular function and testosterone replacement. hCG (5000 IU IM), as an LH substitute, was administered to assess testicular reserve; TT was measured at baseline and on day 3. Ten reproductively healthy young men (23-35 years) acted as controls (to date 6 have completed testing). Compared to younger men, older men had a lower baseline TT (15.5 ± 0.5 nM *v.* 21.0 ± 1.1 nM, mean ± SEM; P=0.004) and higher LH levels (5.3 ± 0.5 IU/L *v.* 3.0 ± 0.4 IU/L; P=0.004). Following hCG the older men achieved a TT of 28.0 ± 0.9 nM and the younger men 36.2 ± 2.8 nM (P=0.01). The absolute increase in TT was of borderline significance (12.5 ± 0.7 nM *v.* 15.2 ± 0.5 nM; P=0.059) but the percentage rise from baseline was not different. When older men with baseline TT<15 nM (n = 55; TT 11.8 ± 0.3 nM) were compared to those with baseline TT>15 nM (n = 53; TT 19.5 ± 0.5 nM) no difference was seen in the absolute rise in TT achieved (12.5 ± 0.7 nM *v.* 12.7 ± 1.3 nM) while the percentage rise was greater in the lower TT group (112 *v.* 67%, P<0.0001). Across all older men the % rise in TT was greater with lower baseline TT levels (P<0.0001). We conclude (1) overall older men have baseline features of Leydig cell dysfunction (lower TT, higher LH) and a borderline diminished absolute secretory response to hCG compared to younger men; (2) older men with lower baseline T levels did not have increased LH levels and showed a comparable absolute Leydig cell response to hCG leading to a greater percentage rise in TT. These data may indicate a relative paucity of LH secretion in these older men consistent with a degree of hypothalamo-pituitary dysfunction. Further studies of the hypothalamo-pituitary-testicular axis are in progress.

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