Regulation of steroid synthesis and apoptosis by insulin-like growth factor I and insulin-like growth factor binding protein 3 in human corpus luteum during the midluteal phase

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The aim of the present study was to investigate the action of insulin-like growth factor I (IGF-I) and insulin-like growth factor-binding protein 3 (IGFBP-3) on steroidogenesis and apoptosis in human corpus luteum during the midluteal phase. Slices from corpora lutea were incubated for 4 h with IGF-I or IGFBP-3. Progesterone, oestradiol, androstenedione and testosterone concentrations were determined by radioimmunoassay; caspase 3 expression was assessed by immunohistochemistry; bcl-2, bax and P450arom expression were assessed by RT-PCR; and apoptosis was detected by in situ terminal deoxynucleotidyl transferase-mediated dUTP nick-end labelling. The results showed that addition of IGF-I stimulated progesterone production (150%, $P < 0.01$), oestradiol production (65%, $P < 0.05$) and bcl-2 gene expression (approximately 200%, $P < 0.05$), but decreased apoptosis ($P < 0.05$). In contrast, IGFBP-3 reduced steroid production and increased bax gene expression and the percentage of apoptotic cells