Human growth hormone enhances progesterone production by human luteal cells in vitro. II. Evidence of a distinct effect on two luteal cell types.

Di Simone N, Castellani R, Lanzone A, Caruso A, Mancuso S.

Department of Obstetrics and Gynecology, Catholic University, Rome, Italy.

Abstract

OBJECTIVE: To examine the differential effect of human GH (hGH) on basal and hCG-stimulated production by cultured small and large human luteal cells.

DESIGN: Distinct cultures of small and large luteal cells from early and midluteal phase.

SETTING: All corpora lutea were obtained from the Obstetrics and Gynecology Department of the Catholic University, a public care center in Rome, Italy.

PATIENTS, PARTICIPANTS: Ten nonpregnant women between 31 and 43 years of age underwent surgery for various nonendocrine disorders such as leiomyomatosis.

INTERVENTIONS: Corpora lutea were obtained at the time of hysterectomy.

MAIN OUTCOME MEASURES: Small and large luteal cells were incubated with or without hCG and/or hGH at different concentrations.

RESULTS: Human GH neither at 250 nor at 500 micrograms/L increased basal P production by small luteal cells, whereas from 1,000 micrograms/L, P concentration in media was significantly increased. The concomitant treatment with ineffective doses of hCG (30 and 60 IU/L) and hGH (250 and 500 micrograms/L) enhanced P production to that obtained with the highest doses of hGH (1,000 micrograms/L or more) or hCG (125 to 250 IU/L) alone. Human GH addition did not change the amount of P release by large luteal cells at any concentration.

CONCLUSIONS: These results indicate a distinct and differential effect of hGH on in vitro luteal steroidogenesis by the two luteal cell types.