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Effects of follicular fluid administration on serum bioactive and immunoreactive FSH concentrations and compensatory testosterone secretion in hemicastrated adult rats

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In adult rats, removal of one testis (hemicastration) results in an elevation of serum follicle-stimulating hormone (FSH) concentrations and a compensation in testosterone secretion by the remaining testis without a corresponding increase in testis size. To determine whether changes in FSH secretion and compensatory androgen production are related, serum testosterone concentrations were measured after inhibin-rich porcine follicular fluid was administered twice daily for 4 days to block the hemicastration-induced rise in FSH. Both serum immunoreactive FSH (immuno-FSH) and bioactive FSH (bio-FSH) concentrations were increased 4 days after hemicastration. The significant increase in serum immuno-FSH in hemicastrated animals was prevented by follicular fluid administration, whereas the serum bio-FSH activity and biologic to immunologic (B/I) ratios were increased in follicular fluid-treated animals. The follicular fluid-induced reduction in serum immuno-FSH had no effect on serum testosterone secretion in hemicastrated rats. Serum inhibin concentrations were reduced 27% in hemicastrated rats compared with intact controls, while administration of exogenous follicular fluid increased serum inhibin concentrations. An elevation in serum immuno-FSH secretion after hemicastration apparently is not required for the compensatory testosterone response. However, the observation of increased bio-FSH in hemicastrated and follicular fluid-treated animals raises questions about the importance of FSH quality (bioactivity), rather than quantity, for controlling testicular steroidogenic activity.

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