

Catecholaminergic phenotype of human Leydig cells

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Key words: catecholaminergic markers, human testis, impaired spermatogenesis.

SUMMARY

Catecholamines are neurotransmitters involved in the regulation of testicular function and they activate the Leydig cell receptors. To assess whether the two key-enzymes involved in the synthesis of catecholamines are present in human testis we examined the expression of Tyrosine Hydroxylase (TH) and Dopamine- β -Hydroxylase (DBH) antigens by immunoperoxidase and immunofluorescence techniques. Sections from testicular biopsies of adult and infant patients were processed by two antibodies. In all specimens Leydig cells stain positively. Differences in the staining positivity among single Leydig cells and among cell groups as well as among Leydig cells from different patients were noted. In some of the reactions a small number of Leydig cells was negative. Most of the immunoreactivity is evenly distributed within the cytoplasm of the Leydig cells. We suggest that the heterogeneous expression among Leydig cells could be correlated to their different metabolic activity. Our observations show a local intratesticular source of catecholamines which, in concert with nervous and blood-stream sources, could be involved in the spermatogenesis regulation. In particular, during psychogenic or somatic stress situations also the local catecholamine production by autocrine and/or paracrine mechanism could contribute to the high concentration of catecholamines and to suppression of the testicular functions.

INTRODUCTION

The Leydig cell is a very important element to the establishment of normal male fertility. The data on the development, structure and function of this cell is excellently described in an interesting book (Payne et al., 1996) that represents a statement of their knowledge.