P35 Expression of Autophosphorylated HER2 in Human Testis

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Objectives: Epidermal growth factor (EGF) superfamily of peptide growth factors (EGF-GFs) plays an important role in gonadal development. Activation of EGF receptors induces dimerization that gives differing responses to different ligands. Of these receptors, HER2 as a cofactor for other EGF receptors acts as a proliferation promoting oncoprotein, and have been implicated in the pathogenesis of a variety of human cancers. In an effort to investigate the role of HER2 in the human male fertility, the expression of HER2 was investigated in testes from obstructive azoospermic or hypospermatogenic males.

Materials and Methods: Optimized semiquantitative RT-PCR and IP-Western were conducted to reveal the expression of HER2 together with sperrmatogenic marker genes in human testes. Immunohistochemical analysis was conducted to localize the HER2 in testis tissue.

Results: Optimized semiquantitative RT-PCR revealed that expression of her2 is closely related with spermatogenic activity in human testis. Phosphotyrosine containing band of Mr. 185 kDa was detected in HER2-immunoprecipitation complex from testis extract by western blot analysis, suggesting the expression of active form of HER2. The germ cells within the seminiferous tubule showed varying degrees of HER2 immunoreactivity. In particular, some spermatogonia which located in the close proximity of basement membrane showed strong immnunoreactivity of HER2. Sertoli cells showed moderate to strong immunoreactivity. Notably, adluminal compartment of Sertoli cell cytoplasm adjacent to the late stage of elongating spermatids showed moderate to strong HER2 immunoreactivity. HER2 immunoreactivity was also found in peritubular cells and Leydig cells.

Conclusions: This is the first report on the HER2 expression in adult human testis. HER2 may play a role in the paracrine regulation of growth control of spermatogonia, differentiation of late stage of germ cells as well as peritubular cells, Leydig cells and Sertoli cells in human testis.

Key words: *HER2, testis, human*

P36 Expression of Aquaporins in Mouse epididymis

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Objectives: Aquaporins (AQPs) are transmembrane channel proteins, and function as molecular water channel in the direction of osmotic gradients. In the male reproductive tract, fluid secretion as well as absorption is important for spermatogenesis and sperm maturation. Furthermore, alterations in the fluid homeostasis in epdidymis may affect male infertility. In an effort to uncover the functional involvement of AQPs in sperm maturation, expression of AQP-1, -7, -8, and -9 was investigated together with the effect of estrogen on the AQPs expression in different regions in mouse epididymis.

Materials and Methods: Immunohistochemical localization of AQPs in caput, corpus, and cauda epididymis was conducted together with optimized RT-PCR analysis of AQPs mRNA in epididymis. Adult male mice were given IP injection of beta estradiol (0.1, 1, 10 ug/kg) dissolved in sesame oil 5 times with 3 days interval.

Results: AQP-1, 7, -8, and -9 were detected in epithelia from all three regions of epididymis. AQP-1 mRNA level was a little lower in corpus epididymis compared with other regions. Conversely, AQP-7 and -8 mRNA level was significantly higher in corpus epididymis compared with other regions. AQP-9 mRNA level was increased along the length of the epididymis. Following exposure to 17beta estradiol (0.1 ug/kg), AQP-1 mRNA level increased a little in caput epididymis. In corpus and cauda epididymis, AQP-8 mRNA level increased by E2.

Conclusions: Expression of AQPs was different according to the segment of mouse epididymis. Estradiol affected epididymal expression of AQP-1 and -8, suggesting that estradiol may regulate fluid homeostasis in epididymis and thus sperm maturation in epididymis. Environmental as well as dietary estrogen may affect sperm maturation by fluid homeostasis in epididymis.

Key words: Aquaporin, Estrogen, Epididymis, Mouse