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JOURNAL ARTICLE

Obstruction of the vas deferens alters protein secretion by the rat caput epididymidal epithelium in vivo

T. T. Turner, T. A. Riley, D. D. Mruk and C. Y. Cheng
Department of Urology, University of Virginia School of Medicine, Charlottesville 22908, USA.

Obstruction of epididymal lumen fluid flow alters the intraluminal environment and potentially changes epididymal epithelial cell function when those functions are dependent on intraluminal regulatory molecules. This investigation tested the hypothesis that obstruction of the rat vas deferens alters caput epididymidal protein synthesis and secretion In vivo. Adult male rats were subjected to vasal obstruction or sham operation. Fourteen days later, caput epididymides were subjected to in vivo microperfusion with medium containing a [35S]-amino acid mixture. At the end of a 3-hour perifusion, micropuncture was used to obtain caput lumen fluid (LF). Tubule extract (TE) was obtained as supernatant after homogenization and centrifugation of caput tubules. Tubule extract contained all [35S]-proteins synthesized within the 3-hour experiment, and LF contained the secreted [35S]-proteins. Radioactivity of trichloroacetic acid (TCA)-precipitable proteins in LF and TE was determined, and two-dimensional electrophoresis and autoradiography of each sample were carried out. The resultant autoradiograms were evaluated densitometrically. A protein synthesis index calculated from the TCA-precipitable radioactivity data demonstrated that a significant decline in overall protein synthesis was induced by vasal obstruction. Densitometry of autoradiograms demonstrated that the total number of radiolabeled proteins detected in both the LF and TE of obstructed animals was significantly smaller than the same number in control animals ($P < 0.05$). Autoradiography revealed seven major, consistently appearing gene products in LF, and these were subjected to amino acid sequence analysis. Cysteine-rich secretory protein (CRISP)-1 proteins were significantly reduced in the LF of obstructed animals, which implies that these proteins are dependent on luminal regulatory molecules for their normal production.

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