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The effects of sustained delivery of estrogen on the structural and functional activity of renal pathology

It was reported in numerous studies that estrogen replacement therapy in post-menopausal women may interfere with the functional capacity of the renal system. Strong scientific evidence about the level of alternation at the glomerular level has to be elucidated. Several experiments conducted in our laboratories hypothesized that sustained delivery of estrogen will alter the glomerular structure and function. The specific objective of this research was to evaluate the effect of physiological dose (10-20 pg./ml) of sustained delivery of estrogen on the glomerular histopathology using adult ovariectomized adult rats as a model. A total of 120 rats were divided into four equal groups and served as intact, control, sham (OVX), exposed to sustained delivery of E, respectively. At the end of 2, 4 and 8 weeks post treatment ten animals from each group were sacrificed and the kidney were removed, fixed and processed for histopathological evaluation following standard laboratory protocols. Blood samples were collected daily for eight weeks and subjected to differential hematology. The results of this study demonstrated that the wet weights of the kidneys collected from estrogen treated animals has shown a slight increase in weight compared to intact animals ($p < 0.05$). Histopathological evaluation revealed that the glomeruli appeared slightly larger in the E treated animals compared OVX, Sham and intact animals. Occasional tubular damage was observed at the end of 8 week phase in estrogen exposed animals. Major shift in essential biomarkers were noted upon sustained delivery of estrogen at the end of two weeks. Gonadotropins levels were suppressed in all estrogen treated animals compared to OVX group. This observation may contribute to a functional change in the filtration rate and has to be taken in consideration in the renal function assessment.

Biography

Hamed Benghuzzi received his Master in Chemistry and PhD in biological Sciences with concentration in physiology from University of Dayton in Ohio. In 1993, he completed postdoctoral training in pathology department at the University of Michigan Medical center. Thereafter, he joined the university of Mississippi Medical Center and currently he is professor in the department of diagnostic and clinical health sciences. He is a fellow of the American Institute of Medical and Biological Engineering, as well as, International Fellow of the World Congress of Biomaterials Societies (Japanese, American, Asian, and European). He is a pioneer scientist in ceramic drug delivery systems. His area of research is the development and applications of novel ceramic drug delivery systems (over 26 years/over 300 publications and 600 abstracts at various meetings). He served and serving as a major advisor for over 35 PhD students as well as a mentor for students at various levels (High school, undergraduate, MS, residents and postdoctoral). He received Nemours awards and honors from very prestigious societies and organizations. He was invited as a keynote speaker at state, national and international levels. His recent research was the first, worldwide, to histopathologically identify the role of sustained delivery of reproductive hormones in the induction of azoospermia.

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