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Effects of 17β-estradiol in the uterine cervix of ovariectomized rats with and without streptozotocin-induced diabetes

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Studies suggest that postmenopausal women may be at an increased risk of developing diabetes mellitus (DM), whereas DM has been reported to elevate the risk of cervical cancer in postmenopausal women. While estrogen replacement has been shown protective effects on the uterine cervix, it remains unclear whether DM influences estrogen uterine effects. This study evaluated the impact of estrogen replacement on the uterine cervix in ovariectomized (OVX) rats with and without streptozotocin (STZ)-induced DM. Twenty adult female rats were divided into four groups: OVX-control (GI), OVX-Estradiol (subcutaneously treated with 10 µg/kg/body weight of 17-β estradiol) (GII), OVX+DM induced by STZ (GIII), and OVX+DM+17-β estradiol (GIV). After 60 days, the animals were euthanized and their uterine cervices were processed for histological analysis and immunohistochemistry for Ki-67 and VEGF-A detection. GI exhibited the smallest glandular and vascular areas, along with fewer reddish birefringent collagen fibers and reduced GAGs content. Lower Ki-67 and VEGF-A immunopositivity in epithelial and stromal cells were observed in the uterine cervix of GI. These parameters were higher in the estradiol-treated groups, with no significant differences between GII and GIV. These results suggest that STZ-induced DM does not influence estrogenic effects on the rat uterine cervix.

Keywords: Estrogen deficiency, Diabetes Mellitus, Streptozotocin, Uterine cervix, Rats