LEPTIN ACCELERATING EFFECT ON THE PUBERTY OF FEMALE ALBINO RATS – HISTOLOGICAL, IMMUNOHISTOCHEMICAL AND CYTOLOGICAL FINDINGS

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Background: Leptin may be a critical determinant of the timing of puberty by activating the hypothalamic-pituitary-ovarian axis. Objectives: To document the endometrial histological and vaginal cytological changes, suggestive of ovulation and the onset of the oestrous cycle in the immature rats treated with leptin when compared with controls. Subjects and methods: Fifty female albino rats aged 22 days were divided into: Treatment Group (n=24) injected with 5µg leptin daily for 20 days, and Control Group (n=26) injected with the solvent. Vaginal smears were taken daily. Three animals were sacrificed every 2-4 days from each group and uterine specimens were prepared for Gomori’s trichrome and immunohistochemical staining for oestrogen receptor (ER). Increased expression of ER is an indication for the onset of the oestrous cycle. Results: The maturational changes were detected in leptin-treated rats from 26 days of age. The endometrial lining was formed of partially ciliated columnar cells with infoldings of the endometrium to form elongated branched gland-like tubular structures. The lining cells were over-crowded giving a pseudostratified appearance. There was high expression of ER in almost all columnar and stroma cells. The smears were less sticky with reduced fibrin-like filamentous component and leucocytes. Many large desquamated large polyhedral nucleated epithelial cells were seen either single or in sheets. Nonetheless, these changes were not revealed in the control rats till the age of normal maturation which is 42 days. Conclusion: Exogenous leptin induced changes suggestive of remature puberty in rats.e. Further studies are required to evaluate its possible clinical implications in human.