

EFFECT OF VITAMIN A ON HISTOPATHOLOGY OF THE OVARY OF SWISS ALBINO MICE (*Musculus*)

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Abstract - The effect of vitamin A on various reproductive functions of ovary were examined. Hyper vitaminosis A has been found to prevent Ovulation at different dose levels. Low doses seems to stimulate the follicular development while the higherdose inhibits the same. Graffian follicles are most sensitive to vitamin A toxicity

Primordial medium and the less sensitive to lower doses while at higher doses all the become atretic leading to atropy of follicles of the ovary.

Graffian follicles shows dose depended degenerative changes in the stroma, granulosa theca and oocytes, cystic follicles observed in ovary. It seems that the hyper vitaminosis A induced cellular changes in the ovary of the swiss albino mice.

Keywords- vitamin A atretic, atropy, pycnoti, cystic

Introduction:

The Biological role of vitamin A and its adverse effects have been well documented. Vitamin A toxicity also called Hypervitaminosis A. Hypervitaminosis A is reposted to modify the regenerative and reproductive process in Amphibians Birds & Mammals. Excess of vitamin A has stimulatory and inhibitory effect on the growing differentiating and dividing cells. The cells of mammalian ovary undergo cyclic changes during various phases of the ovarian cycle. The aim of this study was to determine the effect of vitamin A on celluar changes in the ovary of the swiss albino mice.

Materials and Methods:

Swiss albino mice (*Mus musculus*) originally procured from All India Institute of Medical Science (AIIMS) New Delhi. A colony has been maintained by random breeding. Standard mice feed and tap water given ad-libitum.

Aqueous form of vitamin A palmitate (AROVIT) manufacture by ROCHE products Ltd. Bombay was used to carry out all the experiments. 10 Days old mice are administered with 5,000 I.U., 10,000.

I.U.,15,000 I.U. Dose of vitamin A in the form of intra-peritoneal injections. The data obtained from the vitamin A treated animals were compared with that of controls. For all the dose levels autopsies were conducted at the interval of 10 days after administration of the dose.

Observations:

The symptoms of hypervitaminosis appeared after 5 to 10 days of the treatment These change included progressive change in the smoothness of the fur falling of hairs, bulging of eyes, loss of appetite, fall in body weight. The vaginal cycle was regular in the beginning but became irregular and prolonged toward the end of the experiment 10 days after treatment of at dose level 5000 IU & 10000 IU Stimulatory small effect on the theca granulosa and the stroma Cells.15 Days after treatment. marked hyperaemia causing stimulatory effect of on the follicular growth was visible. The germinal epithelium and the granulose cells appeared to be hypertrophied. 20 days after treatment of at these dose levels. progressive degenerative changes such as nuclear Pyknosis, fibrosis of the cell of the stroma, fragmentation and reabsorption of the oocyte were observed.

In some ovaries hemorrhagic follicles were observed.

Similar progressive degenerative changes were observed in ovaries treated with 15,000 IU of vitamin A after 10 days. After 15 days of treatment no corpora lutea activity were seen in

ovary. Extensive fibrotic activity in the stroma and granulosa was the observed and atersia was wide spread in the ovary.

In most of the ovaries after 20 days all types of follicles and corpus leutum were absent resulting complete atropy of the ovary.

Discussion:

Hyper vitaminosis A is reported to induce a wide variety of toxic effects in the Laboratory animals and man (Pease 1962)

Vitamin A induced symptoms such as Buldging of eyes, hair fall, weight loss confirm the same.

According to Byskov (1978) changes the metabolic activity particularly in the activity of the hydrolytic enzymes. Persistent luteinization of cells of theca gramulosa and Stroma, reapsorpton of the oocyte alternation of FSH level are some major events occurring due to Hyper vitammosis.

Excess vitamin A is also reported to cause dose dependent cellular change in tissue culture. Very high dose inhibit mitosis causing degenerative changes and cell death (Jangir and Niazi 1978).

It seems therefore that the complete atropic changes in the mice ovaries are dose dependent cellular events. Occuring during the condition of hypervitamins A There is a possibility of the direct influence of vitamin A on the secretion of ovarian Hormones. Hyperaemia induced by Vitamin A can be correlated with biosynthesis of Steroid Hormones causing stimulatory effect on the folliculogenesis of mice ovary. Inhibition of ovulation is mice ovary under hyper vitaminosis A is correlated with degration of theca & granulosa cells.

Inhibition of ovulation is major cause of absence of corpora Lutea in Experimental ovary.

In conclusion Although vitamin A is required for controlled cell division, differential of cells & metabolism but hypervitaminosis A induced dose dependent changes the lower doses have stimulatory while high doses have the inhibitory effects on the in the mouse Ovary.

References:

1. Bernhardt I. B. & Dorsey D. J. (1974) Hypervitaminosis A and congenital renal anomalies in the human infants *Obstet Gynecol.* 43 pg 750.
2. Chew B.P. and R.G. Archer 1983: comparative role of vitamin A and B carotene on reproduction & neonate Survival in rats. *Theriogenology* 20-459
3. Dingle J. T. (1963) Studies On the mode of action of excess Vitamin A *Cell Bio* Vol. 17.
4. Goodman D.S. 1980 : Vitamin A metabolism *Fed Proc.* 39:2716.
5. Jangir O.P. and Niazi I.A (1978) *Indian J. Exp. Bio.* 16, 438-445.
6. Morriss GILLIAN M. (1973) *J. Embryol exp. Morph.* 30, 217242
7. Popper H.(1967) *Physio. Rev.* 24 P – 205 Cited by Ganguly 1967 *Scient. Ind. Res* 26 P:110
8. Thompson J.N. MM Hoswell & G.A.J pet (1964) Vitamin A and reproduction in rats. *Proc. Roy. Soc. London* 139,5 b