Does Depot- medroxyprogesterone acetate (DMPA) affect Ovary and Uterine tube of White Albino rat? A histopathological study.

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Abstract

Even though, progesterone is a hormone naturally produced by ovary, but whether the external progesterone is as beneficial as the natural for female? What alteration occurs due to their prolonged use in different organs of female reproductive tract? We aimed to observe the histopathological changes brought by the long term use of Depot-medroxyprogesterone acetate (DMPA), which is the highly popular and promoted contraceptive in developing countries, in reproductive tract of female rat particularly in ovary and Uterine tube. There were significant changes in the histo-morphology of ovary and uterine tube of experimental group rat compared to the control group. Histological changes such as follicular atresia, medullary hemorrhage and atrophy of uterine tube epithelium was seen in experimental group rat. In conclusion, long- term use of exogenous progesterone, such as DMPA for contraception has adverse impact in Female which outweigh the merits. Instead of promoting these hormonal product, which in long period attenuate the health of female, other non-hormonal methods of contraception should be publicized along with their efficacy.

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Guidelines

Safe approach to animal must be assured. In this study following issues were considered for better result:

1. Animals were housed in a well equiped and sterilized animal lab.
2. Sufficient space for the mobility of animal was provided.
3. Healthy diet was supplimented.
4. Animals were sacrified according to the institutional ethical board guidelines.

Before start

For this study, only healthy female rats of appropriate weight were taken.

Heath of the rat was assessed by observing thier appetite, movement and external appearance.

Protocol

1. 30 healthy female Wistar Albino female rats weighing 150-200 gm were obtained from the animal house of BPKIHS, Dharan. They were given standard pellet diet and drinking water ad libitum. They were maintained in a well ventilated room at controlled ambient temperature (25°c) with a 12 hours in alternating light- dark cycle. They were housed in polypropylene cage (40 cm × 25 cm × 15 cm) with the paddy husk bed, which was changed on every 4-5 days

Step 1.

2.

DMPA vials are manufactured by Pfizer pharmaceuticals group. One vial containing 150 mg/ml suspension was diluted in distilled water to make the required concentration for experiment. The experimental groups were given DMPA in the doses of 2.4 mg intramuscularly per week for 8 weeks.

While the control group rats were treated with 0.25 ml of normal saline intramuscularly for 8 weeks. The doses were converted from human dose to rat dose by using multiplication factors for dose conversion between different species by Paget and Barnes.

3.

Animals were divided into 2 groups, with in each group *n*=15 rats, Total number *n= 30*

Experimental group rats were sacrificed one day after the completion of 8 weeks. The rats were anesthetized with Ether soaked in cotton. Ovaries and uterine tubes were fixed by In Vivo Perfusion method. After completion of perfusion, the organs were isolated from the body with help of scalpel and forceps and post fixed for 24 hours with Bouin's Fluid. Thus obtained organs were cut into pieces of 3 mm to fix in neutral buffered formalin for 7 days and processed for making paraffin blocks. The blocks were trimmed, sectioned at 4µm thickness and stained by routine H&E (Hematoxylin and Eosin) staining. All sections were examined under light microscope.

Ethical clearance was taken as per the guideline of Institutional Ethical Review Board (IERB no. 143) of BPKIHS, Dharan, Nepal.

Tissue processing The stages of processing 1. Fixation 2. Dehydration 3. Clearing 4. Infiltration and impregnation 5. Embedding

Step 2.

Warnings

For drug dose conversion, Barnes and Paget rule must be followed.

Safe site for the drug injection and route of administration must be specific.

Always use a sterile gloves and syringe with small size needle.

Animal behaviour can be altered after treating with drug. So safe approach is essential.