

Effects of cisplatin on testes and chromosome of rats: A histological and chromosomal study

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Background: Cisplatin is an efficient platinum-derived anticancer drug. It has been successfully used in clinical oncology against diverse types of cancers. Side-effects of cisplatin on different systems like cardiovascular system and reproductive system are of great concern because of increasing number of longer survival of cancer patients treated with cisplatin.

Objective: The objectives of the study are to observe the histomorphological changes in testes and structural changes in chromosome of rat following administration of cisplatin.

Materials and Methods: Experimental study was carried out in 45 healthy adult male albino rats weighing 150-220 gm. The rats were divided into 3 groups, one control and two experimental groups (n=15 per group). One experimental group was exposed to 3 rounds of 1 mg/kg of cisplatin whereas other experimental group received 3 rounds of 2.5 mg/kg of cisplatin. Control group received equal volume of normal saline for the same period (3 rounds) as applied in both experimental groups. They all received 1 injection daily for 5 days with a recovery phase of 16 days between rounds. On 63rd day, the rats were anesthetized to take out bone marrow for chromosomal study and testes for histological study.

Results: A dose-dependent reduction in weight, diameter and volume of testes was observed. Significant reduction of germ cells and sertoli cells were observed in both experimental groups (p<0.01). High doses revealed severe atrophy and loss of normal architecture of seminiferous tubules, maturation arrest, cytoplasmic vacuolization and multinucleated giant cell formation. Interstitial space was increased (p<0.001). The number and structure of the chromosome of treated rats seemed to be normal as observed by the conventional technique. However, control group rats presented with normal histological and chromosomal findings.

Conclusion: Thus, the study shows that cisplatin produces dose dependent toxicity in rat testes.

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