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ANATOMICAL AND METABOLICAL CHANGES INDUCED IN EXPERIMENTAL ANIMALS BY CHEMOTHERAPY

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Abstract

The purpose of the paper is to establishing the optimal dose for each type of chemotherapy, the administration route and the time of administration depending on the circadian rithm of the body the goal of our study being to obtain minimum toxicity effect and maximum therapeutic effect.

Key words: cumulative effects, histopathological modifications, stasis, edema

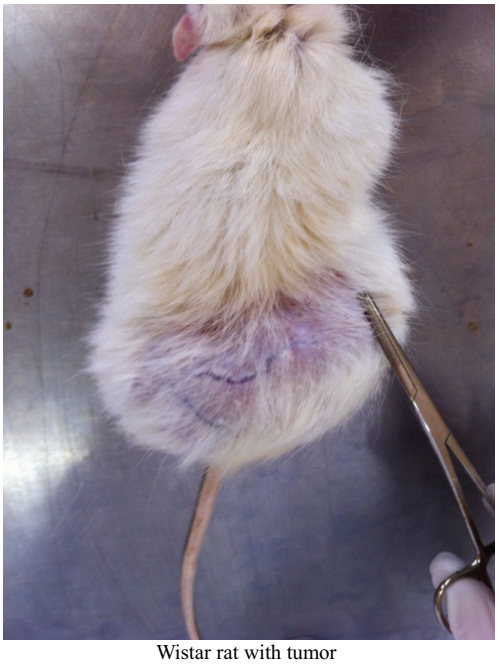
INTRODUCTION

Cancer is the disease of the entire organism which clinically manifests through the initial presents of a primary tumor, after that the lymph node invasion and finally the metastasis associated with the specific para neoplastic syndrome.

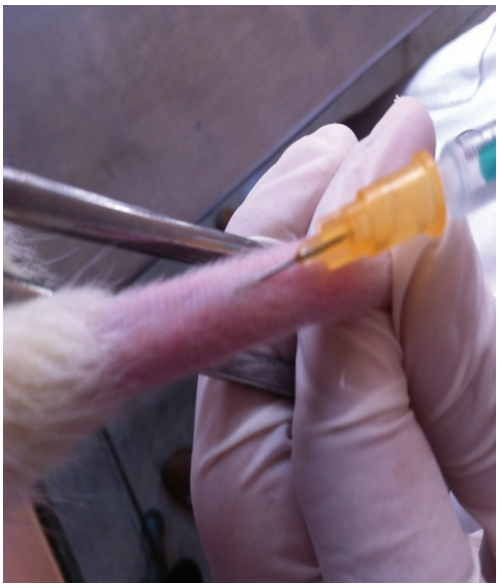
The effects of the cytostatic therapy, the mechanism of action and the way of elimination from the body must be very well known information in order to prevent the appearance of the cytostatic disease and to obtain maximum results from the therapy.

MATERIALS AND METHOD

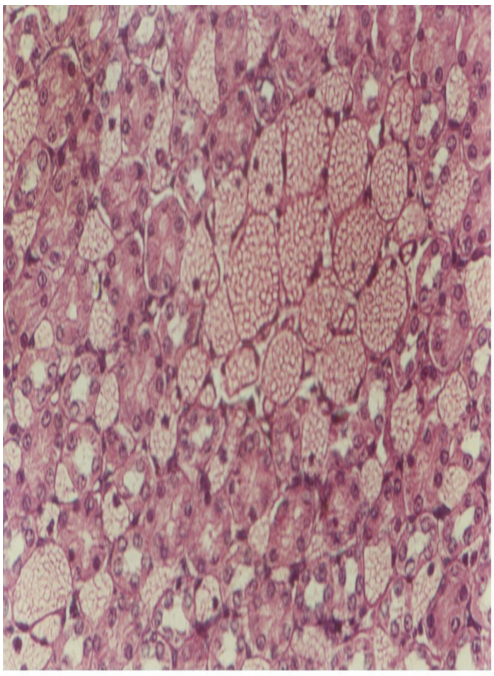
The study was on Wistar rats (noninbred, each group receiving a cytostatic agent in LD50, respectively cyclophosphamide (ciclodependent agent), 5-fluorouracil as (antimetabolite) and farmarubicine as fazodependent agents at certain times at 12 am and 12 pm. After the periods of time between 7 and 10 days after the chemotherapy treatment, samples were taken from organs for the histopathological analisys.
The toxicity and the anti-tumor effect of the anti-cancer substances has been monitored. After a controlled period of time after the administration of the chemotherapy, organ samples were taken and were subjected to histopathological examination.



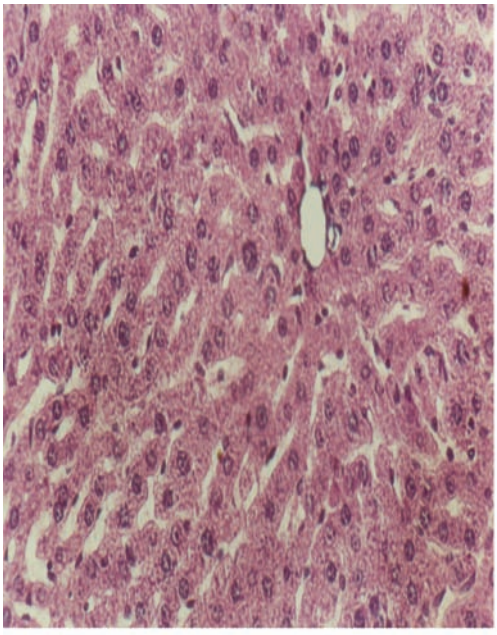
Wistar rat with tumor



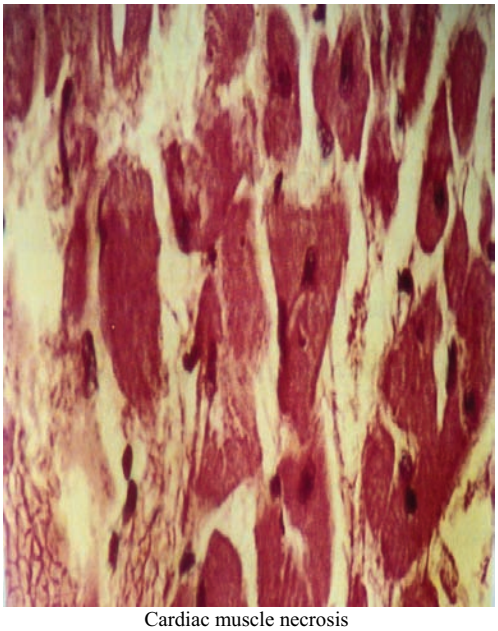
Administration of the therapy in the tail vein



Massive renal stasis



Kupfferian hyperplasia



Cardiac muscle necrosis

RESULTS AND DISCUSSIONS

Following the administration of cyclophosphamide, showed histopathologic findings in the liver: megaeritrocitary elements, anizocariosys, Kupffer cell hyperplasia, scraps of hematopoetic microisles, discrete hepatic dystrophy, renal: - renal glomeruli with epithelial denudation of tubular necrosis and renal elimination conseutive cyclophosphamide administration, hyperplastic acute glomerulonephritis, acute edematous or hemorrhagic glomeruli with subsequent stasis. Also limfocitolisys phenomena.

Intraperitoneal inoculation of 5-fluorouracil induced hepatic congestion, and autophagy necrobiosis phenomena, intense hyperplasia and severe dystrophic lesions, agenerative Kupfferian hepatocytes. Renal: Interstitial nephritis, stasis and edema.

Farmorubicin caused severe damage to the liver: acute hepatitis, in the kidney: tubulonefrosys, peripheral blood leukopenia and seminal necrosis in males. Most importantly, there was degeneration, necrobiosis of the myocardial fibers - anthracycline-induced cardiotoxicity. The rat has a specific resistance to chemotherapy, such as anthracycline. Cumulative myocardial damage at the same doses of anthracycline are less pronounced than in mice.

CONCLUSIONS

The cyto-toxic pathological modifications are reversible within therapeutic doses. The alterations that can be framed in the cytostatic disease must be taken into consideration simultaneously with the paraneoplastic phenomena with gradual stages of difficulty in relation with the clinical stage of the disease tumor.

To prevent the occurrence of chemo resistance there have been used relatively high doses of cytostatic drugs in clinical oncology therapy, but also the therapy is designed to allow regeneration of damaged cellular components, especially the blood forming components.

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