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Symptomological, histological and biochemical alterations in male albino rats in response to exposure to the immunosuppressor, Cyclosporine A

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Cyclosporine A (CsA) is probably the strongest and safest known immunosuppressor known so far. The histological and biochemical alterations associated with exposure to the drug have been investigated. Thirty, 3-month old, male albino rats of 100-120 g body weight (B.wt.) were randomly divided into three equal groups. Rats were intubated to stomach with CsA in olive oil (1:3, v/v) for two consecutive days and escape one day for 21 days. The first and the second groups received a dose of 75 mg CsA/kg B.wt. and 50mg/kg B.wt., respectively, while the third group received only olive oil to serve as a control. Half of the rats in each group were euthanized after 10 days and the remaining half was euthanized on day 21 of the experiment. Both euthanized and dead animals were immediately dissected, internal organs (liver, kidney, spleen, brain, testes, bone marrow, femur, skull and heart) grossly examined and specimens taken for histological study. Biochemical analysis was conducted on blood samples collected from all animals after being anaesthetized immediately before euthanasia. CsA induced concentration-dependent adverse effects in terms of clinical symptomology, histological alterations and biochemical changes. Clinical symptoms included body weight loss, appetite loss, ruffled hair, mild diarrhea and anorexia. Mild to moderate congestion was observed in parenchymatous organs, serosal membranes and cerebral blood vessels with dead rats exhibiting mild haemothorax and enlarged diffusely congested spleen. The pattern of lesions in dead animals was similar, albeit more severe, in dead as compared to euthanized animals. Kidneys, testes and heart showed severe diffuse cellular swelling with marked peri-acinar to midzonal hepatocellular coagulative necrosis. In contrast, the brain, bone and bone marrow appeared within histological limits with only lungs showing mild bronchopneumonia. Increasing levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), urea and creatinine were consistently observed in all animals exposed to CsA.

Keywords: Cyclosporine A, histological alterations, immunosuppressor.

Biography

Marwa K. Emara is a graduate of the Faculty of Veterinary Medicine in 2002, and earned her MSc degree in pathology in 2013. In between, Ms Emara obtained a clinical pathology Diploma in 2005, mini MBA from AUC continuous program in 2010, and a Diploma in epidemiology & public health from the High Institute of Public Health in 2011. She worked as pathology specialist in El Madina Medical Lab, and then worked in UNICEF from 2014 in different development projects about cancer epidemiology and developing and advancing the primary health in Egypt.

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