The protective effect of atomeoxetine on neurogenesis in adriamycin treated rats

Maha ELBeltagy, Ahmed salman, Amjad shatarat, Liyana oweis, Nada ALAntary, Safa ALFegie, Maram Mohsen.

Abstract:

Atomoxetine (ATX) is a noradrenaline reuptake inhibitor used to treat Attention deficit hyperactive syndrome (ADHD), or improve cognition in normal subjects. Cancer patients who have been treated with systemic adjuvant chemotherapy have described experiencing deteriorations in cognition. The cognitive effects of ATX require inputs from the hippocampus. Moreover, proliferation is said to be located in the dentate gyrus (DG) of the hippocampus. The aim of this study is to examine spatial memory and proliferation in subgranular zone in dentate gyrus in adult male rats treated with a combination of Atomoxetine and Doxorubicin (DOX). Spatial memory was tested using the novel location recognition (NLR) test and proliferation of hippocampal cells was quantified using .immunohistochemistry for the proliferative marker Ki67

Our results showed that ATX-treated rats showed cognitive enhancement in the NLR task and increase in cell proliferation in the Subgranular zone (SGZ) of the DG, compared to saline-treated controls. Animals treated only with DOX showed significant deficits in their ability to carry out the OLR task and co administration of ATX did not improve their performance. DOX chemotherapy caused a significant reduction in the number of proliferating cells in the sub granular zone of the dentate gyrus compared to saline treated. This reduction was eliminated when ATX was co administered with DOX. These findings suggest that DOX can negatively affect both cell proliferation and memory and ATX co .administration improves proliferation but not memory in adult male rat hippocampus.