

Study on the effect of fluoxetine consumption during adolescence on liver tissue and enzyme changes in male and female rats

Abstract

Background: Fluoxetine (FLX) is a widely used drug for some psychiatric disorders. This antidepressant drug selectively inhibits the presynaptic reuptake of serotonin. Adverse effects of FLX on several organs of the body such as the hepatic and cardiac systems have been reported during treatment.

Aim : The present study aimed to investigate the side effects of FLX treatment during adolescence on the cardiac and hepatic systems.

Materials and Methods: A total of 32 male and female puppies (8 people) were randomly distributed into four groups. Two groups of FLX-treated male and female rats were treated with fluoxetine (5 mg/kg/day, gavage) on PNDs 21-60. Two other groups of male and female rats were divided into control groups where the animals received distilled water. After the completion of the treatment period (40 days), the animals were euthanized under deep anesthesia with ketamine or xylazine, and blood samples were collected for the measurement of liver enzymes. In addition, the liver and heart of the animals were examined histopathologically.

Results: Fluoxetine significantly raised serum alanine aminotransferase (ALT) and Alkaline phosphatase (ALP) in males, whereas the aspartate aminotransferase (AST) level increased in male and female animals. In the

histopathological study, hepatic plates were more seriously affected and the sinusoids were irregular in adolescent male rats. Degenerative changes were observed especially in the 1st and 2nd zone of FLX-treated male rats. Signs of inflammation and accumulation of lymphoid groups were frequently observed in the portal triad of the hepatic lobule. These conditions were more severe in male livers. Minimum or nearly normal changes were observed in female liver slides. In addition, the histological assessment indicated that treatment with FLX during adolescence also increased the weight of the heart as well as the wall thickness of the right and left ventricles (hypertrophy) in male and especially female animals.

Conclusion: The increasing usage of FLX during adolescence highlights the considerations of the side effects of this drug.

Keywords: Fluoxetine, Cardiac Side effects, Hepatic side effects, adolescence, Hepatic enzymes