

Altered Cerebellar Metabolic Parameters in Bromazepam Treated Rats: Implications of Gradual Cessation Protocol

Cynthia Okeke¹, Mayowa Jeremiah Adeniyi^{2*}

¹ Department of Physiology, Igbinedion University Okada, Edo State

² Department of Physiology, Edo State University Uzairue, Edo State

Abstract

Objectives: Many reports avail on the physiological implications of benzodiazepine and bromazepam use and misuse. The aim of the study was to investigate the effect of gradual cessation protocol of bromazepam administrations on cerebellar metabolisms in female rats.

Methods: Twenty-five female rats weighing 150-160g were randomly divided into five groups of five rats each. Administration of a single daily oral dose of 1.15mg/kg body weight of bromazepam was done for nine days. Cessation was thereafter done three, six and nine days respectively. Cerebellar levels of glycogen, glucose and lactate, blood/cerebellum glucose ratio, cerebellar glucose/glycogen ratio, ataxia index and other parameters were determined.

Results: Bromazepam administration caused significant reduction in cerebellar glycogen. Bromazepam-induced depression in glycogen content was also observed 3days after cessation. However, restoration of the glycogen occurred and peaked 6 days after cessation. Plasma/ Cerebellar glucose ratio was significantly higher in bromazepam treated rats when compared with control, 3-day, 6-day and 9-day cessation groups respectively. Cerebellar glucose/glycogen ratio was significantly higher in bromazepam treated rats when compared with control, 3-day, 6-day and 9-day cessation groups respectively. Bromazepam administration significantly increased ataxia index when compared with control, 3-day, 6-day and 9-day cessation groups respectively. Ataxia index correlated negatively

Address for correspondence: Mayowa Jeremiah Adeniyi, Department of Physiology, Edo State University Uzairue, Edo State. Email: 7jimade@gmail.com

with cerebellar glycogen ($r = -0.712$, $P < 0.05$) and positively with cerebellar glucose/ glycogen ratio ($r = 0.917$, $P < 0.05$) respectively.

Conclusion: The results of the study indicated the adverse but time-dependent reversible effects of bromazepam on cerebellum metabolic parameters in adult female Wistar rats.

Keywords: Cerebellum, Lactate, Glycogen, Bromazepam, Coordination, Ataxia Index