Selenium Protects Cerebral Cells by Cisplatin Induced Neurotoxicity

Ergun Karavelioglu MD; Mehmet Gazi Boyaci; Nejdet Simsek; Mehmet Akif Sonmez; Rabia Koc; Mustafa Karademir; Mustafa Guven MD; Olcay Eser

Introduction

The aim of this study is to evaluate the central nervous system toxicity of cisplatin and neuroprotective effect of selenium

Methods

Twenty-one male Wistar albino rats were divided into three groups: control(C), cisplatin(CS), cisplatin and selenium(CSE, n = 7 in each group). Cisplatin(12 mg/kg/day, i.p.) was administered for 3 days to CS and CSE groups. Also, CSE group received via oral gavage 3mg/kg/day(twice-a-day as 1.5 mg/kg) selenium 5 days before of cisplatin injection and continued for 11 consecutive days. The same volumes of saline were intraperitoneally and orally administered to C group at same time.

Results

The histochemical examinations of cisplatin treated group were observed heterochromatic and vacuolated neurons, and dilated capillary vessels in the brain. Rats that had been given a dose of 3mg/kg/day selenium had decreased the cisplatin induced histopathological changes in the brain, indicating a protective effect. In addition, cytoplasmic staining of the cell for bcl-2, both cytoplasmic and nuclear staining for bax, were determined to be positive in the all group. Bax positive cells were increased in the CS group compared to C group, in contrast to decreased bcl-2 positivity.

Conclusions

Selenium limited apototic activity and histological changes due to the cisplatin releated central neurotoxicity.

Learning Objectives

Selenium protects central nervous system due to chemotherapy toxicity.

References