O2 GLUTAMATE AMELIORATES PYRIDOXINE-INDUCED NEUROPATHY : A PRELIMINARY REPORT.

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ABSTRACT

Ingestion of pyridoxine or vitamin B6 (B6) megadose seems to be one of the important causes of drug-induced neuropathy. Although a certain numbers of reports concerning pyridoxine-induced neuropathy have been published, the mechanism of toxicity is still unclear and there is no known therapeutics against the degeneration has been found. Interestingly, glutamate (GLU), one of the excitatory neurotoxin, has been recently reported to have neuroprotective effects against neuropathy induced by many cancer chemotherapeutic agents, based on different mechanisms. In this study, the possibility for using GLU as a neuroprotectant against B6-induced neuropathy was studied. In addition, as hepatocytes seem to have high expression of GLU-sensitive proteins, levels of ALT and AST represent the liver functions were determined. Spraque-Dawley rats were used and divided into 4 groups receiving either; 1) water for injection IP and orally, twice daily, 2) 250 mg/Kg GLU orally, twice daily, 3) 400 mg/Kg B6 IP, twice daily, or 4) 400 mg/Kg B6 IP and 250 mg/Kg GLU orally, twice daily. Feeding of GLU was started 1 day before starting the experiment. Everyday of treatment, rats were tested for pain threshold, muscle power score and gait abnormality. Nerve conduction velocity (NCV) of sciatic nerve and AST and ALT levels were determined on D0 and D15. Rats treated with B6 alone showed a significant decrease ($p < 0.05$) in muscle power score and movement score (represent gait disturbances) from D10 through D15. A significant decrease in NCV was also observed at D15 without any significant changes in tail-flick test in B6-treated rats. No significant changes in all parameters for peripheral neuropathy in rats treated with either GLU alone or B6 and GLU. Liver enzymes were not affected by any treatment in this experiment. Our results show that GLU has the ability to ameliorate B6-induced neuropathy.

References

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