

## Homocysteine plasma level correlates with Methotrexate induced neurotoxicity in treated pediatric cancer patients

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Despite its clinical success, methotrexate (MTX) therapy is associated with toxicities such as neurotoxicity, the pathogenesis of which remains unclear. It has been suggested that hyperhomocysteinemia is caused by MTX and is responsible for its neurotoxic effects. The aim of this study was to explore whether hyperhomocysteinemia was related to MTX-induced neurotoxicity. 29 cases with newly diagnosed acute lymphoblastic leukemia or non-hodgkin lymphoblastic lymphoma patients were studied; they were treated on a single clinical protocol that included four courses of high-dose methotrexate (HDMTX; 2.5 or 5.0 g/m<sup>2</sup> per day) as consolidation therapy. A trend for higher plasma homocysteine levels among patients with neurotoxicity (P=0.005) was observed. The study participants' median plasma homocysteine

concentrations at 42 h. after 1st and 2nd HDMTX (16.5 µmol/L and 13 µmol/L, respectively) were greater than the concentrations immediately before 1st and 2nd HDMTX (6 µmol/L and 7 µmol/L, respectively). The main complication observed during this work was repeated vomiting other complications were memory impairment, low activity. One of the patients comatosed and developed convulsions after the second-high dose MTX (MRI, Leucoencephalopathy), while the observed MRI manifestations during the study were demyelination and leucoencephalopathy. It could be concluded that homocysteine level was elevated after HDMTX and its elevation may be related to neurotoxicity risk in treated pediatric cancer patients.

### Biography

Mona Khalifa is a Clinical Pharmacist at the National Cancer Institute, Cairo, Egypt. She has completed her Bachelor's degree in Pharmaceutical Sciences from the School of pharmacy, Cairo University. This is the same university where she also got her Master of Science in Pharmacology and Toxicology. Her research interest is focusing on drug-related neurotoxicity in pediatrics and off-label use of drugs for brain disorders.

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