

Therapeutic Drug Monitoring of High Dose Methotrexate in Osteosarcoma Patients

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Introduction: Methotrexate (MTX), a folic acid antagonist, is used widely for treatment of various types of cancer. In treatment of osteosarcoma by high dose methotrexate (HDMTX), therapeutic drug monitoring (TDM) is usually performed for improving the efficacy and prevention of adverse drug reactions. Pharmacokinetic profile of MTX is useful for improving the TDM protocol for HDMTX. The objectives were to study pharmacokinetic parameters of HDMTX and design the TDM of HDMTX protocol. **Materials and Method:** A retrospective study evaluated data from TDM of HDMTX in patients with osteosarcoma during July 2012 to June 2013. The pharmacokinetic parameters (elimination rate constant; k_e , and terminal half-life; $T_{1/2}$) were calculated from serum MTX concentrations at various times, then the appropriate sampling time for TDM according to the pharmacokinetic profile of HDMTX was determined.

Results: The data of serum concentration at various times after the end of 24-hr infusion of HDMTX (70 cycles from 26 patients) were examined. Patients in this study were 17 to 49 year-old (21.27 ± 7.59 year-old), and all of them has the glomerular filtration rate over $80 \text{ mL/min}/1.73\text{m}^2$. At 72 hr after the end of infusion, 64.28% of patients revealed predicted MTX concentrations lower than $0.2 \mu\text{M}$. The average calculated k_e and $T_{1/2}$ were $0.0190 \pm 0.048 \text{ hr}^{-1}$ and $16.24 \pm 6.11 \text{ hr}$, respectively. **Conclusion:** The appropriate sampling time for TDM of HDMTX in treatment of osteosarcoma is at 72 hr after the end of 24 hr infusion, then every 24 hr until the concentration below $0.1 \mu\text{M}$. Further study of the relationship between regimen of leucovorin rescue to the efficacy and toxicity of HDMTX should be performed.

Keywords: methotrexate, high dose, osteosarcoma, therapeutic drug monitoring

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Prevalence, Risk Factors, and Management Of Hyponatremia In Schizophrenic Patients At Prasrimahabodi Psychiatric Hospital

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Introduction: Hyponatremia is a common problem in schizophrenic patients. However, data of the prevalence, associated risk factors and management of hyponatremia in this population was limited in Thailand. **Materials and Method:** Retrospective cross-sectional survey was designed. Data collection was conducted in 1,666 schizophrenic patients who aged between 15 to 60 years old at Prasrimahabodi psychiatric hospital, between April 1, 2011 and April 30, 2013. One hundred patients were randomly sampling then the patients' data from electronic medical and paper-based medical records were extracted. The patients with a diagnosis of syndrome of inappropriate antidiuretic hormone or other disorders which affected serum sodium concentration before April 1, 2011 were excluded. Prevalence rate was calculated. Chi-squared test was used to determine the risk factors of hyponatremia. **Results:** The prevalence of hyponatremia among schizophrenic patients was 86/1,666 (5.16%). Risk factors which significantly associated with hyponatremia were alcohol consumption, caffeinated beverage consumption and anticonvulsants receiving (p-value 0.046, 0.010 and 0.015, respectively). Thirty-seven patients (43.02%) did not receive any management, 47 patients (54.65%) were managed by adding sodium chloride tablets (74.47%), selecting sodium-containing intravenous fluid (34.04%), adding salt to diet (4.25%), water restriction (4.25%), quitting caffeine (2.13%) and clinical observation (2.13%). **Conclusion:** The prevalence of hyponatremia among schizophrenic patients in this study (5.16%) was similar to that of previous studies. Alcohol consumption, caffeinated beverage consumption and anticonvulsants receiving are significantly associated with hyponatremia in schizophrenic patients. Only half of hyponatremia patients were managed, so the clinical practice guideline should be developed to support the screening and management of hyponatremia in this population.

Keywords : Hyponatremia, Schizophrenia, Prevalence, Risk Factors, Management

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