

中文題目：高濃度胺基甲基葉酸造成原發性中樞神經性淋巴瘤病人急性腎衰竭之風險因子分析
英文題目：Identifying risk factors for high-dose methotrexate-induced acute kidney injury in patients with primary central nervous system lymphoma.

作者：林奴雲¹，蔡淳光^{2,3}，葉秋梅^{2,4}，劉耀中^{2,3}，王浩元^{2,3}，柯博伸^{2,3}，林庭安^{2,3}，蕭樑材^{2,3}，陳博明^{2,3}，高志平^{2,3}，劉嘉仁^{2,5}

服務單位：¹臺北榮民總醫院內科部，²臺北榮民總醫院內科部血液科，³國立陽明交通大學醫學院
⁴國立陽明交通大學醫學院公衛所，⁵國立陽明交通大學急重症醫學研究所

Background: Primary central nervous system lymphoma (PCNSL) accounts for 1% of all non-Hodgkin lymphomas and 3% of all brain tumors worldwide. According to National Comprehensive Cancer Network (NCCN) guidelines, high-dose Methotrexate (HD-MTX) is used as the frontline chemotherapy for this disease. As the metabolites of MTX are extracted via the kidneys, renal dysfunctions have been reported as the major side effects in this treatment. We thus aim to identify the risk factors for HD-MTX-induced acute kidney injury (AKI) in patients with PCNSL.

Method: This retrospective observational cohort study included patients with newly diagnosed PCNSL treated at Taipei Veterans General Hospital between January 2009 and April 2022. The patients aged under 20 were excluded. At each cycle of HD-MTX, patients' baseline characteristics initial laboratory data, were all obtained before chemotherapy. The scheduled follow-up serum MTX levels were monitored within 24-48 hrs period and 48-72 period. As for treatment, we gathered each patient's therapeutic regimens, including rituximab, intrathecal chemotherapy, cytarabine, vincristine, or other agents. Categorical variables were compared in categorical forms by using Chi-square tests. A Cox proportional hazards model was used to assess the risk factors for acute kidney injury after chemotherapy of HD-MTX.

Results: Among the 147 established patients with PCNSL, 116 of them received high doses of methotrexate (HD-MTX). A total of 654 cycles of HD-MTX were recorded. In univariate analysis, we found body mass index (BMI) ≥ 24 kg/m² (HR: 1.86, 95% CI: 1.01–3.45), serum MTX level of 48-72 hours after HD-MTX infusion ≥ 2 mg/dL (HR: 9.28, 95% CI: 3.05–28.26), fluid accumulation at third spaces (HR: 4.17, 95% CI: 2.31–7.55) all had increased risk of getting AKI. Input $\geq 3,000$ mL per BSA on the same day of HD-MTX (HR: 0.54, 95% CI: 0.29–0.98) had decreased the risk of getting AKI.

Conclusion: In this contemporary cohort, we found BMI ≥ 24 kg/m², serum MTX level of 48-72 hours after HD-MTX infusion ≥ 2 mg/dL, and fluid accumulation at third spaces were all associated with an increased risk of AKI, whereas the input $\geq 3,000$ mL per BSA on the same day of HD-MTX might have preventive effects on having AKI.