

급성 파라콰트 중독환자에서 혈중 요산 수치의 임상적 의의

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Serum Uric Acid as a Marker for Acute Kidney Injury in Patients With Acute Paraquat Intoxication

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Paraquat (PQ) is a non-selective herbicide that generates reactive oxygen species in vivo. Uric acid emerged as a marker of oxidative stress, and may enhance ROS-mediated injury in acute PQ intoxication. Therefore, we investigated the association between uric acid levels and mortality and acute kidney injury (AKI) in the present study.

Methods: From January 2007 to December 2008, patients who arrived at our hospital with acute PQ intoxication (n=513) were included in the study. Patients were divided into two groups (hyperuricemia vs non-hyperuricemia) based on uric acid levels. Mortality and acute kidney injury were analyzed in reference to uric acid level.

Results: A total of 247 patients were included in the study. The mean serum uric acid level was 5.6 ± 1.6 mg/dL in men, 4.1 ± 1.3 mg/dL in women and the mean serum creatinine level was 0.7 ± 0.2 mg/dL. Patient mortality was higher in hyperuricemia group than non-hyperuricemia group (68.4% vs 38.3%, $p < 0.05$). Hyperuricemia significantly increased the risk of mortality after adjustments for age, gender, and the estimated amount of PQ ingestion. The adjusted odds ratio for mortality was 3.67 (1.35–9.98) with hyperuricemia. The frequency of AKI was higher in the hyperuricemia group (78.9% vs 61.2%, $p < 0.005$). The mortality in the kidney failure group was 75.7%, while that of the counterpart was 17.9%. After adjustments for age, gender, and the estimated amount of PQ ingestion, hyperuricemia still was significantly associated with an increased risk of kidney failure (OR, 3.30; 95% CI, 1.33–8.20). There was an increased prevalence of respiratory failure associated with hyperuricemia. The incidence of liver injury and pancreatic injury were higher in patients with hyperuricemia; however, this was not statistically significant. The mean uric acid level increased in association with an increase in the number of organ injuries.

Conclusions: Baseline serum uric acid level might be a good clinical marker for patients at risk of mortality and AKI after acute PQ intoxication.

Key Words: 급성 신손상, 파라콰트, 요산

Acute renal failure, Paraquat, Uric acid