

급성 신손상을 동반한 중증의 알코올성 케토산혈증 환자의 임상 특징

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Clinical Characteristics in Critically Ill Patients of Alcoholic Ketoacidosis with Acute Kidney Injury

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Purpose of the study: This study was conducted to investigate the characteristics and risk factors of acute kidney injury (AKI) in patients diagnosed with alcoholic ketoacidosis (AKA).

Methods: We retrospectively investigated patients diagnosed with AKA who visited the emergency department of Wonju Severance Christian Hospital from January 2004 to March 2014. Patients with history of chronic alcohol abuse and recent episode of binge drinking who also demonstrated metabolic acidosis in arterial blood gas analysis and increased serum anion gap in serum chemistry were included. We also excluded cases of metabolic acidosis caused by other substances, such as methanol, ethylene glycol, and salicylate.

Results: In a total of 357 AKA cases, 293 (82.1%) were diagnosed with AKI by Kidney Disease Improving Global Outcome (KDIGO) criteria: 80 cases (22.4%) were classified as AKI stage I, 70 cases (19.6%) as AKI stage II, and 143 cases (40.1%) as AKI stage III. Mortality was reported in 84 cases (23.6%), and the mean time from admission to mortality was 6.0±10.7 days. Major causes of death included uncontrolled metabolic acidosis (n=46, 54.8%), septic shock (n=26, 31.0%), and gastrointestinal tract bleeding (n=7, 8.3%). The mortality rate elevated according to increasing stages of AKI. There were significant differences in mean arterial pressure, acute physiology and chronic health (APACHE) II score, sequential organ failure assessment (SOFA) score, urine output in first 24 hours of admission, history of liver cirrhosis, complication of rhabdomyolysis, pneumonia, pancreatitis and in-hospital arrest among the groups. There were no significant differences in the history of alcohol ingestion and initial presenting symptoms. Independent risk factors for AKI included rhabdomyolysis, pancreatitis, C-reactive protein, serum anion gap, lactate, mean arterial pressure, as adjusted with age, sex, history of liver cirrhosis, and diabetes (Table 1).

Conclusion: This study was the first to investigate the characteristics of AKI in patients diagnosed with AKA based on the KDIGO criteria. While uncomplicated AKA is known to have good prognosis in general, AKA patients with AKI demonstrate high mortality rates than AKA without AKI, and the major risk factors for AKI in these subjects include comorbidity of rhabdomyolysis and pancreatitis.

Key Words: 급성신손상, 알코올성 케토산혈증
Acute kidney injury, Alcoholic ketoacidosis

Table 1. Risk Factors for AKI according to Multivariate Analysis using Logistic Regression.

| | Adjusted Odds Ratio* | 95% CI | p value |
|------------------------|----------------------|------------|---------|
| Rhabdomyolysis | 7.14 | 2.30-22.21 | 0.001 |
| Pancreatitis | 3.66 | 1.14-11.79 | 0.030 |
| C-reactive protein | 1.59 | 1.22-2.06 | 0.001 |
| Serum anion gap | 1.15 | 1.07-1.23 | <0.001 |
| Serum Lactate | 1.10 | 1.02-1.19 | 0.015 |
| Mean arterial pressure | 0.98 | 0.97-1.00 | 0.038 |

*Adjusted for Age, Sex, Liver cirrhosis and Diabetes.