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Glyphosate 제초제에 의한 혈액투석을 필요로 하였던 심한 급성신부전증

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Glyphosate Induced Severe Acute Renal Failure Requiring Hemodialysis

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Glyphosate is used widely as a non-selective herbicide. Ingestion of small amounts of glyphosate usually causes only gastrointestinal symptoms without any major organ damages including renal toxicity, lung injury, unlike paraquat. Although ingestion of large amounts of glyphosate may cause renal injury, it is mild to moderate and hemodialysis treatment is usually not needed. Here we report a case of severe acute renal failure requiring hemodialysis due to glyphosate toxicity.

Case

A 67-year-old man with no history of renal disease presented to the emergency room 30 minutes after ingesting 90 mL of glyphosate herbicide. On arrival, the patient complained of nausea, vomiting, and chest burning sensation. He was treated with 5,000 mL of gastric lavage at the local clinic. His blood pressure was 130/80 mmHg, heart rate was 84 beats/minute, respiration rate was 21 breaths/minute and his temperature was 36.9℃. On physical examination, the patient was alert and oriented, his breath sounds were clear, his heart sounds were normal and his abdomen was soft. In initial laboratory findings, an arterial blood gas analysis in room air demonstrated a pH 7.414, pCO_2 36.5 mmHg, paO_2 88.4 mmHg, HCO_3 14.7 mEq/L, and serum creatinine was 0.84 mg/dL. His complete blood counts, electrolytes, and cardiac enzymes were within normal limits. Chest X-ray and EKG were all normal. One day after admission, his creatinine abruptly increased to 4.4 mg/dL and oliguria developed. Over the next 24 hours, his mentality changed to stuporous. A follow-up chest X-ray revealed pulmonary edema and arterial blood gas analysis showed metabolic acidosis. His serum creatinine increased to 8.2 mg/dL. We started hemodialysis treatment. Two weeks after initiation of hemodialysis, his renal function was slowly improving. We performed a kidney biopsy to confirm the cause of acute renal failure and it revealed acute tubulointerstitial nephritis consistent with drug-induced nephrotoxic injury. After discontinuation of hemodialysis, his renal function gradually recovered and serum creatinine level decreased to 1.6 mg/dL 3 weeks after admission.

Key Words : 급성신부전증, 제초제
Acute renal failure, Glycophosate