

급성 파라콰트 중독 환자에서 급성 신부전의 임상 양상

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Clinical Feature of Acute Renal Failure in Patients with Acute Paraquat Intoxication

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Background : It is well known that reactive oxygen species (ROS) implicated as one of the major cause of tubule cell injury in acute renal failure (ARF). Paraquat (PQ) intoxication is very lethal, and acute tubular necrosis is frequently observed. High concentration of PQ accumulated into cells results in redox cycling and generation of ROS. Because of this fact, we hypothesized that ARF in acute PQ poisoning would provide us with a good opportunity to observe the clinical feature of ROS induced ARF.

Methods : A total of 298 PQ intoxication patients were enrolled the study. We classified patients into initial normal creatinine (Cr) group (initial Cr \leq 1.2, group 1) and abnormal Cr group (initial Cr $>$ 1.2, group 2). The definition of ARF was based on the RIFLE criteria. The incidence and mortality of PQ induced ARF were analyzed in group 1 during hospitalization. Initial clinical parameters were chosen as the predictors of ARF in acute PQ intoxication. Progress of clinical features were checked by measuring serial change of plasma Cr level in the ARF group.

Results : (1) A total 298 patients with acute PQ intoxication was enrolled the study. The data of 278 patients were analyzed (18 patients were excluded because initial laboratory data were omitted.) (2) The survival rate was higher in group 1 (108/180, 60%) than in group 2 (14/98, 14.28%). Results show that initial Cr level is a very important prognostic factor of mortality. (OR 9.00, 95% C.I. [4.7478,17.061]) (3) In group 1 (7 patient was excluded because serial data of Cr was not available.), the incidence of ARF was 34.68% (60/173). (4) In group 1, the survival rate was 13% (13/60) in ARF group and 84.07% (95/113) in non ARF group. Mortality risk was higher in ARF group than in non ARF group (OR 19.081, 95% C.I. [5.862, 42.229]). (5) Multiple logistic regression analysis estimated amount of PQ ingestion was very important predictor of the incidence of ARF. (6) The average peak serum Cr level among the 13 survivors in the ARF group was 4.38mg/dl at fifth day, and the Cr level was normalized within 2 weeks.

Conclusion : Since Cr is a very good predictor of mortality, preservation of renal function seems to be important for a good clinical outcome. We believe PQ induced ARF to be a valid model of ROS induced ARF, and this study may provide a good opportunity to investigate the clinical course of ROS mediated toxic nephropathy.

Key Words : 급성 파라콰트 중독, 활성 산소종, 급성 신부전

Acute paraquat intoxication, Reactive oxygen species, ARF