

번호 III-10

제 목	국문	파라콰트중독 치명율에 대한 예측인자로서의 응급 임상검사			
	영문	Emergency laboratory parameters predict outcome of Paraquat poisoning			
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**1. Background and Purpose:**

Paraquat (1,1'-dimethyl 4,4'-bipyridium dichloride) is widely used as a potent herbicide, and 24.5% paraquat dichloride is still available in Korea. Due to high mortality of paraquat poisoning, many studies regarding prognostic indicators of the outcome of paraquat have been attempted. However, no significant and reliable predictors have been suggested besides plasma and urinary paraquat concentration. Since laboratory data are readily available in emergencies for comparisons with plasma paraquat concentrations, these can help clinicians predict the progress. In addition, it is clear that organ damages are closely related to the severity of paraquat poisoning. Therefore, it is possible to assess the progress of paraquat poisoning using laboratory parameters.

A cross-sectional study was designed to determine initial laboratory parameters at the time of admission and to evaluate which laboratory findings served as prognostic indicators of the outcome of paraquat.

**2. Materials and Methods**

147 patients with paraquat poisoning by ingestion, admitted to the Institute of Pesticide Poisoning (IPP), Soonchunhyang University Chunan Hospital, Korea, during 1999, were studied. On admission, a standardized questionnaire, including demographic characteristics, past medical history, and specific questions about the paraquat poisoning (volume ingested), was completed. Exposure to paraquat poisoning was assessed through the patient's clinical histories and an urine paraquat test. After checking vital signs, both blood and urine samples were taken, except urine samples for eight patients (1 survivor, 7 fatal), at the time of admission.

### 3. Result

Paraquat fatality increased with the estimated ingested amount and positive levels in the urine paraquat test. Leukocytosis was significantly related to higher OR (5.2) for fatality. Anemic status had significantly different paraquat fatality. Liver (GOT and GPT) and renal dysfunction (BUN, creatinine, and urine analysis) showed significantly higher ORs. fatality. Patients with metabolic acidosis (pH and pCO<sub>2</sub>) were also related to higher paraquat fatality.

After controlling for age, sex, and time interval between ingestion and admission, the ORs increased with the number of abnormal findings in liver function, and significant OR was found in patients with more than two abnormal findings. At the least, an abnormal finding in renal function (BUN or creatinine) was a significant predictor of the outcome. Acidosis status significantly predicted the fatality with the highest OR in cases of two acidic findings (OR = 35.25, P < 0.001). Furthermore, two abnormal results in urine analysis significantly predicted the paraquat fatality

### 4. Discussion and Conclusion

Present results imply that routine laboratory examination on admission can provide important and useful information to determine the severity and to predict the prognosis of paraquat poisoning. Simple and practical bedside measurements for organ function can help clinicians predict the prognosis on first contact with patients. Until now most reliable prognostic indicators suggested have been time-related plasma paraquat concentration, as proposed and evaluation of target organ damages such as in the lungs and kidneys.

Since information about plasma paraquat concentration is not always available in every hospital, our methods can easily be used in case of emergency situations. In addition, routine laboratory data such as GOT, GPT, BUN, and creatinine, as well as arterial blood gas analysis, are readily available and can be undertaken in case plasma paraquat measurements are not available.