Organophosphate insecticides are highly toxic and present a serious threat in terms of human intoxication (1). The high mortality ascribed to organophosphate poisoning is due to delayed diagnosis and improper treatment (2). Acetylcholinesterase (AChE) activity appears to be a reasonable index of the degree of clinical recovery in most instances (1). In centers where the measurement of cholinesterase activity can not be done, management is based on assessment of severity of intoxication, which depends largely on clinical findings (3). Based on our previous experience in organophosphate intoxication, leukocytosis is a very common finding, and the white blood cell count returns to normal level, after treatment. The aim of this study was to determine whether the monitoring of the number of leukocytes may be helpful in the management of patients and in withdrawing the treatment.

A prospective study was conducted on 24 patients poisoned with organophosphate compounds, admitted to the intensive care unit at Erciyes University Hospital. Diagnoses were based on the patients' history, and clinical manifestations. Twelve (50%) of the patients were male and 12 (50%) were female, and the median age was 27.2±11.0 years. Fifteen patients (28.1±9.0) poisoned with insecticides other than organophosphate were used as control subjects. The patients were examined according to route, mode, and degree of intoxication, white cell count, time to normalization of white cell count, duration of treatment, and causes of death. Leukocyte counts were measured daily during hospitalization. The degree of intoxication was determined according to criteria outlined by Bardin (Table) (2). In all of the patients, the cause of intoxication was attempted suicide. In all patients, the route of intoxication was oral, except in one patient who had injected herself with methamidophos intravenously. On admission, no other pathologic states, such as infection, use of drugs, or hematological disorders which can cause leukocytosis were found. Statistical analysis was performed by linear regression.

Of the 24 patients, 19 (79%) had leukocytosis on admission. In 16 of the 19 patients with leukocytosis, the leukocyte count returned to normal limits during treatment whereas in 3 patients the leukocyte count gradually increased. One of the 3 patients whose leukocyte count remained high died of respiratory failure, and another died of aspiration pneumonia. In the 3rd patient, urinary tract infection was detected. One of the patients whose leukocyte counts returned to normal levels died of respiratory failure. All 3 patients who had normal white blood cell counts on admission required treatment for only one day. The relationship between the time to normalization of leukocytosis and the duration of the treatment was significant (r:0.933, p<0.0001). There was a significant correlation between the degree of intoxication and the duration of the treatment (r: 0.518, p<0.05). The degree of severity of intoxication of the 6 patients who died was high (Grade 3). Four of the patients poisoned with insecticides other than organophosphate had leukocytosis, and 2 of these also had aspiration pneumonia.

Organophosphate poisoning is usually a serious condition, and the management of it sometimes presents many pitfalls (1). In the therapy, atropine and sometimes cholinesterase enzyme reactivators are used. The
duration of treatment is dependent on both the improvement of clinical signs and a decrease in the cholinesterase activity of the blood. (4-8). Leukocytosis has been noted in several case studies (5,6,9). In 1 study done in our hospital, the incidence of leukocytosis in organophosphate intoxication was found to be 43% (8).

In our study the incidence of patients with leukocytosis at the beginning of treatment was 79%, and therefore, this rate rose to 90% when the patients who had leukocytosis during treatment were combined. Our findings shows that a decrease in the leucocyte count to normal levels was paralleled closely by the improvement of clinical signs, and that the time to recovery from intoxication was shorter in patients without leukocytosis.

Leukocytosis is a common finding in organophosphate intoxication. According to our findings the monitoring of the leucocyte number in conjunction with clinical signs may be helpful in the assessment of the prognosis and the efficacy of treatment in centers where the measurement of cholinesterase activity can not be done.

References