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Letter to the Editor

Different Aspects of Mercury Poisoning in Children

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Dear Editor-in-Chief

Mercury poisoning is a potentially fatal toxicological emergency (1). The aim of this study was to describe the demographic and clinical features, treatments and outcomes of patients with elemental mercury poisoning who were admitted to our tertiary children's hospital.

This retrospective, cross-sectional, study was conducted between January 2011 and July 2022 in a tertiary children hospital in Turkey. The medical records of children hospitalized with mercury exposure were retrospectively reviewed.

The study protocol was approved by local Ethics Committee and a written informed consent was obtained from each parent.

The total of 595 inpatients presented with poisoning during the study period. Nineteen of these patients (3.2%) were hospitalized due to mercury exposure. 57.9% (n=11) of the patients were symptomatic. There were no correlations between the serum mercury level and being symptomatic and the clinical severity (P=0.331 and P=0.636; respectively). The clinical severity was correlated with the 24-h urine mercury level the day after the DMPS chelation treatment began (Kendall's tau=0.663, P<0.05) and the mercury exposure duration (Kendall's tau=0.721, P<0.05). School chemistry laboratories were the mercury exposure sources indicated by 57.9% of the patients (n=11) who were symptomatic. The source was a broken thermometer in the 8 (42.1%) asymptomatic patients. DMPS chelation treatments were administered to 11 symptomatic patients. High urine mercury levels were found 24 h after the chelation therapy began in all patients except three of them (patient 12,13,14) who developed SJS during treatment. Moreover, their 24-h urine mercury levels were not elevated after the chelation treatment. Twenty one percent of the patients (n=4) presented with systemic symptoms but no mercury exposure histories. Mercury poisoning of the patients was understood clearly after questioning them about the mercury exposure in detail and showing the photos of mercury to them. The airborne mercury concentration was 25 $\mu g/m^3$, as assessed by the Disaster and Emergency Management Authority staff, and seven of the family members were affected four of them were in child age.

Mercury poisoning is a toxicological emergency that we determined that the intoxication severity was correlated with the 24-h urine mercury level the day after the DMPS chelation treatment began and with the mercury exposure duration. In a study, authors did not find any correlation between the urine mercury levels and the symptom severity before the chelation treatment in a case

of elemental mercury intoxication (2).

In this study, the most common mercury source was a school chemistry laboratory like another study (3). The use of mercury should be banned in science laboratories, and the teachers should be warned to keep the mercury secure. In our study, four patients played with elemental mercury for five days without being aware that it was mercury and they cleaned up the elemental mercury with a vacuum cleaner. Previously, mercury toxicity cases due to inappropriately "cleaned up" liquid mercury spills have been reported in the literature (4). Vacuuming up the spilled mercury exposes everyone indoors to a significant amount of vaporized mercury. The Illinois Department of Public Health (IDPH) in the United States recommend that the homeowners should not attempt to clean up a large mercury spill (5, 6).

Three of the patients (Patients 12, 13 and 14) developed SJS-like mucocutaneous reactions on 5th day of the DMPS treatment. It is possible to explain the clinical findings of direct mercury vapour toxicity but after the chelation therapy, increase on urine mercury levels was not observed and there were no dermatologic manifestations at presentation at the beginning. So the DMPS was the most likely cause of the SJS in that three patients. DMPS was related to skin rashes and pruritus, but there was only a few reports in the literature (7).

The results of this study showed that the clinical severity was correlated with the 24-hour urine mercury level the day after the DMPS chelation treatment began. However, there were no correlations between the serum mercury level and being symptomatic and the clinical severity. Mercury poisoning should be kept in mind for the differential diagnosis if there are unexplained symptoms of the children. Families should be informed about what they have to do after mercury exposure.

Conflict of interest

The authors declare that they have no conflict of interest.

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