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EDITORIAL COMMENTS

Acute and Long-term Effects of Organophosphate Poisoning

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Pesticides cause acute and/or chronic poisoning in living organisms; they also cause a several health-related problems owing to precipitation in the soil and the products cultivated thereof. Organophosphates are the most common and widely used pesticides. Organophosphate-induced acute or chronic poisoning has been reported in many regions of the world, particularly in the developing nations (1, 2). In all age groups, starting right from the neonatal period, the poisoning may occur due to inhalation of the pesticide or its transmission to the skin; sometimes, it may also due to suicide attempt by intravenous injection of the compound (3-5). The acute picture is cholinergic poisoning, and chronic headache, polyneuropathy, and some endocrine effects are observed.

Although acute poisoning is readily diagnosed, it may rarely present as diabetic ketoacidosis (1). In addition, blood sugar level changes are observed without ketoacidosis. In the Central Anatolia region, 48% and 6.4% of 269 patients were reported to have hyperglycemia and hypoglycemia, respectively (2). Various endocrine influences can occurr in the acute period of organophosphate poisoning. Acetylcholine, which is a neurotransmitter, influences hormonal synthesis, transcription factors, and receptors. Guven M. et al. reported that FSH, LH, and prolactin levels increased in the acute period of poisoning. Hypothyroidism, elevated cortisol, and ACTH levels have also been reported (5).

The chronic effects of organophosphates, including polyneuropathy, malignant diseases, neuropsychiatric diseases, and teratogenic effects, are another important issue (6). As endocrine disruptors, some organophosphate compounds reportedly cause hypospadias and impaired spermatogenesis (7, 8). A study published in the March 2019 issue of Erciyes Medical Journal reported on the long-term effects of organophosphates on the endocrine system; 29 cases were re-examined approximately 3.5 years later, and one case had cortisol and 3 cases had growth hormone deficiency (9).

In conclusion, organophosphate poisoning is an important health-related problem. It causes serious diseases, such as endocrine and neuropsychiatric disorders, malignancy, and teratogenicity, in the acute and chronic periods. Therefore, the global usage of organophosphates should be controlled and limited.

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