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INTRODUCTION

Organophosphates (OPs) and other pesticides are used to eradicate agricultural pests. Gardeners are the most risky group prone to side effects of pesticides. Organophosphates (OPs) inhibit acetyl cholinesterase (AChE) enzyme and as a result excess nicotinic and muscarinic neurostimulation develops. Chronic neurotoxic effects may be irreversible. For evaluation of pesticide exposure in human body specific biomarkers that are determined by authors are needed. We evaluated gardeners laboratory test results retrospectively. The purpose of this study was to determine the biomarkers of occupational pesticide exposure in gardeners.

METHODS

Forty one gardeners who applied to Ankara Occupational Disease Hospital for medical examination in 2010-2015 were included to this study. Pulmonary function tests (PFT), toxicological analyze, AChE levels and radiologic imaging results were obtained from hospital database (FONET). Toxicological analyze results were evaluated according American Conference of Governmental Industrial Hygienists (ACGIH) threshold values.

RESULTS

AChE levels of six gardeners were found low and these values were under 50 % of mean AChE activity. Urine arsenic levels of six gardeners were higher than ACGHI threshold values. Liver enzymes (alanine aminotransferase and aspartat aminotransferase) of five gardeners were above laboratory reference range. Nine of the gardeners had obstructive type pulmonary function disorder. We detected micro nodules on posterior-anterior lung X-ray graphics of six gardeners. There were also sensorineural hearing loss in five gardeners.

CONCLUSION

Gardeners are under risk of exposure to various noxious materials. Excessive exposure to pesticide could cause hepatotoxicity, respiratory system disorder, ototoxicity and AChE inhibition. The exposed workers should be monitorized regarding to these side effects. It is crucial to monitor ALT, AST, PFT, AChE level and audiometric tests. Arsenic exposure should be regarded exposure to other pesticide than organophosphates.

Keywords: Gardener, Pesticide, Arsenic, Acetyl cholinesterase