

Delayed neurological complications of sulfur mustard and tabun poisoning in ۴۳ Iranian veterans

Emadodin Darchini-Maragheh^{۱,۲}, Habibollah Nemati-Karimooy^۱, Hosein Hasanabadi^۱, Mahdi Balali-Mood^۱

۱. Medical Toxicology Research Center, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
۲. Student Research Assembly, Mashhad University of Medical Sciences, Mashhad, Iran

Objectives and introduction: Delayed neurotoxic complications of chemical warfare agents (CWA) such as sulfur mustard (SM) and tabun on human cases have not been reported in details. We thus aimed to investigate possible neurotoxic complications of these agents on Iranian veterans ۲۲-۲۷ years after exposure. **Methods and materials:** Following coordination with the veteran foundation and obtaining the approval of medical research ethics committee, ۴۳ Iranian veterans with late complications of CWA exposure during the Iraq-Iran conflict were studied after obtaining a signed written informed consent. Demographic and clinical findings were recorded in pre-designed forms. Neurologic examination was performed by a neurologist. Routine biochemical tests were performed for all the patients. Electromyography (EMG), nerve conduction velocity (NCV) and electroencephalography (EEG) were performed as clinically indicated. **Results:** Majority of the patients (۳۸) were exposed to SM and only ۵ patients exposed to tabun. Hyperesthesia was the most objective finding (۷۲.۱). Fatigue (۹۳%), Paresthesia (۸۸.۳%) and headache (۸۳.۷%) were the most common subjective findings in the veterans. Sensory nerve impairments including paresthesia (۸۸.۳%), hyperesthesia (۷۲.۱%) and hypoesthesia (۱۱.۶%) were the most common observed clinical complications. EMG and NCV were impaired in seven patients (۱۶.۳%) which all of them were SM exposed patients but did not show any significant correlation with organ complications. EEG was negative even in the seized patients. Cholesterol, LDL, triglyceride and lactate dehydrogenase levels were significantly above the normal ranges. **Conclusion:** Late neurologic complications of CWA, particularly SM poisoning are considerable even after ۳ decades of exposure, which require medical attention.

Keywords: Chemical warfare agent, neurotoxic complications, sulfur mustard, tabun, poisoning.