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Pesticide poisonings reported to the ACMT Toxicology Investigators Consortium (ToxIC) Registry

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Background: The Toxicology Investigators Consortium (ToxIC) Registry is a multicentre reporting, research, and toxicosurveillance network connecting over 50 sites in the USA, Israel, and Canada on a web-based platform since January 2010. We utilised the data from this ACMT-sponsored registry to investigate pesticide exposures encountered since its inception.

Methods: The Registry was queried for all cases coded as exposures to pesticides. Deidentified demographic data, clinical signs, and laboratory details (which are all routinely populated as part of the registry submission process) were collated and analysed for trends related to these agents.

Results: There were a total of 57 cases (31 females; 4 pregnant) of pesticide exposures reported to the Registry between January 2010 to July 2012. Patient ages ranged from less than 2 years to 70 years. ToxIC Investigators reported 31 outpatient cases, with the remainder seen in ED or inpatient settings; there were 12 unintentional exposures, and 8 occupational or agricultural injuries; the remainder were intentional ingestions. We identified the following pesticide classes (and numbers of cases): pyrethroids (14); anticholinesterases (9); herbicides (6); vitamin K antagonists (5); organochlorines (4); borates (3), mothballs or dibromoethane (2 each); phosphides and neonicotinoids (1 each); and unknown or nonspecified pesticides (10). Twenty six patients developed neurologic effects; other types of signs (e.g. vital signs changes, pulmonary, GI, renal or metabolic changes) were noted in less than ten patients per category of finding. Eight cases were treated with antidotes, and 14 were given other supportive care. There was 1 death (paraquat). Several banned or illegal chemicals were reported, such as heptachlor, dibromoethane, and high-dose brodifacoum rodenticide liquid. Unusual or infrequently encountered associations in this series (1 case of each): 2,4,-D ingestion causing seizures; sulfentrazone/cloransulam-methyl combination powder inhalation with delayed pneumonitis; and bronchospasm and rash related to occupational boric acid exposure.

Conclusions: Our series confirms current trends in the industrialised world: a small number of exposures from a large variety of pesticides, including several high-toxicity and banned chemicals. Some of the unique associations in our study sample could be used to generate additional inquiries about incidence and frequency of complications from rarely encountered hazards. Moreover, this study suggests that the ToxIC registry has the potential to be a viable mechanism for web-based pesticide poisoning surveillance worldwide. Expansion of the Registry to countries with greater pesticide availability and higher case burdens may provide a unique opportunity for toxico-surveillance and research about these hazards in diverse practice settings.