



Point of Care Diagnostics for Acute Organophosphorus Poisoning: An Emerging Need for Management

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Poisoning with organophosphorus pesticides can occur due to suicidal or non-suicidal exposure [1]. It is a serious health concern, especially in the developing nations. According to WHO, in rural Asia majority of the deaths occur due to suicidal ingestion of organophosphorus pesticides as they are freely available in the market [2]. Toxicity due to organophosphates leads to depression of Acetylcholinesterase activity in the nervous system thereby causing excessive cholinergic stimulation. Measurement of AChE is recommended in all clinical cases of OP poisoning [1]. Diagnosis is usually based on the history of exposure and the clinical manifestations as reliable enzyme assay methods are not available. As the decrease in AChE level correlates with the severity of poisoning, therefore, a rapid and reliable enzyme assay method is required for early diagnosis and management of the poisoning [3, 4].

At present, the recommended method for the measurement of AChE activity in case of organophosphorus poisoning has certain pitfalls [5-9]. Researchers have tried to address such limitations, but the major problem is the wide inter-individual difference in the baseline value of acetylcholinesterase [4,10-13]. Till date, there is no established reference range of acetylcholinesterase which makes the interpretation of the results difficult especially in cases of less severe poisoning.

With the growing incidence of poisoning, there is an emerging need for the bedside assessment of acetylcholinesterase activity. This can be met by a point of care testing platform which can enable timely management of the poisoning. There is ongoing research for the development of point of care testing tools for the detection of acetylcholinesterase activity in the context of organophosphorus poisoning [14,15]. We have recently reported that AChE estimation is still important for understanding organophosphorus poisoning and feel we feel that AChE is the target biomarker for point of care testing tool development [16].

At present, there is no recommended point of care testing tool for the desired purpose. Therefore, we believe that with the advent of a cost effective, user-friendly and rapid point of care testing tool which can overcome the problem of baseline measurement of acetylcholinesterase activity can potentially reduce the interface between diagnosis and management of acute organophosphorus poisoning.

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