SUMMARY AND CONCLUSION
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The study performed on 150 agricultural workers engaged in aerial OP pesticides spraying in mango orchards in the joining rural areas of Mylavaram village, Krishna district, Andhrapradesh. In mango plantations and agricultural farms and the findings recorded in the exposed subjects were compared with those obtained in a reference group consisting of 50 male subjects having no previous history or current exposure to OP pesticides in any of the processes involved in the formulations and spraying of OP pesticides.

The assessment of human exposure to organophosphorous pesticides was done by the following procedures using a presturctured survey performa.

1. Clinical assessment of the exposed group with particular emphasis to neurological examination and recording of relevant signs and symptoms pertaining to neurotoxicity induced by OP pesticides exposure, in order to assess the acute OP and chronic OP pesticide poisoning (OPIDN and OPICN).

2. The electrophysiological studies on nerve conduction (both sensory and motor) in upper and lower limbs.

3. The lung function status was also measured in the study population in order to ascertain the effects of pesticide toxicity on the ventilatory capacity and respiratory health of the exposed workers.

4. The biochemical estimation of enzymes AChE, the antioxidant status of the exposed group was estimated by the levels of GSH and MDA.

5. Hematological profile was also done to look for the effect of OP pesticide on the hematological parameters.

6. Biomonitoring of urinary samples for the urinary estimation of the metabolites of OP pesticides the morning voided urinary samples were collected and analyzed for six dialkyl phosphates (both DMP AND DEP) derivatives present in various concentrations.
The workers were exposed to a number of organophosphates pesticides which were sprayed in different combinations having very high neurotoxicity. The study showed that over all prevalence of neurotoxicity was found to be 16% of the exposed group. The highest prevalence of neurotoxicity was found in area IV where the workers were exposed to chlorpyrifos and dimethoate OP pesticides followed by in area-II where the workers were exposed to methyl parathion.

The workers exhibited the clinical manifestations of acute OP poisoning revealing both muscarinic as well as nicotinic effects of OP pesticides poisoning. The cardinal muscarinic symptoms included Lacrimation (62%), Salivation (56%) Miosis (26%) while the most common nicotinic symptoms were Mydriasis (40.6%), sweating (39.3%) Tachycardia (18%), Tremors (26%) were observed. Besides this other pesticide related symptoms were recorded and most prominent symptoms were the burning sensation in eyes (15.3%) watering of eyes (14%), dizziness (12%) and headache (12.6%). The symptoms of OPIDN were parathesis of extremities and weakness of proximal limb muscles and neck muscles were prominent in the exposed groups. The results also show Babinski signs which were positive in (11.3%) of the workers were thereby indicating the peripheral neurotoxicity induced by OP pesticide.

The biochemical profile indicated reduced levels of enzymes AChE in comparison to that in control group. The decrease in the enzyme levels confirms the clinical findings and electrophysiological studies (nerve conduction velocity both sensory and motor) which studied characteristic neurotoxic signs and symptoms and impair nerve conduction in the OP pesticide exposed sprayers. This could be attributed to excess accumulation of AchE at the nerve endings resulting in interpretation of nerve conduction causing OP pesticide poisoning.

The studies further revealed that OP pesticides chlorpyrifos and methyl parathion particularly showed delayed motor and sensory nerve conduction velocity in the ulnar and peroneal nerves, while Diazion, Mevinphos, Dimethoate failed to show any co-relation.

The decreased levels of GSH in the exposed sprayers are suggestive of Oxidative stress which is accompanied by an increase in MDA levels indicating increased lipid peroxidation in the exposed workers.

Our findings of the analysis of urinary samples for concentration of dialkyl phosphates (DMP and DEP) derivatives showed that DMP was present in 87% of urine samples collected from the pesticide exposed group. This was the most common along with DMTP and followed by DEP and DETP were the most common urinary metabolites detected in the urine sample while DEDTP was
least commonly detected. We found very high levels of DMP (95.6±106.6), DMTP (111.6±114.8) in the morning voided urine samples there by suggesting environmental exposure to OP pesticides.

The results of the study concludes that the OP pesticide sprayers had significant occupational exposure as indicated by high levels of urinary metabolites particularly DMTP, DMP and DEP coupled with clinical findings showing both muscarinic and Nicotinic symptoms suggestive of acute OP pesticide poisoning and as well as OPIDN and OPICN poisoning supported by the concerned symptoms like weakness of muscles and parathesia of extremities. More support came from biochemical studies which showed decreased levels of GSH and increased levels of MDA poisoning towards oxidative stress causing OPP poisoning in the exposed group. Findings of delayed peripheral sensory and motor nerve conduction furthers confirms our findings of both acute and chronic neurotoxicity induced by occupational exposure to different OP pesticide use by the agricultural workers in different villages of Andhra Pradesh.