CHAPTER VI

SUMMARY AND RECOMMENDATIONS
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SUMMARY

Organophosphorus insecticides are normally esters, amides or thiol derivatives of phosphoric, phosphonic, phosphorothioic or phosphonothioic acids. They constitute the most frequently abused group of chemicals.

Some of the Organophosphorus pesticides are very hazardous due to their high acute toxicity. Direct exposure to pesticide is encountered by persons engaged in manufacture, formulation, transport and use. They are frequently used for suicidal and rarely for homicidal purpose.

- To study organophosphorus (OP) poisoning cases, 121 OP intoxicated cases admitted in Civil Hospital, Ahmedabad were investigated. Patients ranged from 14 to 72 years of age with the maximum number (48.8%) of cases in the age group of 21 – 30 years and the male to female ratio being 2:1.
- Lack of education was observed as a major attributing factor. 33.1 % cases were totally illiterate and no case had higher education/ professional qualification.
- OP insecticides are responsible for large number of suicidal personal (80.2%). 9.1% cases were occupationally exposed and only 6.6% cases were associated with accidental consumption.
- The major attributing reasons observed were social and domestic problems (29.9%), marital and love affair friction (27.4%), job problems (8.2%), financial stress (11.3%) and chronic illness and failure in examination (3.1%).
- Clinically muscarinic manifestations such as vomiting, nausea, miosis, excessive salivation, blurring of vision and abdominal cramps were the predominant manifestations. Nicotinic manifestations composed of sinus
tachycardia, hypertension and fasciculations were also observed. C.N.S. manifestations comprise dizziness, headache, mental confusion, coma and convulsions.

- Psychiatric evaluation revealed decrements in alertness, increased irritability, memory deficit, and lethargy.
- Cardiac toxicity was an important manifestation; sinus bradycardia (6.6%), sinus tachycardia (24%) and depression of ST segment with inversion of T wave in 7.4% of cases.
- There was a significant inhibition of AChE RBC and plasma ChE in the studied cases when compared with controls. However in cases who died after admission, there were more severe inhibition in AChE values as compared to those survived. It suggests the prognostic implications of ChE inhibition beside diagnostic influences. Plasma ChE inhibition was found to be a more reliable indicator of acute poisoning cases.
- No significant alterations in haematological values and urine examination occurred in the poisoning cases.
- Alterations in values of Serum bilirubin, SGPT, SGOT and alkaline phosphatase activities were observed in four cases showing increasing trend with significant changes only in serum bilirubin, suggesting that OP insecticide do effect liver functions but for a transitory period.
- Lactic dehydrogenase activity was significantly effected in cases who died due to acute exposure to O.P. insecticides as compared to surviving cases suggesting that LDH changes, although nonspecific can help in projecting the prognosis of the case.
• In fatal cases the average CK levels were significantly higher as compared to cases who survived.

• Immune alterations showed a significant alteration in IgG, IgA and C3 and C4 complements in exposed subjects. The estimation of IgA levels and its increase in OP poisoning cases can serve as a useful diagnostic tool for OP poisoning cases. An increase in C3 and C4 complements are suggestive of inflammatory process going on in the body due to exposure to OP insecticides.

• OP poisoning cases treatment was based on minimising the absorption, general supportive treatment and specific pharmacological treatment. Atropine dose varied on the severity of the case, with continuous infusion in extreme cases. Atropine with oxime reactivators proved to be equally effective.

• None of the 18 cases followed showed evidence of delayed neuropathy.

GENERAL RECOMMENDATIONS

1. Public Health authorities should recognize the problem and make every effort to contain it. Effective legislative controls over pesticide users and restriction in availability will help to check abuse.

2. Training in safe work practices should be enforced, which contrasts sharply with the existing situation in the industrialized world.

3. Education and training programmes on the safe use of pesticides for occupationally exposed workers will have to be initiated and misconceptions must be corrected. There should be mass awareness campaign to reduce the exposure of toxic chemicals.

4. Research on development of more adequate analytical methods (faster procedure and simpler equipment so that diagnosis may be confirmed at the
earliest e.g. organophosphates qualitative test and thin layer chromatography) and their access to hospitals.

5. Easy availability of Antidotes and life saving measures at Primary Health Centers.

6. Establishment of POISONING Centers for referral purposes and information dissemination.