A STUDY OF ORGANOPHOSPHORUS COMPOUND POISONING IN TERTIARY CARE CENTRE IN KANYAKUMARI

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ABSTRACT

BACKGROUND

Organophosphorus compound poisoning is a common toxicological emergency encountered in the district of Kanyakumari in Tamil Nadu. This study was planned to study the clinical profile of organophosphorus poisoning admitted in Kanyakumari Government Medical College Hospital, Asaripallam, Tamil Nadu.

MATERIALS AND METHODS

The demographic profile of Organophosphorus compound poisoning cases were determined by a retrospective study on all cases of organophosphorus poisoning admitted in the Emergency Department of Kanyakumari Government Medical College Hospital from January 2014-December 2015.

RESULTS

A total 672 cases of Organophosphorus compound poisoning were analysed during the two year period from January 2014 to December 2015. Young male population were the commonest patients (77%). Suicidal intention was the commonest cause of consumption of OPC (71%). Associated alcohol consumption was reported among 210 patients (31%). 140 patients succumbed to respiratory failure (20%) among which 63 patients were reported to have consumed alcohol. Commonest compound used was diazinon (136 people-20%). A delay of more than 24 hours in arrival lead to higher mortality rates (50%). The maximum hospital stay duration was found to be one week in majority of cases (62.5%). The incidence of death was more in patients with a hospitalisation of more than 3 weeks (22.7%). 644 people survived (95%) and 28 people expired (5%), the most common factor influencing death being respiratory failure.

CONCLUSION

Organophosphorus compound poisoning is a common toxicological emergency and early hospitalisation, education, strict pesticide laws, vigilance in alcohol usage and awareness can reduce the mortality from organophosphorus poisoning.

KEYWORDS

Organophosphorus compounds, Poisoning.

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BACKGROUND

Organophosphorus compound is an easily available pesticide and owing to its availability, it is one of the commonest cause for suicidal and accidental poisoning.[1] It is a highly toxic compound leading to accumulation of acetylcholine at synapses and neuromuscular junction due to the inhibition of the enzyme cholinesterase.[2] A study by WHO shows that about 3 million pesticide poisoning occurs causing more than 2,22,000 death per annum worldwide.[3] Developing countries like India show alarming rate of toxicity and death owing to the easy availability of the compound.[4]

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Organophosphorus compounds and its association with suicide has reached morbid proportions in India and carries a mortality of 4-30% as indicated by studies.[5] The most common presentation was pupillary constriction, followed by excessive secretions, fasciculation, depressed consciousness, diaphoresis, diarrhoea, abdominal pain, fever, and respiratory failure.[6] Respiratory failure is a common complication of organophosphorus compound poisoning. This leads to high mortality in these patients, demanding timely treatment which is crucial for survival.[7] After an exposure to an organophosphorus agent the clinical syndrome progresses through three well defined phases: Initial cholinergic phase, intermediate syndrome and delayed polyneuropathy phase.[8] This observational study was undertaken with a view of the frequency and load of organophosphorus poisoning in Kanyakumari district and as to study the outcome of the poisoning.

AIMS AND OBJECTIVES

To study the epidemiology of organophosphorus compound poisoning cases admitted in the hospital, age wise, sex wise, type of organophosphorus compound, reason for poisoning, delay in seeking treatment, duration of hospitalisation, associated alcohol consumption, incidence of respiratory failure and overall outcome and the common poison used for suicide in Kanyakumari district, southern part of Tamil Nadu.

METHODS

Cases admitted to Kanyakumari Government Medical College Hospital during January 2014- December 2015 were studied in this record based retrospective study. Data were collected from the Medical Records Department of Kanyakumari Government Medical College Hospital. All Organophosphorus compound poisoning were classified as medicolegal cases, whose records were kept separately in the Medical Records Department. The recorded information from case sheets were entered in pre-coded proforma and included age, sex, economical status, type of OPC, alcohol consumption, delay in arrival, duration of hospital stay, reason for poisoning, ventilator support, outcome of the cases. A total of 672 organophosphorus compound poisoning cases were admitted during this 2 years period.

RESULTS

Of the total 672 cases 518 were males (77%) and 154 were females (23%). Most cases were in the age group of 21-30 years (30.5%). The incidence was more among the young males. 478 cases of suicidal poisoning (71%), 150 cases of accidental poisoning (22.3%), 2 cases of homicidal poisoning (0.3%) and 42 cases in which the reason for poisoning was unknown, were reported. 210 cases had a history of alcohol consumption (31%). This may be a triggering factor for consumption of poison, which may be either accidental or suicidal. 140 cases needed mechanical ventilation owning to respiratory failure (20.8%). The most common used compound was diazinon (ethyl), reported in 136 (20.2%) cases, though in majority of cases the compound remained unknown 157 (23.4%). The other compounds reported were chlorpyriphos (ethyl) (103 cases), dichlorvos (methyl) (34 cases), dimecron (methyl) (79 cases), malathion (ethyl) (98 cases), monochrotophos (methyl) (65 cases). Of the 672 cases, 253 cases arrived within 6 hours of consumption (37.64%) and 348 cases arrived within 12 hours (51.72%). The mortality rate was significantly increased in cases with a delay of 12 hours or more. A hospital stay duration of 4-7 days was reported among majority of OPC poisoning cases (42.7%). Mortality significantly increased with prolonged hospitalisation (22.7%). Atropine usage ranges from 10 ampules to > 300 ampules and P2AM was given in full dose (500 mg per hour) for minimum of three days depending on the severity, according to WHO guidelines. Mortality was reported in 28 cases during this period (4.2%) the most common cause being respiratory failure.

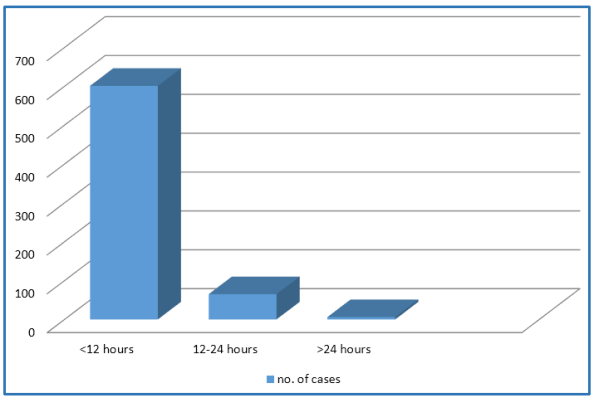

Figure 1. Time of Arrival

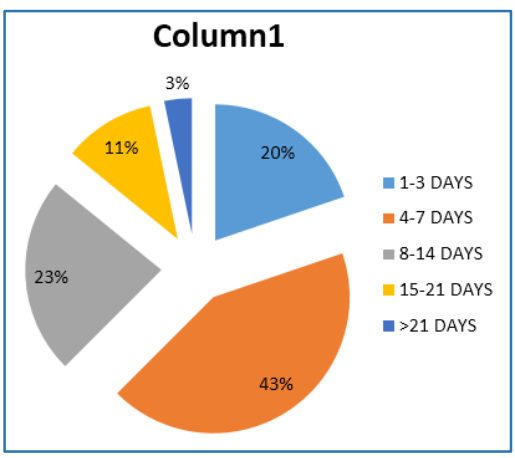

Figure 2. Duration of Hospital Stay

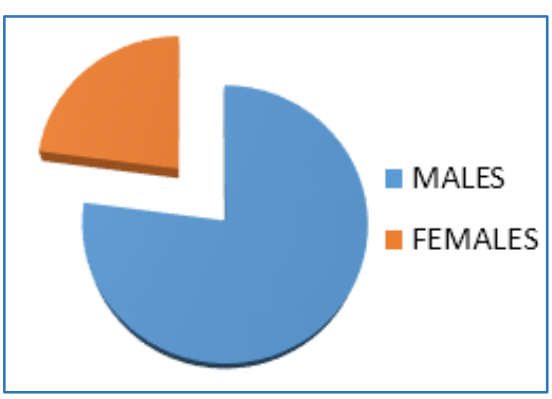

Figure 3. Sex wise Distribution of Cases

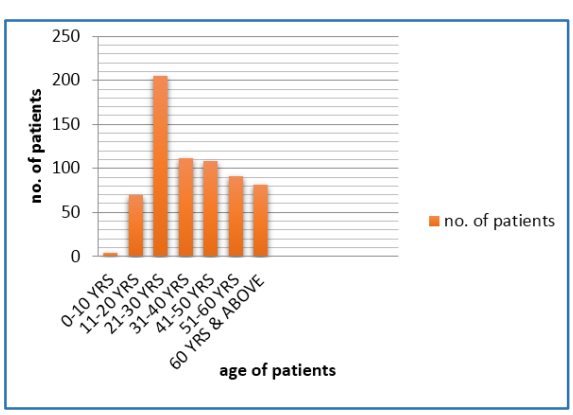

Figure 4. Age wise Distribution of Patients

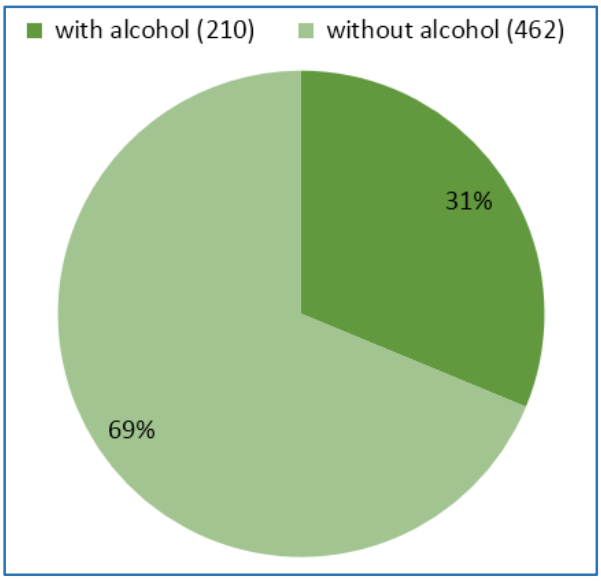

Figure 5. Alcohol Consumption among Patients

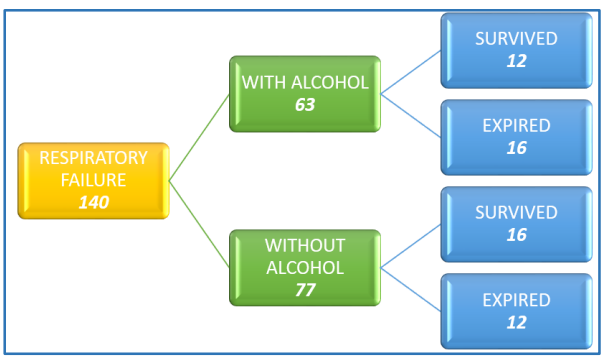

Figure 6. Respiratory Failure and Outcome in Patients

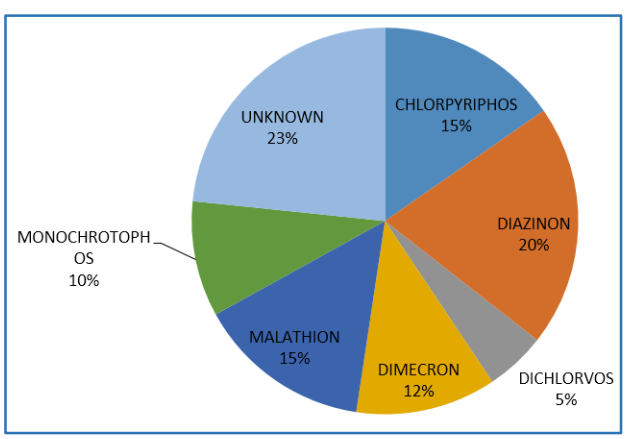

Figure 7. Distribution of Consumed Compounds

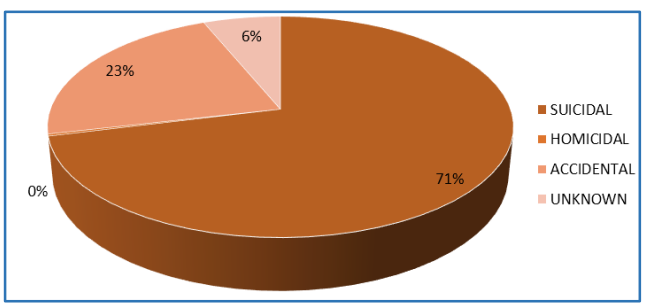

Figure 8. Motive of Poisoning

DISCUSSION

In this study, we see that suicidal intention due to family conflict is the most common denominator of organophosphorus compound poisoning, with young male alcoholics being the majority of the victim population. This could be attributed to the easy availability and low cost of organophosphorus compounds as well as alcohol. There is a lack of awareness about the ill effects of OPC poisoning that leads to injudicious usage (as in cases of accidental poisoning) of the compound. Female victims consumed poison mainly to get the attention from the family sometimes having the intention of threatening them. Most cases were received within 12 hours of consumption of OPC, indicating that though most of the cases were suicidal, the victim made attempts out of impulse rather than an actual want to die. Thus a better psychosocial and moral support will help reduce these incidences. The transportation facilities also play a crucial role in the management of these poisoning cases as the services such as 108 Ambulance help mobilising the patients in a short duration to tertiary care centres.

Majority of the patients had a hospital stay duration of 7 days or less. This was most probably due to the early recovery in young patients, with less co-morbidities who form the majority of the cases, or due to severe poisoning which is fatal. Ethyl compounds have the property of late ageing so P2AM may be helpful. Respiratory failure was the most common cause of death in organophosphorus compound poisoning. There was an increase in the incidence of respiratory failure among those who had associated alcohol consumption. Mechanical ventilator support was required in these cases and prognosis was guarded amongst this population.

CONCLUSION

Kanyakumari Government Medical College Hospital, as a tertiary care centre, has a high burden of organophosphorus poisoning with significantly less mortality rate. This could be attributed to the early intervention and management of these cases according to the WHO and Tamil Nadu government guidelines.

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