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Prevalence of Acute Pancreatitis in Organophosphate Poisoning in a tertiary care hospital in North India

Gastroenterology

Vijant singh chandail Consultant, Post Graduate department of medicine, Govt Medical college Jammu, J&K

Viney sambyal Senior resident , Post Graduate department of medicine, Govt Medical college Jammu, J&K

Suman kumar kotwal Consultant, Post Graduate department of medicine, Govt Medical college Jammu, J&K, Corresponding authors

Vinu Jamwal Associate Professor, PostGraduate department of medicine, ASCOMS Sidhra Jammu, J&K

Akash Gandotra PG student, Post Graduate department of medicine, Govt Medical college Jammu, J&K

ABSTRACT

Introduction: Acute organophosphate poisoning is one of the commonest poisoning and has reached epidemic proportions in most parts of the world especially in developing countries where its management is lacking leading to high fatal outcome. Acute pancreatitis is one of the serious complications of this poisoning. This potentially fatal complication can be over looked in the absence of typical clinical features of acute pancreatitis.

Materials and methods: The objective is to determine the prevalence of acute pancreatitis following organophosphate poisoning. This was a retrospective analysis conducted at postgraduate department of medicine; Govt. Medical College Jammu. Patients of both sexes with age more than 16 years admitted with positive history of organophosphate poisoning (OP) were included in this study. A Performa was designed and all the collected data regarding basic information of the patients, past history, physical examination and relevant investigations like complete blood count, serum amylase and lipase, alanine amino transferase(ALT), ultrasound abdomen, CT abdomen(where needed) were recorded.

Results: Among 50 patients in our study group mean age was 40±9 years. Significant symptoms seen were muscarinic in the form of secretions (80%), pin point pupil (40%), respiratory failure (10%). Marked nicotinic symptoms seen were fasciculations (20%). Significantly elevated amylase (>300u/l) was seen in 50% (n=25) of patients out of which patients 18% (n=9) had significantly elevated lipase (>150) levels, confirmation of acute pancreatitis was done by ultrasonography of abdomen and CECT abdomen. The acute pancreatitis were seen in 18% (n=9) of patients and all were managed conservatively and discharged.

Conclusion: Elevated serum amylase and lipase levels are more frequently seen in organophosphate poisoning and can predict the diagnosis of acute pancreatitis as a complication, so that a proper management of such patients can be done.

KEYWORDS:

Organophosphate poisoning, acute pancreatitis, Complication, Serum lipase.

INTRODUCTION:

Acute organophosphate poisoning is one of the commonest poisoning and has reached epidemic proportions in most parts of the world especially in developing countries where its management is lacking leading to high fatality rate. According to WHO, worldwide estimate of pesticide poisoning is around 3 million each year, with around 2 million hospitalized from suicide attempt majority of which are actually intentional as it is readily available in every home (1, 2).

Organophosphate compounds are diverse group of chemicals used in domestic and industrial settings. The major effect of these agents is irreversible inhibition of acetyl cholinesterase, a neurotransmitter found in the central and peripheral nervous system which causes over stimulation of muscarinic and nicotinic receptors which results in extensive clinical features like bradycardia, increased salivation, blurred vision, fasciculations etc. (3, 4). Worldwide mortality studies report mortality rates of 3-25% from organophosphate poisoning (5). Acute pancreatitis is one of the grave complications of this poisoning (5, 6, 7).

This potentially fatal complication can be ignored in the absence of characteristic clinical features of acute pancreatitis (8, 9). Although we come across large number of patients with this poisoning in our clinical practice, but data regarding the frequency of acute pancreatitis in pesticide poisoning is limited. Acute pancreatitis is thought to occur from ductal hypertension and pancreatic parenchymal injury (10, 11). This study was conducted to determine the incidence of acute pancreatitis in organophosphate poisoning in our set up so as to reduce the mortality and hospital stay by its early detection and management.

Materials and methods:

This study was carried out in the postgraduate department of Govt Medical College Jammu which is a tertiary care centre in our state. This was a retrospective analysis conducted at postgraduate department of medicine; Govt. Medical College Jammu during period of one year. Total of 50 patients (30 males, 20 females) of poisoning with organophosphate insecticide were studied. All patients including both sexes and age >16 years with recent history of organophosphate ingestion, inhalation or cutaneous absorption with clinical symptoms and signs of organophosphate poisoning were included in this study. Confirmation of poison was done by history and seeing the container bought by patient's family members, composition printed on them .Those patients with history of alcohol addiction or history of gall stones/gastric ulcer in the past were excluded. Patients with history of drug intake like azathioprine, valproic acid etc. were excluded. Serum amylase and lipase levels were estimated using calorimetric assay. Serum amylase level between 0-96 u/l and serum lipase level between 0-60 u/l were accepted as normal. Patients with amylase levels more than300 u/l were accepted as possible pancreatitis, and only patients with concomitantly two fold elevated levels of lipase were diagnosed as acute pancreatitis. Diagnosis was confirmed by ultrasound and contrast enhanced computerised tomography (CECT) Abdomen.

RESULTS

During study period of one year 50 patients with ingestion of organophosphates were evaluated. Mean age was 40±10 years. Among 50 patients 30 were males 20 were females. Among 50 patients 96% (n=48) patients were exposed to organophosphate compound through gastrointestinal route, 4% (n=2) patients via inhalation and none by cutaneous absorption. The most common clinical presentation was excessive salivation seen in 80% (n=40) patients. Frequently observed clinical signs were pin point pupils seen in 40% (n=20) patients followed fasciculation seen in 20% (n=10) patients and respiratory failure in 10% (n= 5)patients. Among 50 patients 25 patients had 3 fold elevated amylase levels, of these 25 patients 18 %(n=9) patients had

significantly raised lipase levels suggestive of acute pancreatitis confirmed by ultrasound abdomen followed by CECT scan.

All the nine patients were managed conservatively and were discharged on 9th or 10th day with no mortality. Two patients were having CTSI(CT score index) of 4/10; four having 6/10 and remaining have CTSI of 7/10. The patients were kept nil per oral with Ryles tube suction and managed with I/V fluids and Antibiotics as per protocol. The pain subsided after 3 days of treatment and the patients were started orals and subsequently the patients were discharged after an average of 2 weeks of treatment. The followup scans after 4 weeks revealed complete resolution of pancreatitis and the intrapancreatic fluid collections with the conservative treatment. All the Patients were followed for three months and there was no evidence of any sequalae of pancreatitis.

Discussion:

Multiple Cases of acute pancreatitis as a complication with organophosphate poisoning have been reported in literature (12) . In our study, 9 patients were diagnosed as acute pancreatitis, which was confirmed by ultrasonography of abdomen and CECT abdomen. Ahmed Arshia, et al; conducted a descriptive study in Karachi for study period of 6 months with 90 patients. Elevated amylase levels were found in 28 patients, elevated lipase was seen in 9 patients who (13).

S Singh , et al; carried out a prospective study in PGI Chandigarh between 2001-2005 to find the incidence of acute pancreatitis with elevated levels of amylase and lipase in patients with organophosphate poisoning. Of the 79 patients studied, serum amylase was found to be elevated (>200 S.U) in 37 patients (46.95 %). It has been concluded that mild elevation of serum amylase is common in patients with organophosphate poisoning, however acute pancreatitis is rare but not uncommon (14, 15, 16). Of the 50 patients in our study 20 patients had normal serum amylase level; 25 patients had pain abdomen during their hospital stay and had elevated (>300 u/l) serum amylase level and out of these 25 patients, 9 patients had significantly elevated (>150 u/l) serum lipase level, and were diagnosed as acute pancreatitis, which was confirmed by ultrasonography of abdomen and CECT abdomen. Any patient with pain abdomen after organophosphate poisoning should be evaluated for the evidence of acute pancreatitis by S.amylase, S.lipase, Ultrasonography and CECT abdomen. Most of these patients can be managed conservatively with fluids and antibiotics and all these patients were discharged and followup showed complete resolution of pancreatitis.

CONCLUSION

Organophosphate poisoning is associated with multiple complications, including acute pancreatitis. Therefore, it is necessary to carefully examine and access patients of acute Organophosphate poisoning, who present with pain abdomen, for early detection acute pancreatitis, so that they can be timely managed.



Image 1: CECT abdomen done on Day 3 of admission with organophosphate poisioning showing bulky pancreas with intrapancreatic fluid collection in the head of pancreas and another collection at the splenic hilum.

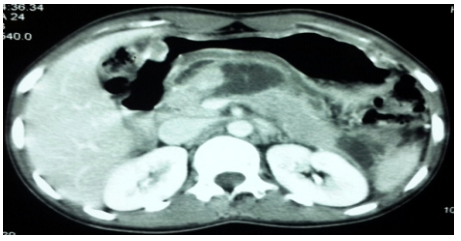

Figure 2: CECT abdomen showing bulky pancreas with intrapancreatic fluid collection in the body of pancreas and another collection at the splenic hilum done on Day 4 of admission with organophosphate poisioning .

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