Indian Journal of Basic and Applied Medical Research; June 2016: Vol.-5, Issue- 3, P. 160 -168

**Original article:**

**Serum Creatine Phosphokinase as aMarker of Severity in Organophosphorus Compound Poisoning**

**1Dr.Kinathankaraiyan Nagarajan , 2Dr. .NatesanSudhan , 3Dr Shankar Radhakrishnan**

1Professor, Department of Internal Medicine , Tanjaore Medical College , Tanjore

2Post Graduate, Department of Internal Medicine , Tanjaore Medical College , Tanjore

3Associate Professor, Department of Community Medicine ,VMKVMCH., Salem

Corresponding author: Dr Shankar Radhakrishnan

**Abstract:**

**Background:** Organophosphorous compounds are employed frequently for suicidal and homicidal purposes largely because of their easy availability at the moment of frustration and low cost. OPC poison act by inhibiting the acetylcholinesterase enzyme (AchE) at muscarinic and nicotinic receptors. Laboratory evidence of OP poisoning is usually confirmed by measuring the decreases in the blood and erythrocyte cholinesterase activities. There are emerging options for new cheaper and/or easily quantifiable biochemical markers in relation to OP poisoning like creatine phosphokinase (CPK).

**Aim:** To assess the CPK levels and its correlation among patients who had consumed OPC poison.

**Materials and methods:** A Prospective observational study was conducted on 190 patients of acute organophosphorous poisoning admitted in medicine wards and Intensive Medical Care Unit (IMCU) at Thanjavur Medical College Hospital, Thanjavur, Tamilnadu. The clinical severity was assessed and categorized according to PeradeniyaOrganophosphorous Poisoning scale. The levels of serum CPK (estimated by modified IFCC method ) and plasma cholinesterase (estimated by kinetic , butrylthiocholine method) were measured on admission.

**Results:** The study had shown a strong positive correlation between the CPK levels and the severity of OPC poisoning. The mean CPK level in mild, moderate and severe OPC poisoning were 126, 526 and 1270 respectively.

**Conclusion:** Serum CPK level can be used as an alternative biomarker in diagnosis or stratifying severity of acute OP poisoning, as it is cheap, easily available, especially in developing countries where EChE and BChE levels are not widely available in most of the laboratories.

**Keywords:** organophosphorous poison, creatine phosphokinase, cholinesterase, acetylcholinesterase