

# ECG manifestations in acute organophosphorus poisoning

Uttam Kumar Paul <sup>1</sup>, Anup Kumar Bhattacharyya

Affiliations [expand](#)

PMID: 23029843

## Abstract

A cross-sectional study was conducted to evaluate the electrocardiographic changes in 107 patients of acute organophosphorus poisoning admitted at casualty ward of MGM Medical College, Kisanganj from June 2007 to June 2010. Electrocardiographic changes were recorded before the administration of atropine. Prolonged Q-Tc interval was the commonest ECG abnormality, found in 67 patients (62.6%), followed by sinus tachycardia in 36 patients (33.6%). Sinus bradycardia was found in 33 patients (30.8%). Elevation of ST segment was seen in 27 patients (25.2%). T wave inversion was seen in 21 patients (19.6%). First-degree heart block (P-R interval >0.20 seconds) occurred in 9 cases (8.4%). Atrial fibrillation was seen in 5 patients (4.6%). Ventricular tachycardia was seen in 6 cases (5.6%) and ventricular premature complexes in 3 patients (2.8%). Of these 6 cases of ventricular tachycardia 1 responded to intravenous lignocaine, and the other 5 developed ventricular fibrillation leading to death despite other resuscitative measures. All the electrocardiographical abnormalities returned to normal before the patients were discharged. Seventeen patients died. The cause of death was ventricular fibrillation in 5 patients and non-cardiogenic pulmonary oedema in others. In conclusion it can be said that ECG should be carefully recorded and analysed in all patients of acute organophosphorus poisoning, and depending upon these changes and other clinical and biochemical parameters, the patients should immediately be shifted to well equipped ICU for better care which will reduce the mortality rate caused by these highly lethal poisons.

[PubMed Disclaimer](#)

## Similar articles

## Cardiac and electrocardiographical manifestations of acute organophosphate poisoning.

Karki P, Ansari JA, Bhandary S, Koirala S.

Singapore Med J. 2004 Aug;45(8):385-9.

PMID: 15284933

## [Electrocardiographic changes in acute organophosphate poisoning].

Lionte C, Sorodoc L, Petriş O, Sorodoc V.

Rev Med Chir Soc Med Nat Iasi. 2007 Oct-Dec;111(4):906-11.

PMID: 18389778      Romanian.

## [Electrocardiographic changes in patients with chronic anemia].

Stanojević M, Stankov S.

Srp Arh Celok Lek. 1998 Nov-Dec;126(11-12):461-6.

PMID: 9921020      Serbian.

## [Doubts of the cardiologist regarding an electrocardiogram presenting QRS V1-V2 complexes with positive terminal wave and ST segment elevation. Consensus Conference promoted by the Italian Cardiology Society].

Oreto G, Corrado D, Delise P, Fedele F, Gaita F, Gentile F, Giustetto C, Michelucci A, Padeletti L, Priori S.

G Ital Cardiol (Rome). 2010 Nov;11(11 Suppl 2):3S-22S.

PMID: 21361048 Italian.

## Cardiac arrhythmias and conduction disturbances in autoimmune rheumatic diseases.

Seferović PM, Ristić AD, Maksimović R, Simeunović DS, Ristić GG, Radovanović G, Seferović D, Maisch B, Matucci-Cerinic M.

Rheumatology (Oxford). 2006 Oct;45 Suppl 4:iv39-42. doi:

10.1093/rheumatology/kel315.

PMID: 16980722 Review.

See all similar articles

## Cited by

Cardiovascular responses of adult male Sprague-Dawley rats following acute organophosphate intoxication and post-exposure treatment with midazolam with or without allopregnanolone.

Pan S, Bruun DA, Lein PJ, Chen CY.

Arch Toxicol. 2024 Apr;98(4):1177-1189. doi: 10.1007/s00204-023-03679-x. Epub 2024 Feb 2.

PMID: 38305864 Free PMC article.

## Pollutants, including Organophosphorus and Organochloride Pesticides, May Increase the Risk of Cardiac Remodeling and Atrial Fibrillation: A Narrative Review.

Le Quilliec E, Fundere A, Al-U'datt DGF, Hiram R.

Biomedicines. 2023 Aug 30;11(9):2427. doi:

10.3390/biomedicines11092427.

PMID: 37760868      **Free PMC article.**      Review.

## Synergistic action of organophosphates and COVID-19 on inflammation, oxidative stress, and renin-angiotensin system can amplify the risk of cardiovascular maladies.

Rajak P, Roy S, Podder S, Dutta M, Sarkar S, Ganguly A, Mandi M, Dutta A, Nanda S, Khatun S.

Toxicol Appl Pharmacol. 2022 Dec 1;456:116267. doi:

10.1016/j.taap.2022.116267. Epub 2022 Oct 12.

PMID: 36240863      **Free PMC article.**

## Importance of pesticides for lethal poisoning in India during 1999 to 2018: a systematic review.

Karunaratne A, Bhalla A, Sethi A, Perera U, Eddleston M.

BMC Public Health. 2021 Jul 22;21(1):1441. doi: 10.1186/s12889-021-11156-2.

PMID: 34294076      **Free PMC article.**

# Organophosphate poisoning presenting as out-of-hospital cardiac arrest: A clinical challenge.

Kuo HS, Yen CC, Wu CI, Li YH, Chen JY.

J Cardiol Cases. 2017 Apr 22;16(1):18-21. doi:

10.1016/j.jccase.2017.03.006. eCollection 2017 Jul.

PMID: 30279788      **Free PMC article.**

See all "Cited by" articles

## MeSH terms

- Adolescent
- Adult
- Arrhythmias, Cardiac / etiology\*
- Atrial Fibrillation / etiology
- Child
- Electrocardiography\*
- Heart Conduction System / drug effects\*
- Heart Conduction System / physiopathology
- Humans
- Male
- Middle Aged
- Organophosphate Poisoning\*
- Poisoning / complications\*
- Poisoning / physiopathology

➤ Ventricular Fibrillation / etiology

➤ Young Adult

## Related information

Cited in Books

MedGen

PubChem Compound

PubChem Substance

## LinkOut - more resources

### Medical

MedlinePlus Health Information

### Research Materials

NCI CPTC Antibody Characterization Program