



ORIGINAL RESEARCH PAPER

General Medicine

CLINICAL PROFILE OF PATIENTS WITH ACUTE EPICHLOROHYDRIN POISONING - AN OBSERVATIONAL STUDY

KEY WORDS:
Dr. Buddhadeb Majumder

Resident and Presenting, Dr. DY Patil Medical College, Navi Mumbai

Dr. Rabindranath Sahay

Professor and HOU, Dept. of General Medicine, Dr. DY Patil Medical College, Navi Mumbai

Dr. Saurabh Kothari

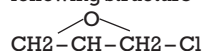
Assoc Prof. Dept. of General Medicine Dr. D Y Patil Medical College, Navi Mumbai

ABSTRACT

Introduction: Epichlorohydrin is an organochlorine compound and an epoxide. It is a colourless liquid with a pungent, garlic like odour, moderately soluble in water, but miscible with most polar organic solvents. It is used in the production of glycerol, plastics, epoxy glues and resins, epoxy diluents and elastomers. Epichlorohydrin is a common chemical used in industry and Accidental exposure to Epichlorohydrin can occur in workers working in glycerol, plastics, epoxy glues and resins, epoxy diluents and elastomer factories. **Aims And Objective:** To study the clinical profile of patients with Acute Epichlorohydrin Poisoning And identify the frequency and nature lung involvement. **Method:** 30 patients of age 18 and above with Acute Epichlorohydrin poisoning were included in the study. Symptomatology and History, ABG, chest Xray and Hrct chest findings were included in the clinical profile. Distribution of responses were examined using frequencies and percentages and cross tabulation were done between various subgroups. **Results:** All the patients had accidental direct exposure to Epichlorohydrin. All the patients presented with acute onset respiratory distress and dry cough. Burning sensation and redness and watering from eyes with watering from nose were present in all the patients. Burning sensation in the throat was present in two third of the patient. Two third of the patients developed ARDS and of them 60 % developed moderate to severe ARDS. Two thirds of the patient required ICU admission and out of them 60 % required NIV support and rest 40% were managed by Oxygen via Facemask. Rest one third patient required admission in general ward. All the patients show heterogenous opacities in chest Xray. All the patients show patchy areas of consolidation with Ground Glass changes in HRCT Chest. Two third of the patients show pleural effusion in both Chest Xray and HRCT Chest and out of them 80 % patients show bilateral pleural effusion. **Conclusion:** ARDS of varying degree with mucosal irritation is the most common presenting feature of patients with ACUTE EPICHLOROHYDRIN POISONING. Pneumonia with HRCT chest showing Ground Glass Opacities are common.

INTRODUCTION

Epichlorohydrine is a colourless liquid with a pungent, garlic like odour, moderately soluble in water, but miscible with most polar organic solvents. Its boiling point is 116° C., density 1.18 at 20° C. and vapour pressure 13 mm. at 20° C. It has the following structure



Its high reactivity is due to both the epoxy group and to the chlorine atom. It is used as a stabilizer in certain chlorine containing substances such as pesticides and chlorinated rubber and as an intermediate in many manufactures. It is used in the production of glycerol, plastics, epoxy glues and resins, epoxy diluents and elastomers. Epichlorohydrin is a common chemical used in industry and Accidental exposure to Epichlorohydrin can occur in workers working in glycerol, plastics, epoxy glues and resins, epoxy diluents and elastomer factories.

Epichlorohydrin in liquid form is a vesicant and a dermatitic agent to the skin and the vapour is irritant to the eye, nose and throat. It has been shown that the exposure of rats to an atmospheric concentration of 250 p.p.m. for 4 hours is lethal.

Objectives

The study aims to identify the clinical profile of patients with Acute Epichlorohydrin Poisoning And the frequency and nature of lung involvement.

Method

This is a single center cross sectional study done at Dr. D.Y Patil Medical College, Navi Mumbai. The hospital is adjacent to Industrial area which houses multiple factories using Epichlorohydrin compound. It received multiple numbers of

patients of Epichlorohydrin poisoning of various age group From September 2020 to September 2021. All the patients had accidental direct exposure to Epichlorohydrin. 30 patients of age 18 and above with Acute Epichlorohydrin poisoning were included in the study. Symptomatology and History, ABG, chest Xray and HRCT chest findings were included in the clinical profile.

The data was retrieved from Medical Record Department. The radiological images were reviewed through the electronic PACS system by Dept of Radio-diagnosis. Data was then collected in a data sheet and a confidential code was assigned to each patient. No personal data was divulged in the data collection sheet except age and sex. All the data was treated with confidentiality.

The diagnosis of acute Epichlorohydrin poisoning was confirmed by detailed history. Distribution of responses were examined using frequencies and percentages and cross tabulation were done between various subgroups.

RESULTS

All the patients had accidental direct exposure to Epichlorohydrin. All the patients were seen within 4 hours of accidental direct exposure to Epichlorohydrin.

Men constituted 80 % (24), as there was only 6 female (20 %) of the total sample size. The mean age was 26 years.

All the patients (100 %) had accidental direct exposure to Epichlorohydrin. All the patients (100 %) presented with acute onset respiratory distress and dry cough. Burning sensation and redness and watering from eyes with watering from nose were present in all the patients (100 %). Burning sensation in the throat was present in 20 patients (66.66 %).

20 patients (66.66 %) developed ARDS. 8 patients (26.66 %) developed mild ARDS. 7 Patients (23.33 %) developed moderate ARDS. 5 patients (16.66 %) developed severe ARDS.

20 patients (66.66 %) required icu admission and the rest 10 patients (33.33 %) were admitted in general ward.

12 patients (40 %) required NIV support . 8 patients (26.66 %) required Oxygen via Face Mask.

All the patients (100 %) show heterogenous opacities in chest Xray. All the patients (100 %) show patchy areas of consolidation with Ground Glass changes in HRCT Chest. 20 patients (66.66 %) show pleural effusion in both Chest Xray and HRCT Chest. 16 patients (53.33 %) developed bilateral pleural effusion.

Table : Clinical feature and findings of the studied group

Features	No. of patients	Percentage of total study population
Respiratory distress and dry cough	30	100 %
Burning sensation, redness and watering from eyes	30	100%
Watering from nose	30	100%
Burning sensation of throat	20	66.66%
Mild ARDS	08	26.66%
Moderate ARDS	07	23.33%
Severe ARDS	05	16.66%
ICU Admission	20	66.66%
General Ward Admission	10	33.33%
NIV support	12	40%
Oxygen via Face Mask	08	26.66%
Heterogenous opacities in CXR	30	100%
Patchy areas of Consolidation and ground glass changes in HRCT	30	100%
Bilateral Pleural effusion	16	53.33%
Unilateral Pleural effusion	04	13.33%



Fig : Showing Redness and Watering from eyes and Watering from nose

CONCLUSION

ARDS of varying degree with mucosal irritation is the most common presenting feature of patients with ACUTE EPICHLOROHYDRIN POISONING. Pneumonia with HRCT chest showing Ground Glass Opacities are common.

Treatment

On admission in ER all the patients were given supplemental Oxygen support. 66.66 % patients were diagnosed to be in ARDS based on ABG report who were continued on Oxygen support, rest were kept off Oxygen support. 40% required NIV support.

Injection glycopyrrolate 0.5 mg IV was given in all the patients to reduce watering from nose and eyes and decrease the mucosal secretion.

All the patients who were diagnosed with ARDS were given Injection Hydrocortison 100 mg.

Artificial tear drops and xylometazolin nasal drops were given to all the patients. Gargling with luke warm saline water was given to all the patients.

REFERENCES