

Chemical Pneumonitis Due to Accidental Ingestion of Liquid Mosquito Repellent Vaporizer: A Case Report

Uma Maheshwari R, Thandapani Kanimozhi* and Arulkumaran Arunagirinathan

Department of Paediatrics, Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India

*Corresponding author: Thandapani Kanimozhi, Assistant Professor, Department of Paediatrics, Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India, Tel: +919952262500; E-mail: drkani88@gmail.com

Received date: February 08, 2019; Accepted date: April 05, 2019; Published date: April 12, 2019

Copyright: © 2019 Uma Maheshwari R, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Mosquito repellents are widely used as varied forms in endemic areas infested with mosquitoes. Most vaporizers contain pyrethroid compounds. Children due to their exploratory nature and their mouthing stage are prone for ingestion and poisoning. Much of the reviewed literature pertaining to pyrethroids is related to neurological manifestations. Volatile solvents usually present in commercial formulations may also enhance pyrethroid toxicity. To the best of author's knowledge, liquid mosquito repellent vaporizer (LMRV) manifesting only as respiratory illness is uncommon, with this context, we report a two-year-old toddler with an accidental ingestion of LMRV leading to chemical pneumonitis.

Keywords: Child; Poisoning; Transfluthrin; Kerosene

Introduction

Liquid Mosquito Repellent Vaporizer (LMRV) is increasingly being used in areas endemic for vector borne diseases like malaria and dengue. Most vaporisers have transfluthrin and prallethrin, pyrethroids as repellents [1]. Suicidal or accidental ingestion is less commonly encountered of the few cases reported; most common manifestations have been related to toxicity to central nervous system [2]. We report a case of 2-year-old who presented with chemical pneumonitis following accidental ingestion of LMRV.

Case Report

A 2-year-old male child was brought to emergency department with history of accidental ingestion of mosquito repellent at home. According to mother, child had consumed around 10 ml, one hour before admission. Immediately child had 2 episodes of vomiting followed by breathing difficulty.

At admission, child had a Glasgow coma score 15/15, heart rate-102 BPM, respiratory rate-48/min, blood pressure-100/60 mm of Hg and oxygen saturation at room air was 100%. ECG monitored using multipara monitor was normal. On examination of respiratory system, child had sub costal and inter costal retractions. Fine crepitations were noted on auscultation over right site of chest. Rest of the systemic examination was normal.

Child was admitted in pediatric intensive care unit and started on supportive treatment with intra venous fluids; antiemetic's and proton pump inhibitors. Gastric lavage was not done as the liquid vaporizer contained deodorised kerosene 97.12%. X-ray chest done after 6 hours showed bilateral pneumonitis (Figure 1). Hemogram done following admission showed Hb of 9.7, TLC-15500 with polymorphic predominance and platelets was 4,10,000. Liver function and renal function tests were done which was within normal range. Child developed fever after admission. But considering chemical

pneumonitis antibiotics were not started. Child improved over next 48 hours with supportive care alone and then discharged.

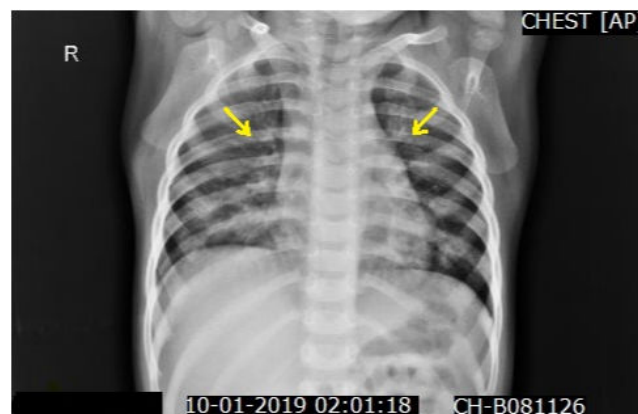


Figure 1: X-ray showing bilateral pneumonitis.

Discussion

Most LMR has pyrethroid derivatives as repellents and deodorised kerosene as vaporizer. Our patient had consumed a commercial brand with 1.6% transflutharin.

Pyrethroids are established neurotoxicants with toxic effects on Na⁺ and Cl⁻ channels. They delay the closure of Na⁺ channels and surge of Na⁺ influx leads to excitation. They also decrease Cl⁻ channel which is responsible for most neurotoxic effects of pyrethroids. At high concentrations, they act on GABA gated Cl⁻ channel causing seizures [2].

Immediately after ingestion, nausea, vomiting and abdominal pain may occur. CNS effects include dizziness, headache, fatigue, coma and

convulsions. Cardiac and pulmonary toxicity do occur but rarely encountered clinically.

Reported pulmonary symptoms include aspiration pneumonitis and pulmonary edema probably due to organic solvents [3]. The solvent used here is kerosene, which is well known to cause chemical pneumonitis. Low surface tension, low viscosity and high volatility leads to penetration of air ways and spreading over large surface area causing pneumonitis. Other systemic features include CNS effects secondary to hypoxia from lung injury and GI effects from gastric irritation. There is no specific antidote for pyrethroid toxicity, therefore management is only symptomatic and supportive [4].

Our patient immediately had vomiting from gastric irritation which probably could have led to aspiration of kerosene and chemical pneumonitis similar to a case reported by Chandelia et al. [5]. No CNS symptoms from pyrethroid toxicity occurred throughout the course of hospital stay.

Parents were advised about the need to keep potentially poisonous things out of the reach of children before discharge.

Conclusion

LMRV poisoning although unusual, but not rare with increasing use in households. Respiratory manifestations of kerosene poisoning may

be delayed and potential adverse effects may be overlooked, unless the presence of kerosene is recognized. Hence any child presenting with LMRV ingestion needs to be monitored for toxic effects of kerosene in addition to pyrethroids.

Conflicts of Interest

None.

References

1. Ramesh A, Vijayalakshmi A (2001) Monitoring of allethrin, deltamethrin, esbiothrin, prallethrin and transfluthrin in air during the use of household mosquito repellents. *J Environ Monit* 3: 191-193.
2. Bradberry SM, Cage SA, Proudfoot AT, Vale JA (2005) Poisoning due to pyrethroids: *Toxicol Rev* 24: 93-106.
3. Ray DE, Forshaw PJ (2000) Pyrethroid insecticides: poisoning syndromes, synergies, and therapy. *J Toxicol Clin Toxicol* 38: 95-101.
4. He F, Wang S, Lui L, Chen S, Zhang Z, et al. (1989) Clinical manifestations and diagnosis of acute pyrethroid poisoning. *Arch Toxicol* 63: 54-58.
5. Chandelia S, Dubey SK (2014) Mosquito Repellent Vaporizer Poisoning-is the culprit Transfluthrin or Karosene? *Indian pediatr* 51: 319.