

Complications and management of attempted suicide by intrapleural injection of prallethrin

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Abstract

We describe the unusual presentation and management of complications of intrapleural prallethrin injection in this case report. The pathologic process is distinct from the usual toxicity secondary to effect on ionic channels of the nervous system.

Keywords: Fibrinolytic agent, intrapleural injection, prallethrin

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Introduction

Prallethrin is a synthetic pyrethroid used in vaporizing mats and liquid vaporizers against mosquitoes. We report here the consequences of intentional direct instillation of prallethrin into the pleural cavity and subsequent management.

Case Report

A 27-year-old male attempted to commit suicide by injecting 5 ml of prallethrin (liquid mosquito repellent, marketed as ALLOUT) into the left third intercostal space adjacent to the sternum and was admitted within an hour through emergency room into the critical care unit.

On admission, the patient was alert, hemodynamically stable and had no respiratory distress. He had mild abdominal pain. The initial laboratory investigations, arterial blood gas analysis, and chest X-ray were normal. However, as pain continued to increase over the next 24 h, computed tomography scan of the chest and abdomen was done and found to be normal.

Forty-eight hours after admission, the patient became tachypneic and tachycardic, and there was reduced air entry in the left hemithorax. Chest X-ray revealed significant pleural effusion. Echocardiography revealed massive pleural effusion and multiple fibrotic strands with free floating ends radiating outward from the pleural wall [Figure 1]. Intercostal drainage (ICD) tube was placed and 100 ml of straw colored sterile exudative fluid was drained. Systemic steroids were given intravenously.

Considering the intensity of fibrosis, 100,000 units of urokinase was instilled intrapleurally via ICD tube on two consecutive days and 1290 ml of serosanguineous fluid drained. After a couple of days, subcutaneous swelling was noticed over the chest wall at the site of injection of prallethrin [Figure 2]. The swelling was initially firm and showed small cystic spaces on ultrasound examination.

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Figure 1: Echocardiography revealing pleural effusion and fibrotic strands

It gradually increased in size and became fluctuant. Laboratory tests revealed leucocytosis and was started on broad spectrum antibiotics. Thick pus was drained by incision of overlying skin which did not yield any organism on Gram staining or culture.

The patient made a gradual recovery and was discharged on day 12. The swelling in the chest wall recurred entailing a repeat incision and drainage. There was no reaccumulation of pleural fluid on follow-up chest X-ray.

Pyrethroids interfere with functioning of voltage-sensitive sodium channels and delay their closure.^[1] The most common complication encountered after poisoning is seizures due to the hyperexcitability of the cells in the nervous system secondary to interactions with the sodium channels.^[2] Cardiac conduction disturbance presumably due to the same mechanism has also been described.^[3] The usual route of poisoning is oral. A single instance of self-injection culminating in abscess formation at site of injection and acute respiratory distress syndrome (ARDS) has been reported.^[4]

Our case report is probably the first instance of injection of prallethrin into the pleural cavity.

The fluid had caused intense local irritation resulting in pain within a couple of hours of injection. The intense inflammatory response leading to massive pleural accumulation of exudative fluid and intense fibrosis was manifested 2 days after injection. Steroids were used to try and suppress the inflammatory response. However, fibrinolytic agents instilled intrapleurally to dissolve the fibrosis resulted in a dramatic and gratifying response.



Figure 2: Swelling in the chest wall at the site of injection of prallethrin

Steroids had no effect on the inflammatory reaction leading to abscess in the chest wall either. The use of steroids in another instance of injection also did not result in preventing abscess formation.^[4] However, in the same patient, ARDS had occurred due to systemic absorption of the injected agent. Use of steroids has reportedly helped in resolution of the ARDS leading to complete recovery. This leads us to speculate that there may be distinct mechanisms of toxicity and steroids might be useful in resolving inflammatory response.

Prallethrin probably elicits an inflammatory response in the soft tissue which ends in pus formation. Until all the prallethrin is cleared, the abscess formation probably will continue as demonstrated in this patient who required incision and drainage twice.

Conclusion

Prallethrin probably acts as a chemical irritant in soft tissue and pleural space and elicits intense inflammatory response resulting in a pyogenic process. Steroids do not seem to have much effect on arresting the pyogenic process, whereas urokinase was successful at dissolving the intrapleural fibrotic strands. As patients employ novel agents and methods in attempting suicide, treating physicians have to rise up to the challenge of navigating uncharted territory.

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Conflicts of interest

There are no conflicts of interest.

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