

CYPERMETHRIN POISONING – AN UNCOMMON SUICIDAL COMPOUND CASE REPORT

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ОТРАВЛЕНИЕ ЦИПЕРМЕТРИНОМ – ОТЧЕТ О РЕДКОМ КЛИНИЧЕСКОМ СЛУЧАЕ

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Insecticide and pesticide poisoning and ingestion are relatively common in India. Organophosphate (OP) compounds have been and still one of most common pesticide used for self harm. Introduction of various similar chemicals into the market is posing difficulties in management of patients presenting with ingestion of these chemicals to the emergency room (ER). Many times these products could have similar branding but with different chemical composition. The lack of freely available national database of these products and advice on the management in case of poisoning due to them has been a challenge which is yet to be addressed.

Learning points and objectives:

- To be aware that not all pesticides are not OP compounds.
- With newer products coming into market, we need to be read the labels carefully and make a decision regarding further management of these patients.

In the meantime we have to be cautious and aware that pesticides and insecticides have a wide chemical composition. ER physicians may have to take time and effort to get the correct chemical and review their management while attending to such cases.

Keywords: organophosphate compounds, suicide, poisoning, treatment.

Отравления инсектицидами и пестицидами относительно распространены в Индии. Фосфаторганические соединения (ФС) были и остаются одними из наиболее распространенных пестицидов, наносящих вред организму. Появление на рынке различных аналогичных химических веществ создает трудности для лечения пациентов, поступающих в отделение неотложной помощи с проглатыванием этих химических веществ. Эти продукты могут иметь схожую торговую марку, но с разным химическим составом. Отсутствие общедоступной национальной базы данных по таким продуктам и рекомендаций по реагированию в случае отравления ими было проблемой, которую еще предстоит решить.

Цели и задачи:

- Необходимо помнить, что не все пестициды являются ФС.
 - С появлением на рынке новых продуктов нам необходимо внимательно читать инструкции к подобным препаратам и принимать решение о дальнейшем лечении этих пациентов.
- Между тем, мы должны проявлять осторожность и осознавать, что пестициды и инсектициды имеют широкий спектр химического состава. Врачам скорой помощи, возможно, придется потратить время и усилия, чтобы получить нужное химическое вещество и пересмотреть назначаемое лечение, оказывая помощь в таких случаях.

Ключевые слова: фосфаторганические соединения, суицид, отравление, лечение.

Introduction

Organophosphate (OP) poisoning is one of the most common poisoning presentations to emergency departments in India. In Urban India we have seen frequent presentations with insecticide poisoning of both accidental and intentional ingestion. OP poisoning is diagnosed based on history when available, clinical presentation and the smell of OP from patient. But apart from OP there are other pesticides which have similar smell and can present with similar clinical presentations. Cypermethrin is one such compound. Cypermethrin is a class-2 Pyrethroid compound used for pesticide control. Its use has been increasing as it is relatively more toxic to pests and rodents (about 2250 times more toxic to insects than mammals).

Cypermethrin crosses the blood-brain barrier and induces neurotoxicity and motor deficits. Cypermethrin prolongs the opening of sodium channel, a major site of its action, leading to hyper-excitation of the central nervous system. In addition to sodium channel, cypermethrin modulates chloride, voltage-gated calcium and potassium channels, alters the activity of glutamate and acetylcholine receptors and adenosine triphosphatases and induces DNA damage and oxidative stress in the neuronal cells. Cypermethrin also modulates the level of neurotransmitters, including gamma-aminobutyric acid and dopamine. At high concentration pyrethroids also act on GABA-gated chloride channel which may be responsible for seizure.

Toxicity to humans due to pyrethroid can be of two types. Type I can manifest as hypersensitivity reaction, like anaphylaxis, reflex hyper excitability and fine tremors. Type II produces watery diarrhoea, coarse tremor, reflex hyper excitability, choreoathetosis, and seizure. On ingestion it produces throat and epigastric pain, nausea, vomiting, salivation, dysphagia, dizziness, headache, and fatigue. Burning or tingling sensation, numbness, paraesthesias, lacrimation, photophobia, conjunctival congestion, and bronchospasm are the other manifestations due to direct or dermal

exposure. In our case, most of the symptoms were present. Ingestion of large doses may produce neurotoxicity like, tremors, fasciculation, convulsion, coma, pulmonary edema, respiratory failure and cardiac conduction disturbances.

The toxic oral dose in mammals is greater than 100–1000 mg/kg, and the potentially lethal acute oral dose is 10–100 g.

With both the compounds being freely available over the counter, both the compounds being used for similar purposes and both of them having similar clinical presentations it is relevant and important to try and establish the cause as Treatment of both is different. Cypermethrin do not have any antidote. Their management is mainly symptomatic. They also have clearance levels hence can be expected to have faster recovery. On the other hand OP poisoning may need more aggressive management and can be given Pralidoxime as an antidote.

Learning points and objectives

To be aware that not all pesticides are not OP compounds.

With newer products coming into market, we need to be read the labels carefully and make a decision regarding further management of these patients.

Case presentation

A 36 year old female brought to Emergency Room (ER) with complaints of multiple episodes of vomiting, burning sensation in the chest and excessive salivation. Her symptoms had been progressively been getting worse. She also gave history of having consumed a bottle of pesticide – Metacid about 100 ml to kill herself about two hours before presentation. Her family became aware of this and had brought her to Emergency department for further management. She had history of previous suicidal attempts. Currently she seemed quite and hesitant to interact.

She was noted to have a heart rate of 82 beats/min, blood pressure of 120/70, respiratory rate of 16/min, temp of 98.6. Her pupils

were bilaterally 3 mm and reactive. She was noted to have increased oral secretions. Her chest was clear. Rest of examination was unremarkable.

With above history she was diagnosed to have consumed OP poison and was planned to be treated as such. In view on ongoing nausea and vomiting and smell of OP from patient, stomach was with ryle's tube was initiated. As patient was noted to have increased salivation she was also give atropine 0.6 mg bolus twice in ER. Up on further discussion with family, they had brought the container from which she had consumed the poison. The container was labeled – Metacid which is a relatively brand name for OP compound methyl parathion. But on reading fully it had mentioned under the name as Cypermethrin. This made us re-think if we are really dealing with OP compound. Patient was stable and was not having in marked features of OP poisoning and with her presenting symptoms settling, we admitted patient to ICU for further observation. We looked up on further management of cypermethrin poisoning and learnt that it was symptomatic management. She continued to stay asymptomatic for next 24 hours in ICU and did not need any further medications. She was reviewed by Psychiatry team and discharged from hospital in stable and symptom Free State.

Conclusion

It is important to go through the chemical contents of ingested substance when dealing with poisoning. The labeling, branding and familiarity may lead to bias and incorrect interpretation of ingested substance and hence can affect the treatment. Thought the presentation



Container used by patient.

with OP and cypermethrin can be similar there are some difference in their management. It is important to try and establish the compound to be able to tailor the care appropriately. This will help avoid atropinisation in cases where they are not needed and limit to symptomatic management. There are some similarities in treatment, like the use of stomach wash. We can use the time of initial treatment being administered to establish the ingested compound. Pralidoxime can be given in undifferentiated cases, as early administration of PAM has beneficial effects in OP poisoning and has not been noted to cause harm by its administration cypermethrin poisoning. It is the use of atropine which need to be monitored. Use of atropine should be stopped on confirmation of cypermethrin poisoning. Current and recent advice is to treat cypermethrin poisoning cases symptomatically.

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ЦИПЕРМЕТРИН БИЛАН ЗАҲАРЛАНИШ – КАМ УЧРАЙДИГАН КЛИНИК ҲОЛАТ БЎЙИЧА МАЪЛУМОТ

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Ҳиндистонда инсектицид ва пестицидлар билан заҳарланиш нисбатан кўп учраб туради. Фосфат-органик бирикма (ФБ)лар организмга зарар кўрсатувчи энг кўп тарқалган пестицидлардан бири бўлиб қолмоқда. Шунга ўхшаш кимёвий моддаларнинг турли хил аналогларининг сотувда пайдо бўлиши шошилишч тиббий ёрдам бўлимларига бундай моддаларни ютиб юборганлиги сабабли муурожаат қилаётган беморларни даволашда қийинчиликлар туғдирмоқда. Ушбу кимёвий воситалар бир-бирига ўхшаш савдо белгисига эга бўлгани ҳолда, кимёвий таркиби кўпинча турли хил бўлади. Бу каби моддалар бўйича барча учун очиқ бўлган маълумотлар базаси ва ушбу моддалар билан заҳарланганда қўриладиган чораларга доир тавсиялар йўқлиги муаммоси очиқлигича қолмоқда.

Мақсад ва вазифалар:

- Пестицидларнинг барчаси ҳам ФБ эмаслигини ёдда тутиш зарур.
 - Сотувда янги воситалар пайдо бўлганда уларга тегишли маълумотномаларни диққат билан ўқиб чиқиб, ушбу моддалар билан заҳарланган беморларни даволаш бўйича қарор қабул қилиш зарур.
- Шу билан бир қаторда, пестицидлар ва инсектицидлар кенг спектрдаги кимёвий таркибга эга эканлигини тушунган ҳолда, эҳтиёт чораларини ишлаб чиқишимиз зарур. Шошилишч тиббий ёрдам бўлимлари шифокорлари ушбу моддалар билан заҳарланган беморларга ёрдам кўрсатишда уларнинг кимёвий таркибини аниқлаштиришга ва буюрилган даво чораларига тегишли ўзгартиришлар киритишлари учун маълум бир вақт ва ҳаракатларни сарфлашларига тўғри келади.

Калит сўзлар: фосфаторганик бирикмалар, суицид, заҳарланиш, даволаш.

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Поступила в редакцию 02.01.2021