AN UNCOMMON SUBSTANCE OF ABUSE: PYRETHROID

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ABSTRACT

Pyrethroid, an insecticide is an uncommon substance of abuse in Asian countries. Cholinergic and sympathethic symptoms along with psychiatric symptoms in such rare substance of abuse have not yet been described. A 39-year-old Asian male with past psychiatric history of methamphetamine dependence and bipolar disorder type 1, came to the emergency department because of suicidal ideation with a plan to slash his throat. The patient was very agitated during initial assessment. In the emergency room (ER), the patient reported that he had been using methamphetamine for the last four years. His last use was six hours before coming to the ER and that was his only use during the past six to eight weeks. His affect was flat and irritable. His urinary drug screen was positive for amphetamines, methamphetamines, and cannabinoids. The patient reported that it would give him the same high as methamphetamine and he would occasionally have feelings of déjà vu. The patient also reported having olfactory hallucinations while using it. The patient had been using the insecticide for six to eight weeks and only used methamphetamine one (1) day before coming to the ER. The patient had suicidal ideations apparently precipitated by his use of pyrethroid. His statements about friends using it intravenously highlight the phenomenon of an under reported substance being abused with little or no telltale signs by people with high risk for self-harm.

KEYWORDS: Psychiatrics, Substance of abuse, Pyrethroid.
INTRODUCTION
Pyrethroid, an insecticide is an uncommon substance of abuse in Asian countries. Cholinergic and sympathetic symptoms along with psychiatric symptoms in such rare substance of abuse have not yet been described.

CASE HISTORY
A 39-year-old Asian male with past psychiatric history of methamphetamine dependence and bipolar disorder type 1, came to the emergency department because of suicidal ideation with a plan to slash his throat. The patient was very agitated during initial assessment. In the emergency room (ER), the patient reported that he had been using methamphetamine for the last four years. His last use was six hours before coming to the ER and that was his only use during the past six to eight weeks.

On physical examination, temperature was found to be 98 degree Fahrenheit, pulse 116/minute, blood pressure128/78mmHg, weight 68.0 kg, and height 177 cm. His pupils were 5mm in diameter and reactive. In the review of systems, the patient denied any pulmonary, cardiac, renal, and abdominal complaints. There was no complaining of increased tearing from eyes. Lungs were clear and the heart rate was regular without murmurs. Bowel sounds were normative. The patient was not oriented to time. His affect was flat and irritable. He was evasive and tangential while answering questions. A chest radiograph and electrocardiogram was normal. His urinary drug screen was positive for amphetamines, methamphetamines, and cannabinoids. Blood chemistry concentrations/counts/percent of the following analysis were mainly within reference limits: alcohol < 4mg/dL, salicylate <3mg/dL, sodium 145mmol/L, potassium 3.8mmol/L, chloride 108mmol/L, blood urea nitrogen 10mg/dL, serum creatinine 0.8mg/dL, aspartate transaminase 18 U/L, alkaline phosphatase 73 U/L, thyroid stimulating hormone 0.57 µIU/mL, white blood cells 10.6 K/uL, red blood cells 4.49 Mu/L, haemoglobin 13.9 g/dL, hematocrit 41.2%, and platelets 239 K/uL. Urinalysis revealed nothing abnormal.

The patient was transferred to the inpatient psychiatry unit. The next day, the patient was disoriented, refused to talk to the treatment team, and slept most of the day. On his fourth hospital day, the patient was much more oriented and reported that he was unable to get methamphetamine for the past six to eight weeks because he could not afford it. The patient would use the crystals formed from one bottle for four to seven days. He claimed that his friends used those crystals intravenously after diluting them. The patient reported that it
would give him the same high as methamphetamine and he would occasionally have feelings of déjà vu. The patient also reported having olfactory hallucinations while using it. He said that he liked the increase in heart rate and the “rush” he used to get after every use. The patient reported that he would sleep most of the day when he was using it. He denied unwanted adverse effects during his use except for frequent headaches upon waking up which were relieved by over-the-counter analgesics. The patient had been using the insecticide for six to eight weeks and only used methamphetamine one (1) day before coming to the ER. The patient claimed that he had been compliant with his medications for bipolar disorder until he started using it. The patient was taking divalproex sodium 400mg twice daily and quetiapine extended-release 300 mg at bedtime. He voiced that he, since a few weeks before coming to the ER, got scared that he might get cancer because of the frequent use of the insecticide which led him to have suicidal ideation. Despite the reported use for six to eight weeks, the patient had no significant physical findings associated with pyrethroid abuse when he presented to the ER. The patient had suicidal ideations apparently precipitated by his use of pyrethroid. His statements about friends using it intravenously highlight the phenomenon of an under reported substance being abused with little or no telltale signs by people with high risk for self-harm.

DISCUSSION

Pyrethroid cause hyper-excitation by affecting sodium channels which are kept open for unusually long periods of time. Animal studies of pyrethroid toxicity have shown hyperglycaemia and elevated plasma levels of noradrenaline and adrenaline. These may account for the “rush” the patient experienced with use of it. Ingestion and parenteral injection of pyrethroid in suicide attempts, occupational exposure, and accidents are well documented and have resulted in poisoning syndromes with characteristic sympathetic activation, lacrimation, hyperexcitability, choreoathetosis, and status epileptics. Reports of association of pyrethroid with parenteral drug abuse are fairly sparse. These have shown adverse effects like local erythematic, cellulites, and vasculitis. These reported cases had the pyrethroid injected either subcutaneously(popping) or intravenously usually resulting in local effects that could be noted immediately on examination. There was also association with suicidal history or ideation. Communication via phone with the National Pesticide Information Center (NPIC) was made. NPIC stated that they had no official documented cases processing pyrethroid to produce effects similar to methamphetamine or case reports of the use of pyrethroid as a recreational substance.
There are certain limitations to this report. The anamnesis was taken from a person suffering from substance abuse and bipolar disorder, the latter being untreated for the last six to eight weeks, making his credibility questionable. However, our longstanding knowledge of patients with this kind of problems in this area suggests that this patient’s report should not be dismissed without careful consideration. However, our longstanding knowledge of patients with this kind of problems in this area suggests that the suicidal thoughts emerging in the patient may also not be a result of the use of pyrethroid only, as the patient’s untreated bipolar disorder may have made him more prone to such ideation. This case report is interesting in the fact that the pyrethroid was “processed” so that it could be smoked or inhaled to get a feeling of “rush.”

**CONCLUSION**

Pyrethroid, an uncommon substance of abuse should be suspected in agricultural and developing countries in case of poisoning cases. Patient with mixed sympathetic and cholinergic symptoms with psychiatric symptoms should be suspected for multi substance abuse. It is important for physicians to maintain a high level of suspicion for alternate and uncommon substances of abuse and suicidal ideation among people who abuse these substances.

**FOOTNOTES**

Source of support: Nil

Conflict of interest: None declared.

**REFERENCES**

