



Functional medicine

Acetochlor poisoning presenting as acute genital edema: A case report

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Introduction

The etiology of acute scrotal edema can vary from a benign process such as post-trauma hydrocele, allergy, hypoproteinemia, appendicular torsion, or epididymo-orchitis to an emergent process such as an incarcerated inguinal hernia, testicular torsion, or rupture. Rarely, unexplained penile or scrotal swelling occurs as a chemical contact. Here, we reported a case of acetochlor contact presenting as acute genital edema of initial symptom.

Case report

A 41-year-old febrile man presented to the our department with a 1-day history of acute genital swelling. He was an agricultural worker and lived in countryside area. His symptoms began 24 hours prior when he noticed that his penis and scrotum began to swell. During the next 24 hours, his private skin developed progressive enlarging. He admitted that he had ten years of alcohol consumption without history of drug allergy or infectious diseases contact, and denied chronic liver, kidney, heart or mental diseases or recent travel history. He reported no dyspnea, cough, night sweats, nausea, vomiting, abdominal pain, diarrhea except slightly abdominal distension. He had no previous history of inguinal hernia or hydrocele.

On examination, the patient showed acute face with axillary temperature 38.6 °C, a BP of 120/70 mm Hg, a HR of 92 beats/min and a RR of 15 breaths/min. Genital examination showed severe penile and scrotal edema with localized epidermal exfoliation and necrosis (Fig. 1). Scrotal ultrasonography confirmed scrotal subcutaneous edema without hydrocele of tunica vaginalis (Fig. 2). Laboratory value include WBC 7460/mm³ with 92% neutrophils and 0% basophils, RBC 3.9 × 10⁶/mm³, blood platelet 93,000/mm³, sodium 128.8mEq/L, potassium 3.33 mEq/L, calcium 1.97mEq/L, chloride 95.5 mEq/L, CO₂CP 17.8 mEq/L, AST 112.1U/L, r-GGT 727 U/L, TP 63.6g/L, ALB 36.4g/L, TBIL 66.8umol/L(6.8–30), DBIL 37umol/L(0–8.6), IBI-L29.8umol/L(5.1–21.4), TT 0.5s(11–17.8), APTT 41.6s(20–40), PT 16.6s(9–13), INR 1.41(0.8–1.2), FBG 6.10g/L(2–4). The patient was transferred to emergency department, and given intravenous fluids to correct electrolyte imbalance and acidosis and given some supportive therapy including hepatic protectants, antioxidants and diuretics.

Empiric broad-spectrum antibiotics was also used to prevent potential infection. What caused these anomalies confused our clinicians.

In the second day subsequent to his hospitalization, the patient reported to us an episode that he urinated twice and drank 200ml alcohol after sprayed a kind of herbicides without gloves, which contains acetochlor, onto his courtyard. It did not catch his attention as he used this kind of herbicide every year. This detail made us realized that the patient was intoxicated by acetochlor via skin absorption. After 2-weeks supportive treatment, the laboratory tests gradually returned to normal, and the penile and scrotal swelling and pain gradually improved. During one-month follow-up, scrotal swelling disappeared and no obvious abnormalities were found.

Discussion

Acetochlor [CAS no. 34256-82-1; IUPAC name 2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide] is a common, pre-emergence chloroacetanilide herbicide, which is widely used both in China and elsewhere for the control of most annual grasses and certain broad leaf weeds.¹ In recent years, with the prohibition of toxic pesticides, such as paraquat, acetochlor is favored by more and more agricultural workers. Consequently, the related poisoning events are increasing gradually. Acetochlor use was reported to be associated with increased risk of lung cancer, colorectal cancer, pancreatic cancer, and melanoma.² The pure herbicide acetochlor is light yellow liquid, stable in nature, not easy to volatilize and photolysis, not soluble in water but in organic solvents. Its metabolites can cause methemoglobin, comprising oxygen-carrying capacity of hemoglobin. Furthermore, it could lead to heart, brain, liver and kidney failure as well as respiratory depression, limb convulsion and even death.³ Sun et al.⁴ reported a case of myocardial injury induced by acetochlor oral ingestion. The most recorded victims were intoxicated through oral passage. However, the poisoning incidents absorbed by the skin were rarely reported. Dong H presented a man developed erythema multiforme-like contact dermatitis after acetochlor skin contact, but no symptoms of skin edema were found.⁵

The most striking features of our patient's presentation were penile and scrotal edema with localized epidermal exfoliation and necrosis. We analyzed the cause of poisoning in this case may be due to

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Fig. 1. Marked penile and scrotal edema with localized epidermal exfoliation and necrosis was noted.

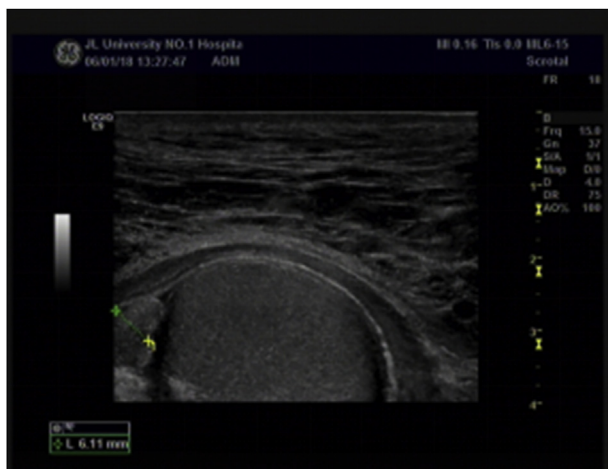


Fig. 2. Scrotal ultrasound revealing subcutaneous edema without hydrocele.

acetochlor skin absorption. The patient had consumed 200ml alcohol, which resulted in dilatation of the scrotal vessels leading to acetochlor permeating into cutaneous. In addition, the high temperature in summer promoted the absorption of acetochlor through the skin and increased its permeability. The skin is less compact in the penis than extremities. As a result, severe penile and scrotal edema developed. After the toxin was absorbed with alcohol into the blood, it is combined with hemoglobin, damaging the red blood cells and platelets, compromising blood coagulation and liver function. Meanwhile, the patient has

ten years of alcohol consumption, which might deteriorate his liver detoxification function. Due to minimal skin absorption, there was no obvious gastrointestinal symptoms.

Conclusion

We present a case of atypical acetochlor poisoning, which has been never reported. Acute penile and scrotal swelling is very common in urologic clinic, but herbicide poisoning is rarely considered unless the patients elicit contact history. So, it is important to remember that scrotal subcutaneous edema can be the initial manifestation of some kind of herbicide.

Abbreviations

WBC	white blood cell
RBC	red blood cell
ALB	albumin
ALT	alanine aminotransferase
AST	aspartate aminotransferase
CO ₂ CP	carbondioxide combining power
DBIL	direct bilirubin
TP	total protein
TBIL	total bilirubin
TT	thrombin time
APTT	activated partial thromboplastin time
INR	International Normalized Ratio
FBG	fibrinogen

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.eucr.2018.10.014>.

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