

## Case report:

# TOXIC EFFECT OF XANTHIUM STRUMARIUM AS AN HERBAL MEDICINE PREPARATION

Hossein Saidi, Mani Mofidi\*

\* Corresponding author: Department of Emergency Medicine, Hazrat Rasool Hospital, Iran University of Medical Sciences and Health Services, Tehran, Iran, Tel: +98-21-66515001, FAX: +98-21-66525327, e-mail: [mofidim@iums.ac.ir](mailto:mofidim@iums.ac.ir)

## ABSTRACT

We describe the intoxication resulting from exposure of a previously healthy young woman to *Xanthium Strumarium* (Astraceae family) as an herbal preparation. The patient developed hepatic injury, symptomatic hypoglycemia and seizure 7 days after drinking of decocting preparation of the plant. It is different from previous reported cases because of neuropsychiatric and gradual onset of symptoms.

**Keywords:** *Xanthium Strumarium*, hepatic injury, intoxication

## CASE REPORT

A 25-year-old woman was referred to our emergency department because of altered mental status and an episode of tonic colonic seizure. She had 4 days period of anxiety, depression and muscular twitching. She lived in a village with her husband and had no serious past medical history. On admission, her vital signs were normal except tachycardia (102/min). She was responsive only to pain stimuli. Initial bedside rapid glucose concentration was 40 mg/dL, thus she received 50 gm IV D50W. Reevaluation revealed clear improvement in her level of consciousness. In first laboratory data (Table 1) she had hypoglycemia, prolonged coagulation profiles, elevated liver and kidney enzymes. Abdominal sonography showed hepatomegally, diffuse hyper-echoic changes in liver and mild ascites, gall bladder was distended and edematous without any stone. Axial Brain CT scan and EEG were unremarkable. After three hours of conservative treatment by IV Dextrose, she was completely conscious and could be able to answer the questions of interviewers. She told

that she is very interested in having child and her medical follow up could not solve her childlessness problem, so she clung to herbal medicine and an herbal medicine expert had suggested drinking an herbal compound. It consisted of leaves, stalk and seeds of an unknown plant. She had to drink a cup of the prepared liquid after decocting in water once a day (each aliquot has a dry weight about 30-40 gm) and her symptoms began 3 days after that. Her husband brought the plant to our hospital. By searching about poisonous plants of Iran and their effects, it was shown that the plant has scientific name: "*Xanthium Strumarium*" (Figure 1). She was asymptomatic during hospital course. There was no microorganism growth in blood and urine culture. The patient discharged on 7th day of admission. Her liver enzymes became normal within 3 months. She never used the plant again. She is still living in a small village and adopted a beautiful boy as one's own child.

**Table 1:** Lab test results

Lab test	Result	Normal ranges
Blood Sugar	40	70 - 115 mg/dL
BUN	89	5 - 23 mg/dL
Cr	6	0.5 - 1.5 mg/dL
Total Bilirubin	7	0.2 - 1.2 mg/dL
Direct Bilirubin	1	0 - 0.4 mg/dL
Uric acid	6.5	2.3 - 6.1 mg/dL
Na	135	136 - 145 mg/dL
K	5	3.7 - 5.5 mg/dL
Ca	8	8.6 - 10.6 mg/dL
ALT	400	5 - 40 IU/L
AST	850	5 - 40 IU/L
PT	16.9	13.5 sec
PTT	40	30 - 45 sec
INR	1.5	1
Fecal guaiac test	Negative	-



**Fig. 1:** Xanthium Strumarium

## DISCUSSION

According to previous studies, the liver injury from herbal preparation has been ranged from mild elevations of liver enzymes to fulminant hepatic failure requiring liver transplantation. Regulation by the Food and Drug Administration is one of the most important parts of the solution, but physicians' knowledge about the potential adverse effects of herbal remedies should be increased (Pak et al., 2004).

Xanthium Strumarium (Cocklebur) is a genus of flowering plants in the family Asteraceae, native to the Americas, Eastern Asia, South Africa and Australia. It is coarse, herbaceous annual plant growing to 50-120 cm tall, which invades agricultural lands (Luciani et al., 1971). Its seedlings and seeds contain the glycoside carboxyatractyloside and can be poisonous to animals, including cattle, horses and pigs. Carboxyatractyloside poisoning causes multiple organ dysfunctions and can be fatal. Coagulation abnormalities, hyponatraemia, marked hypoglycaemia, hepatic and renal failure are signs of a poor prognosis. There is no antidote for it and supportive therapy is the mainstay of treatment (Martin et al., 1986). The plant also has been used for medicinal properties for Cancer (Turgut et al., 2005), tuberculosis, wounds, headache, malaria, rheumatism (Fouche et al., 2008) and antibacterial activity against *Staphylococcus aureus* species (Gautam et al., 2007). The mature plant is reported as non-toxic; although toxicity has been reported in cattle which had ingested mature plants with burs despite the general belief that ingestion of burs should be limited by mechanical injury during mastication. There are a few case reports about Xanthium Strumarium poisoning in humans. Those patients presented with acute onset abdominal pain, nausea and vomiting, drowsiness, palpitations, sweating and dyspnea. Some of them developed convulsions followed by loss of consciousness and death (Yokoe et al., 2008). Also the allergenic components presented in whole pollen extract of Xanthium Strumarium caus-

ing contact dermatitis especially in atopic patients (Witie et al., 1990; Mondal et al., 1998; Menz and Winkelmann, 1987). Our case showed multi organ failure (raised liver enzymes, elevated BUN and creatinine levels and coagulopathy) and an episode of seizure (due to hypoglycemia) that were similar to previous cases (Jaggi and Gangal, 1987), but in literature review we didn't find any case with anxiety, depressing mood and muscular twitching due to Xanthium Strumarium poisoning. Also reported cases had sudden onset of symptoms unlike our case that had gradual onset.

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