

Anticholinergic effects of Taraxacum Genus Dandelion Grass consumption: A case report

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ABSTRACT

Objective: The traditional use of plants and plant-derived products as alternatives to synthetic medicinal and chemical drugs is a well-established practice, and dandelion is commonly used as a herbal remedy. However, it's important to note that the side effects of dandelion can vary depending on the person. In this particular case, a 55-year-old male patient presented with anticholinergic symptoms after consuming dandelion.

Case Presentation: A 55-year-old male was admitted to the emergency room with altered consciousness. While his vital signs were normal, except for a heart rate of 110 beats per minute and a high glucose level of 280 mg/dL, he exhibited confusion and mydriatic pupils. Although his muscle and tendon examinations were normal, tongue fasciculations were observed, indicating anticholinergic symptoms. The patient's symptoms were monitored for 18 hours until they subsided, and he was discharged after a full recovery.

Conclusion: Dandelion grass has potential therapeutic benefits, but its side effects may vary depending on dosage and application. Patients should inform their healthcare providers and only use products from reputable sources to avoid potential interactions or adverse effects.

Keywords: adverse effect, anticholinergic, dandelion, herbal medicine, nutrition

INTRODUCTION

The use of plants and plant-derived products for medicinal purposes has a long history and has been a popular alternative to synthetic drugs. Dandelion, a perennial herb, has been traditionally used for treating various conditions, including indigestion, heartburn, spleen and liver disorders, diabetes, hepatitis, and anorexia (1-3). However, the evidence supporting the effectiveness of dandelion is primarily based on empirical knowledge, and herbal medicines' safety and side effect profiles can vary from person to person due to difficulties in achieving standardized dosages. In this case report, we present a 55-year-old male patient who consumed dandelion to manage his diabetes and presented with anticholinergic symptoms in our emergency department (ED).

CASE

A 55-year-old male patient with a known history of type 2 diabetes (DM) was brought to the ED by his relatives due to incoherent and illogical speech. According to information provided by the patient's family members, the patient had consumed a large amount of raw dandelion leaves and stem parts of the plant three hours prior to seeking medical attention. The patient, who had no history of using any suspicious substance or plant other than dandelion, was brought to our ED by his family due to muscle twitching and altered consciousness.

At the physical examination, the patient's vital signs were: blood pressure 110/70 mmHg, pulse 110/min, temperature 36.5 degrees Celsius, respiratory rate 10 breaths per minute, SpO2 98, and glucose 280 mg/dl. The patient's consciousness was confused during his neurological examination; his place and person orientations were normal, but he was disoriented in regards to time. He provided late, irrelevant, and absurd responses to the questions posed. The movements and strength of the upper and lower extremities revealed no signs of pathology. The bilateral pupils of the patient were mydriatic, and the light reflex was negative.

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The patient's tendon and muscle examinations were normal, but tongue fasciculations were detected. There was no indication of agitation or delirium in the patient. As a result of the skin observation, there was a facial flushing. The electrocardiogram (ECG) of the patient revealed sinus tachycardia. The patient, whose laboratory results were within normal parameters, was placed under observation. The patient's laboratory results on admission to the ED are summarized in **Table 1**.

Table 1. The patients' laboratory values at the ED admission time

Laboratory tests	Value	Reference range
Hemogram		
Hemoglobin (Hb)	13,7	11-15 g/dL
White Blood cell (WBC)	7,57	4-10 10^3 /uL
Platelet (Plt) 10^3 /mcL	300	150-450 10^3 /mcL
Biochemical parameters		
Glucose	280	74-106 mg/dl
Urea	33	17-49 mg/dl
Creatinine	0,68	0,5-0,9 mg/dl
Aspartate aminotransferase (AST)	17	5-32 U/L
Alanine aminotransferase (ALT)	10	5-33 U/L
Albumin	39	35-52 g/L
Lactate dehydrogenase (LDH)	230	140-280 U/L
Creatine Kinase (CK)	105	55-170 U/L
Troponin T	12	0-14 ng/L
Sodium (Na)	137	135-145 mmol/L
Potassium (K)	4,8	3,5-5,5 mmol/L
Chloride (Cl)	98	95-110 mmol/L
C-reactive protein (CRP)	5,9	0-5 mg/dl
Prothrombin time (Pt)	8,93	8,40-10,5 sec
INR	0,98	0,93-1,15
pH	7,42	7,35-7,45
Bicarbonate	24	22-26 mmol/L
Blood Alcohol Concentration	0,2	0-50 mg/dl

A call was made to the National Poison Information Center (114), and the patient was registered. The patient's clinical symptoms closely monitored for 18 hours while he was in the ED with the suggestion of the Poison Information Center. Appropriate fluid therapy was provided to hydrate the patient while vital signs were monitored.

Since the patient's symptoms were mild, an antidote such as physostigmine was not needed. In addition to the anticholinergic findings, the patient also experienced frequent urination and an increase in urine volume during his follow-up at the ED. After 18 hours, the patient's symptoms completely subsided, and he was discharged with a full recovery.

DISCUSSION

Taraxacum officinale, commonly known as dandelion, is a perennial herb belonging to the Asteraceae, Cichorioideae, and Lactuceae families (3). It can be found in gardens, fields, and wastelands throughout Europe, Asia, and North America. The flowers and seeds of the dandelion are depicted in Figures 1A and 1B, respectively. The plant's roots, stems, and leaves have been used in traditional and complementary medicine for medicinal purposes. While *Taraxacum officinale* is believed to have several therapeutic effects, including antioxidant, hepatoprotective, and anticancer activities (4–6), the literature on its adverse effects is limited. Our patient's anticholinergic findings, including confusion of consciousness, muscle and tongue fasciculations, flushing of the skin, tachycardia, and mydriasis, have not been previously reported in the medical literature.

Dandelion has a long history of use as a diuretic in traditional medicine, which has been scientifically validated by studies on humans (7). Frequent urination was an expected side effect in our patient. While many plants with anticholinergic properties have been described, dandelion's anticholinergic effects have not yet been documented. Anticholinergic syndrome can cause central effects, such as agitation, confusion, hallucinations, seizures, and coma, and peripheral effects, such as mydriasis, dry skin, flushing, urinary retention, decreased bowel sounds, tachycardia, hypertension, or hypotension (8). As a treatment for anticholinergic syndrome, supportive care is indicated in cases of mild toxicity. For substantial delirium and agitation caused by antimuscarinic drugs, physostigmine is recommended as an antidote (9). As our patient's hemodynamics were stable, and his complaints were mild, only supportive care was administered.



Figure 1: In Figure 1A, the arrow shows a cluster of dandelion flowers, while in Figure 1B, the arrow shows a cluster of dandelion seeds. <https://en.wikipedia.org/wiki/Taraxacum> [accessed February 1, 2023]

CONCLUSION

Because of its antioxidant, anti-inflammatory, anticancer, and hepatoprotective properties, dandelion grass is one of the plants used in traditional medicine for the treatment of a variety of diseases and the subject of research in this area. But, it is important to note that while dandelion has potential therapeutic benefits, its side effect profiles may vary from person to person based on dosage and application. So, the use of herbal remedies should always be approached with caution and under the guidance of a healthcare professional. Patients should inform their healthcare providers about any herbal or alternative therapies they are using to avoid potential interactions or adverse effects. Additionally, the quality and purity of herbal products can vary, and patients should only use products from reputable sources. In light of this case, herbalists, botanists, and practitioners of traditional medicine need to be aware of the potential anticholinergic side effects of dandelion.

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