

Irritant contact dermatitis caused by *Ranunculus kotschy* Boiss in 6 cases

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doi:10.1111/j.1600-0536.2010.01842.x

Key words: phytodermatitis; contact; Ranunculaceae; *Ranunculus kotschy* Bois.

Phytodermatitis is the development of an acute inflammatory reaction as a result of contact with a plant that causes skin damage. *Ranunculus kotschy* Boiss is a plant of the Ranunculaceae family; it contains ranunculin and cause phytodermatitis (1). The skin irritation characteristics of the Ranunculaceae family derive from glycosides with the ranunculin structure (2, 3).

It is a traditional treatment for joint pain in the Van region, where this plant is crushed and placed over painful areas.

Case 1

A 65-year-old male with a past medical history of chronic knee pain for 3–4 years presented with redness, pain, burning and blister formation on the right leg after 2 hr of application of a crushed plant over the painful region of his knee and leg. The patient had had no similar contact with this plant before. On dermatological examination, there were ulcers located between the right ankle and knee, extending to the posterior aspect of the



Fig. 1. Phytodermatitis lesion covering the anterior aspect of the right leg.

leg, and characterized by a sharp and irregular margin, erythematous ground, serous leakage and serohaemorrhagic crusts, and a maximum diameter of 3–4 cm (Fig. 1). Laboratory investigations revealed a white cell count of $14\,000/\text{mm}^3$ (normal range: $4.3\text{--}10.8 \times 10^3/\text{mm}^3$) and an erythrocyte sedimentation rate of 76 mm/hr (normal range: 1–20 mm/hr); other test results and radiographic findings were normal.

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Conflicts of interest: The authors have declared no conflicts.

Table 1. Summary of cases 2–6

Patients	Age/sex	Location	Duration of contact	Clinical features	Treatment
Case 2	73/M	Right knee	6 hr	Pain, burning sensation, redness, blisters, and erosive plaque	Wet dressing with eau de borique, diflucortolone valerate + chloroquinadol ointment, cetirizine and naproxen sodium tablets
Case 3	50/F	Both thighs and legs	2 hr	Pain, burning sensation, redness, vesicles, blisters, and erosive areas	Wet dressing with eau de borique, sodium fucidate cream, prednisolone (30 mg/day), cetirizine and naproxen sodium tablets
Case 4	51/F	Right knee	2 hr	Severe pain, burning sensation, redness, vesicles, blisters, crusts, and ulcerated and erosive plaques	Wet dressing with eau de borique, rivanol ointment, diflucortolone valerate + chlorquinadol cream, prednisolone (40 mg/day)
Case 5	66/F	Right knee	10 min	Severe pain, burning sensation, redness, vesicles, and blisters	Wet dressing with eau de gouillard, diflucortolone valerate + chloroquinadol ointment, desloratadine and naproxen sodium tablets
Case 6	43/F	Right foot and leg	1 hr	Severe pain and burning sensation, and eight or nine bullous lesions with serous leakage on the erythematous background	Wet dressing with eau de borique, diflucortolone valerate + chlorquinadol cream, cetirizine and naproxen tablets, prednisolone (40 mg/day).

**Fig. 2.** Erythematous plaque with a sharp margin over the knee.

Systemic clarithromycin, 500-mg tablet, and naproxen, 500-mg tablet twice daily, were initiated; topical wet dressings with eau de borique solution and prednisolone + iodochlorhydroxyquin pomade were applied daily. The crusts over the ulcers were covered with white ointment at night. Contractubex® (A.C.R. Angelini F. Roma, Italy) gel was applied to keloid scars observed during the recovery phase. The lesion healed within 1 week, and the patient was discharged after 3 weeks of treatment and given betamethasone + clioquinol cream and Contractubex® gel for the plaque, in which there were localized atrophic and hypertrophic scars.

Cases 2–6

Case reports of other patients are summarized in Table 1 (Figs 2–4). Laboratory test results were unremarkable.

**Fig. 3.** Several intact bullous lesions with erythematous background on the right foot and the dorsal aspect of the leg.

Clinical findings improved nearly completely or partially in 1–3 weeks. All patients were asked to bring the plant samples that they had used. These samples were analysed in YYU Department of Biology, Division of Botany. The analyses revealed that the plant was *R. kotschy* Boiss (Fig. 4).

Discussion

Members of the Ranunculaceae family are herbaceous plants; there are approximately 1900 species, and the plants have a lifespan of one or more years. Many of them are found in wet environments (4). Some members of the Ranunculaceae have irritant features caused by ranunculin. *Helleborus*, *Anemone*, *Clematis*, *Ranunculus*, *Ceratocephalus* and *Myosurus* species also contain ranunculin (2). Ranunculin exerts its



Fig. 4. *Ranunculus kotschy* Boiss.

toxic effects by inhibiting DNA polymerase, resulting in free oxygen radicals (5). This effect of ranunculin is explained by protoanemonin. Ranunculin is converted into protoanemonin as a result of enzymatic action in a recently damaged plant. Protoanemonin is a fat that is volatile and highly irritant. Protoanemonin levels

vary according to species and maturity of the plant, and the highest levels are found when the plant flowers (4). Protoanemonin is polymerised rapidly and transformed into a harmless substance, anemonine. If it is taken in high amounts systemically, it can cause burning in the mouth and throat, hypersalivation, vomiting, abdominal cramps, diarrhoea, and neurological symptoms (1, 6).

When protoanemonin comes into contact with the skin and mucous membranes, it causes irritation and subsequent blister formation (1, 2). Many people use plants from the Ranunculaceae family in traditional treatments, including drainage of abscesses, and the treatment of blisters, haemorrhoids, burns, cuts, and abrasions. It is used as herbal therapy for the treatment of muscle pains, common colds, and other diseases (2, 3).

In summary, *R. kotschy* Boiss is a member of the Ranunculaceae family and causes phytodermatitis. It is a terrestrial and herbaceous plant, and grows in meadows, in forests, and on rocky hillsides. It grows in north-east, east and central Anatolia. It lives at altitudes of 1300–2400 m (1). These are the first reported cases of phytodermatitis caused by *R. kotschy* Boiss.

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