

## CASE REPORT

# Phytophotodermatitis in grounds operatives

Philip Wynn and Stephen Bell

**Abstract** Occupational dermatoses account for a significant proportion of work-related morbidity. Phytophotodermatitis is an unusual work-related dermatosis, but should be considered in the differential diagnosis of such conditions. An outbreak of 'strimmer rash' is described in three grounds operatives. The identification, aetiology and management of the condition are discussed.

**Key words** Dermatitis; occupational; phytophotodermatitis; strimmer rash.

## Introduction

Exposure to plants can cause a number of occupational diseases. Irritant contact dermatitis can arise from skin trauma, such as from handling barbed stemmed plants or chemical irritation, such as contact with capsaicin from peppers. Allergic contact dermatitis can cause an immediate (type I) urticarial rash of latex sensitization, or delayed contact dermatitis (type IV) of poison ivy sensitization. A more unusual manifestation of occupational skin disease is phytophotodermatitis (PPD), a photosensitive dermal reaction that requires simultaneous exposure to specific chemical agents and sunlight, leading to erythema and vesiculation [1–3]. This dermatosis can be confused with more common forms of occupationally related skin disorders such as dermatitis and, although unusual, the condition should be familiar to occupational health professionals in order to ensure appropriate management. This case study reports an outbreak of PPD in a group of groundsmen using string trimmer grounds maintenance equipment. This appearance has been previously described in a small number of reports in the dermatology literature as 'strimmer rash' or 'weed whacker' dermatitis.

## Case study

Two male grounds operatives, aged 28 and 44, presented to the health and safety officer on the same day with a rash on the arms. A further employee went on holiday the same day but reported, on his return 2 weeks later that he had developed a similar rash on the same day as his colleagues. The rash had arisen 24 h after all the three

men had undertaken grass-cutting duties on the verge of a major road. Each employee undertook the same tasks involving the use of a petrol driven string trimmer attached to the chest by a harness. The machine was manoeuvred by a curved bar held in front of the abdomen, similar in posture to a horizontal steering wheel. This machinery is used to cut grass and weeds close to obstacles such as crash barriers and road signs not accessible by the 'ride-on' mowing equipment. The use of this equipment results in a spray of sap from cut vegetation. During these operations each employee wore full-length trousers, short sleeve shirt, gloves and face visor. These duties were undertaken for the full 8 h shift.

The two employees presenting to the health and safety officer had developed a symmetrical vesicular rash on the flexor surfaces of both arms, sparing areas covered by shirtsleeves and gloves. In two employees, the rash was described as non-pruritic and cleared completely after 4 weeks. No medical attention was sought. The third employee developed a more extensive rash (Figure 1) with erythema between vesicles. The rash persisted for 4 weeks and, 6 weeks later, was noted to have left some small hyperpigmented areas. This employee described the rash as pruritic and was treated by his general practitioner with oral antihistamines and a weak topical steroid cream.

None of the employees had a history of previous dermatological problems or were taking regular medication. One had a history of hay fever. In total, the employees had 40 years of experience in undertaking the same or similar work duties with no previous episode of skin rash.

A workplace visit was undertaken and the presence of weeds from the Umbelliferae species (hogweed) was noted (Figure 2). The day preceding the development of the rash was a hot and sunny summer day in June.

Affected staff returned to their normal duties within days of the resolution of the rash, without further rash developing.

Durham County Council, County Hall, Durham DH1 5UG, UK.

Correspondence to: Philip Wynn, Senior Occupational Health Physician, Durham County Council, County Hall, Durham DH1 5UG, UK.  
Tel: +44 191 383 3368; fax: +44 191 383 4069;  
e-mail: philip.wynn@durham.gov.uk



**Figure 1.** Vesiculation of the forearm 4 days post exposure.

## Discussion

PPD is a cutaneous eruption occurring after exposure to photosensitizing compounds in certain plants and subsequent exposure to sunlight (principally long wave UV-A; 320–400 nm). Sunlight exposure leads to chemical changes in the photosensitizing compound resulting in oxygen radical formation and consequent cellular damage. Exposure to photosensitizing agents can be via ingestion or, more commonly, topical. For topical exposures the rash only arises in areas of both photosensitizing compound and sun exposure, usually with a sharp demarcation with adjacent covered skin [1–4].

Relatively common causes of PPD include exposure to furocoumarins (psoralens), which are natural fungicides and are also used therapeutically in the treatment of psoriasis. Exposure to the juice of Umbelliferae, Ranunculaceae, Moraceae and Rutaceae (bergamot, orange, lemon) plant species are recognized hazards. The Umbelliferae species include celery, parsnip and carrots,

as well as weeds common in the UK, including cow parsnip (*Heracleum sphondylium*), giant hogweed (*Heracleum mantegazzianum*), Bishop's weed (*Ammi majus*) and cow parsley (*Anthriscus sylvestris*). Occupationally related reports of the condition include soldiers on exercise, farm workers, gardeners, vegetable processors/canners, bartenders and florists [5–9].

The history provided by the workers in this case study is typical of PPD, being erythema of sun-exposed areas (typically face, neck and hands) arising 24–48 h after exposure with subsequent development of a vesiculo-bullous rash. The eruption is linear in distribution if the patient has 'brushed' against the offending plant. Long-term hyperpigmentation is a recognized sequelae. Pruritis is described by some authors as a relatively unusual feature and, however, may indicate an allergic phytodermatitis. This symptom in one employee may be a feature of the relative severity of the skin rash, however he remains under surveillance for any future symptoms that may suggest the need to exclude a type IV allergic contact dermatitis.

A number of medications can also cause photosensitization and should be excluded by the clinical history, including tetracycline, minocycline, doxycycline, chlorpromazine, chlorothiazide diuretics, sulphonamides, nalidixic acid, griseofulvin and sulfonylureas. Endogenous light disorders such as porphyria and collagen vascular disorders should also be considered in individual cases of suspected PPD.

Following this episode of PPD staff undertaking ground duties with the strimmer received instruction on the features of PPD, causative plants, and the use and availability of cotton cuffs to cover the skin from the cuff to upper arm.



**Figure 2.** Hogweed found adjacent to site of strimming operations.

## References

1. Solis RR, Dotson DA, Trizna T. Phytophotodermatitis: a sometimes difficult diagnosis. *Arch Fam Med* 2000;**9**: 1195–1196.
2. Rycroft R. Occupational disease of the skin (ed. Baxter PJ, *et al.*), *Hunter's Diseases of Occupations*, 9th edn. London: Arnold London, 2000.
3. Juckett G. Plant dermatitis. Possible culprits go far beyond poison ivy. *Postgrad Med* 1996;**100**:159–163.
4. Shepherd S. Plant poisoning—Phytotoxins. [www.emedicine.com](http://www.emedicine.com).
5. English J. *Colour Handbook of Occupational Dermatology*. London: Manson Publishing, 1998.
6. Maso MJ, *et al.* Celery phytophotodermatitis in a chef. *Arch Dermatol* 1991;**127**:912–913.
7. Seligman PJ, *et al.* Pytophotodermatitis from celery among grocery store workers. *Arch Dermatol* 1987;**123**: 1478–1482.
8. Berkley SF, *et al.* Dermatitis in grocery workers associated with high natural concentrations of furanocoumarins in celery. *Ann Intern Med* 1996;**105**:351–355.
9. Finkelstein E, *et al.* An outbreak of phytophotodermatitis due to celery. *Int J Dermatol* 1994;**33**:116–118.