The oak processionary moth: a new health hazard?

INTRODUCTION
Although a native of southern Europe, the thermophilic oak processionary moth (OPM, Thaumetopoea processionea) is expanding its prevalence to encompass Central and Northern Europe. Roughly, over the past decade, the moth’s range has spread northwards and the species has now become established in the warmer regions of Northern France, the Netherlands, the UK, and Germany.1–3 In the UK, the moth occurs in Surrey and in parts of west London.4 It is thought that the northward progression is due to a decline in late spring frosts, resulting in a more synchronous egg hatch.4 Occurrence of caterpillar dermatitis has increased considerably, not only in gardeners, but also in people engaging in outdoor activities. The larvae of these caterpillars are equipped with fine, barbed hairs (setae, 0.2 mm), which can readily penetrate the human skin.5,6 One of the major issues with the hairs is that they readily detach and can then be blown via wind currents for considerable distances. The older larvae (fifth and sixth instars) are of particular concern as they can carry up to half a million of the urticating setae per caterpillar. The spines can be active for up to 10 years, posing a long-term threat to human health (Box 1).

The caterpillars start emerging in late April, and can be seen marching on oaks in long head-to-tail lines in order to feed on the foliage of oak trees; hence the name ‘processionary’. They are the larval stages of the OPM and June is the time of the year when they build their distinctive silken, web-like nests on the trunks of oak trees, typically about the size of a tennis ball (Figure 1). Not only do the caterpillars contain numerous urticating hairs with microscopic barbs but so do the nests. Control of the OPM is warranted for health reasons if affected trees are located in the vicinity of preschools, schools, or recreational facilities. The high-risk period stretches from mid-May to the end of August.

HEALTH EFFECTS
The systemic health effects caused by adult moths can result in a variety of medical conditions referred to as lepidopterism (Lepidoptera is the order of insects that includes butterflies and moths), while the skin conditions caused by the setae of the larvae are referred to as erucism or caterpillar dermatitis.2,6

After exposure the skin is always affected, particularly the neck, face, arms, and legs. Contact with the hairs and a protein contained in it (thaumetopoein) results in a mechanical, pseudo-allergic skin sensitisation, including the release of histamine and other kinins, as well as the

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**Box 1. Key information**
- Urticating hairs can be active for up to 10 years
- A high number of cases go unreported
- First symptom is a severe itching
- Clinical signs vary from cutaneous lesions to conjunctivitis, pharyngitis, malaise, and anaphylactic reactions.

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Figure 1. A nest of the oak processionary moth at an oak tree. ©Rahlenbeck.
Box 2. Signs and symptoms of a caterpillar dermatitis\(^{2,6}\)

- **Within minutes:** severe pruritus
- **Within 1–2 hours:**
  - toxic-irritative
  - urticarial dermatitis
- **After 6–8 hours:** delayed reactions:
  - papular dermatitis (persisting)
  - papules/nodules resembling insect bite reactions (up to 4 weeks)

Box 3. Post-exposure prophylaxis

- Remove hairs (wearing gloves) using adhesive duct tape or wash hairs off
- Avoid introducing setae into home or living areas (clean shoes, remove setae using adhesive tape, vacuum)
- Remove all clothes (wearing gloves) and wash at 60°C
- Take a shower and wash hair
- If eyes are affected: rinse with water to remove setae, contact an ophthalmologist

REFERENCES


OUTLOOK

Due to a lack of standardised methods for counting setae, it has been impossible to establish a dose–response relationship between symptoms and setae exposure. As a consequence, it is not possible to determine the levels of exposure that result in or trigger the various symptoms and/or the subsequent health condition that ensues. In addition, methods for dermatologic investigations are not available as yet, neither are diagnostic criteria, nor the syndromic classification of the entity. To this end, more research is required to understand the details of the pathogenesis of OPM-related health effects and the approach to adequately address the condition.

TREATMENT

Management is symptomatic and supportive following recommended strategies of gently washing the urticating hairs off the skin or removing them using cellophane or adhesive tape. Clothes should be removed immediately and washed at a minimum of 60°C. With ocular manifestations, eyes should be washed and an ophthalmologist contacted. Conjunctivitis should be treated locally and may include application of an antiseptic (Box 3). Patients with intracorneal setae should be informed about the risk of intraocular penetration and followed up for a minimum of 6 months. Topical antihistamines and medium or high-strength corticosteroids can be applied to skin reactions. Use of nebulised and/or systemic bronchodilators may be administered for asthmatic bronchospasms. In severe cases, parenteral application of corticosteroids may be necessary.

Provenance

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Competing interests

The authors have declared no competing interests.

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