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Not a fungi to be with: Shiitake mushroom flagellate dermatitis

1. Case report

A 46-year-old Caucasian man presented to the emergency department with a three-day history of a pruritic rash which had started after returning from Tokyo. The rash spread from hands to trunk, neck, and limbs but spared the face. There was no significant past medical history and the patient reported no allergies or regular medications. There was also no history of skin disease or recent contact with industrial chemicals.

On examination the patient was afebrile and systemically well. Linear flagellate lesions which did not urticate were seen on the trunk and thighs (Fig. 1). There were no mucosal or articular lesions. Laboratory investigations were unremarkable.

Over the first 24 hours he was initially managed with intravenous hydrocortisone 200 mg, fluids and oral chlorphenamine 10 mg QDS for suspected urticaria. This resulted in worsening of the erythema and treatment was therefore changed to topical betamethasone 0.1% which gave great relief. Upon further questioning, the patient admitted ingestion of shiitake mushrooms whilst in Tokyo, two days before the onset of symptoms. A diagnosis of shiitake dermatitis was therefore made, and he was prescribed oral fexofenadine 180 mg daily in addition, with good effect. After 2 weeks there was complete resolution of the rash.

2. Discussion

Shiitake dermatitis is a rare adverse cutaneous reaction to the ingestion of shiitake mushrooms (*Lentinula edodes*), commonly used in Eastern Asian cuisine. It typically presents with a pruritic striking linear flagellate dermatosis. The time of ingestion of mushrooms to onset of rash can range from two hours to five days. The narrow differential diagnosis includes dermatomyositis, adult onset Still's disease and exposure to certain chemotherapeutic agents [1].

The exact mechanism through which shiitake mushrooms causes this eruption remains to be fully elucidated but lentinan, a β -glucan polysaccharide found in the cell walls of shiitake mushrooms, is thought to be the culprit [2]. Because heat alters its structure, shiitake dermatitis only occurs after consumption of raw or undercooked mushrooms. Lentinan likely exerts its effect through either toxic or hypersensitivity responses; a subject of controversy because of inconsistent skin allergy test results. In favour of a toxic mechanism is the report by Hanada et al. where a patient diagnosed with shiitake dermatitis had a negative skin allergy test [3]. Notably, there have also been positive skin allergy tests

in previously unsensitised people [4]. On the other hand, data supporting a hypersensitivity mechanism include positive patch testing demonstrated in a previously sensitised patient, but not in unsensitised volunteers [5]. Possible mechanisms for lentinan hypersensitivity are, firstly, its induction of inflammatory mediators, namely, tumour necrosis factor- α , interleukins 1 and 2 and nitric oxide and, secondly, its influence on the immune profile of humans towards a Th1 type over a Th2 type [2]. As demonstrated in our case, laboratory investigations can be normal with no inflammatory response.

Shiitake dermatitis is usually a self-limiting condition and treatment, if given, is focused on symptom management. A systematic review of literature found resolution of symptoms to occur at a mean time of 11 days [2]. Corticosteroids (systemic or topical) and antihistamines have been used in previous reports with varying success. There may be faster resolution of symptoms with systemic corticosteroids but no controlled trials exist. Further research is required to guide best practice.

Although first reported in Eastern Asia, with the ever-increasing globalisation of exotic cuisine and easy availability of these exotic mushrooms, shiitake mushroom dermatitis is likely to become more prevalent in the Western world. Emphasis is therefore laid on the need for clinicians to be aware of its presentation to guide correct management.

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Fig. 1. Appearance of the rash on (a) trunk and (b) thighs showing a flagellate dermatosis with linear lesions without urticaria.