

## SHORT COMMUNICATION

### Shiitake Dermatitis – Now Also in Poland

Wojciech Baran, Aleksandra Batycka-Baran, Joanna Maj and Jacek C. Szepietowski\*

Department of Dermatology, Venereology and Allergology, Wrocław Medical University, Chalubinskiego 1, 50-368 Wrocław, Poland. \*E-mail: jacek.szepietowski@umed.wroc.pl

Accepted Apr 2, 2014; Epub ahead of print Apr 7, 2014

Shiitake dermatitis is a striking skin reaction that may appear after consumption of raw or undercooked Shiitake mushrooms (*Lentinus edodes*) in susceptible individuals. The disease is also termed flagellate mushroom dermatitis because the skin lesions resemble wounds caused by whip (*flagellum* in Latin) (1, 2). It was first described in Japan by Nakamura (3) in 1977 and to date only few cases were reported in Europe (2, 4, 5).

#### CASE REPORT

A 34-year-old man in general good health presented with bizarre, linear erythematous skin lesions in flagellate pattern on his torso and petechial papules on his lower extremities (Fig. 1a). The skin lesions had appeared 2 days before admission to our department, first on the lower extremities and then within 24 h over the torso. On first inspection the eruptions resembled scratches or dermographism but lesions consisted of linear groups of small erythematous papules and vesicles (Fig. 1b). Patient complained of mild pruritus (visual analogue scale (VAS) = 2.2 points) and denied scratching. There was no mucosal involvement. Patient admitted that he had taken oral ibuprofen and pseudoephedrine because of general malaise and moderate fever (37.8°C) that preceded the skin lesions by approximately 24 h. These symptoms resolved after several hours. Upon further directed questioning he revealed a history of oriental cuisine with shiitake mushrooms, prepared by his girlfriend 2 days before the skin eruption. General medical history was negative. Laboratory results (blood count including eosinophil count, liver and kidney function, ESR, CRP, complement levels (C1q, C3, C4), antinuclear antibodies) were within normal range except for slightly elevated IgE (167 IU/ml, normal: <100). A punch biopsy from a representative cutaneous lesion on the torso showed focal, epidermal hyper- and parakeratosis, spongiosis, acanthosis and follicular keratosis as well as lymphocytic perivascular infiltrate with some histiocytes, neutrophils and eosinophils in the upper part of the dermis (Fig. 2). Immunohistochemistry revealed that the majority of lymphocytes were T cells (CD3<sup>+</sup>, CD43<sup>+</sup>) with domination of CD4<sup>+</sup> over CD8<sup>+</sup> cells. Single B lymphocytes (CD20<sup>+</sup>) and macrophages (CD68<sup>+</sup>) were also present. Ki67 expression was about 10%. Treatment with systemic gluco-

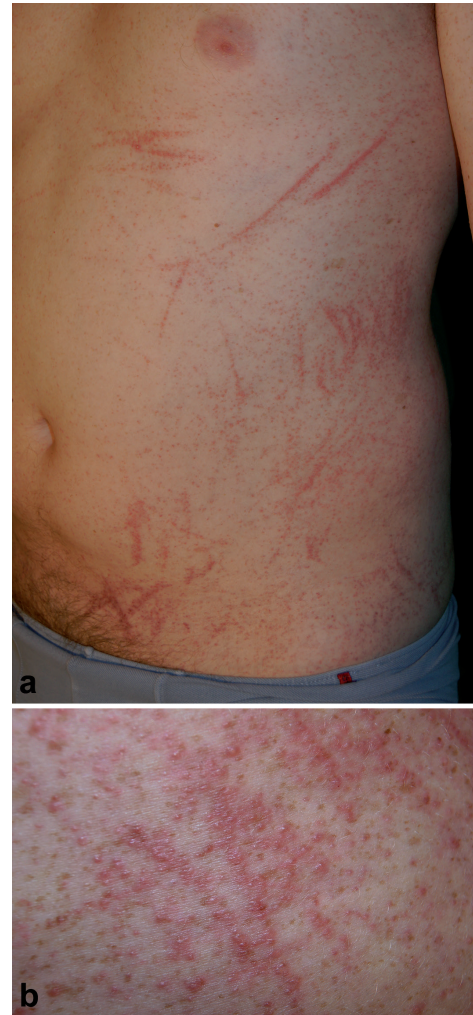


Fig. 1. Linear groups of erythematous papules and vesicles in flagellate pattern on the torso (a). Small papules and vesicles (b).

corticoids (100 mg of hydrocortisone i.v. twice daily) and antihistamines (fexofenadine 180 mg twice daily) was effective and skin lesions resolved within 14 days. However, spontaneous healing cannot be excluded.

#### DISCUSSION

Shiitake dermatitis is a rare entity with the majority of cases described in patients of Asian origin (3). In most cases skin manifestation includes linear groups of small erythematous papules, vesicles or petechiae,

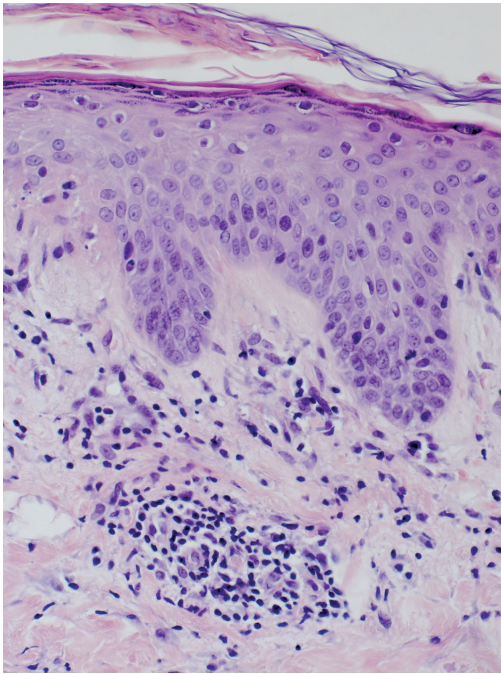


Fig. 2. The biopsy specimen revealed hyper- and parakeratosis, acanthosis, spongiosis; in the upper part of the dermis lymphocytic perivascular infiltration (haematoxylin and eosin  $\times 200$ ).

partly in flagellate pattern that appear on the trunk, extremities or face. Characteristic skin lesions develop approximately 24–48 h after eating the mushrooms and may be provoked by scratching or rubbing the skin (Köebner phenomenon). Typically, patients complain of strong itch, however, in our case the pruritus was mild which may suggest certain individual differences. Mucous membranes are not affected and usually no systemic symptoms are observed; occasionally malaise and fever were reported. Shiitake dermatitis may resemble bleomycin-induced flagellate dermatitis but there is no hyperpigmentation or mucosal involvement in the discussed entity (1, 6). Shiitake is the second most commonly consumed mushroom, widely used in Asian cuisine as a spice; it has also favourable effect on blood pressure, reduction of serum cholesterol level and some anticarcinogenic properties (7). The underlying pathogenesis of shiitake dermatitis is not fully known. It is regarded as toxic reaction caused by lentinian, a thermolabile mushroom polysaccharide. Skin testing with shiitake mushroom extract (patch test, prick-test) or specific IgE levels are usually negative, but general IgE level may be sometimes elevated (1, 7, 8). Clinical picture and history of shiitake mushroom consumption are crucial for diagnosis. Sometimes oral

re-challenge may be useful. However, in our case the patient did not agree for provocation test. Furthermore, the history, time course and clinical manifestation were very characteristic for shiitake dermatitis, thus we did not perform this test. It is also postulated that lentinian may increase the secretion of interleukin-1, produce vasodilatation and petechiae (8). The predominance of T helper lymphocytes and time course of the reaction may also suggest haematogenous delayed type hypersensitivity as an underlying mechanism. It has also been discussed whether some additional trigger factors may be engaged in the development of the skin lesions, e.g. genetic predisposition or drugs. In our case the non-steroid anti-inflammatory drugs ibuprofen and pseudoephedrine were used. Photosensitivity has also been reported, but this feature has never been described in European cases (4). In the treatment, systemic antihistamines and topical and systemic glucocorticoids are used; beneficial effect of balneo-PUVA therapy was also reported (6, 9). Complete remission is achieved within a few weeks, in our case within 14 days. Re-exposure may provoke the disease, so eating shiitake mushrooms by patient should be avoided (10). Shiitake mushrooms are now widely available in supermarkets in Europe. It is therefore important to raise awareness of this distinctive skin reaction after eating inadequately prepared mushrooms.

## REFERENCES

1. Nakamura T. Shiitake (*Lentinus edodes*) dermatitis. *Contact Dermatitis* 1992; 27: 65–70.
2. Maier T, Herzinger T. Linear dermatitis due to shiitake mushrooms. *Hautarzt* 2007; 58: 1021–1022.
3. Nakamura T. Toxicoderma caused by shiitake. (*Lentinus edodes*). *Japanese J Clin Dermatol* 1977; 31: 65–68.
4. Mak RK, Wakelin SH. Shiitake dermatitis: the first case reported from a European country. *Br J Dermatol* 2006; 154: 800–801.
5. Ricar J, Pizinger K, Cetkovska P. Shiitake dermatitis: a distinctive clinical entity. *Int J Dermatol* 2013; 52: 1620–1621.
6. Adler MJ, Larsen WG. Clinical variability of shiitake dermatitis. *J Am Acad Dermatol* 2012; 67: e140–141.
7. Poppe LM, Anders D, Kneitz H, Bröcker EB, Benoit S. Flagellate dermatitis caused by shiitake mushrooms. *An Bras Dermatol* 2012; 87: 463–465.
8. Hanada K, Hashimoto I. Flagellate mushroom (Shiitake) dermatitis and photosensitivity. *Dermatology* 1998; 197: 255–257.
9. Scheiba N, Andrulis M, Helmbold P. Treatment of shiitake dermatitis by balneo PUVa therapy. *J Am Acad Dermatol* 2011; 65: 453–455.
10. Garg S, Cockayne SE. Shiitake dermatitis diagnosed after 16 years! *Arch Dermatol* 2008; 144: 1241–1242.