



Shiitake dermatitis*

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Abstract: Shiitake Dermatitis is a skin eruption that resembles whiplash marks and occurs after consumption of raw shiitake mushrooms. It is caused by a toxic reaction to lentinan, a thermolabil polysaccharide which decomposes upon heating. We report the second case of this dermatitis in Brazil. A 25-year-old man presented with linearly arranged erythematous, pruritic papules on the trunk and limbs, after ingestion of a salad containing raw shiitake mushrooms. The eruption was self-limited, resolving within 10 days of onset. The recognition of this entity gains importance due to the increased consumption of shiitake mushrooms in occidental countries.

Keywords: Dermatitis; Food; Fungi; Lentinan; Shiitake mushrooms; Plants, edible

Shiitake (*Lentinus edodes*) dermatitis was first described by Nakamura in 1977. The author described 23 cases of individuals who, after consumption of raw or poorly cooked mushroom, developed linearly arranged erythematous lesions whose appearance reminded her of the Middle Ages practice of self-flagellation.¹

In 1992, Nakamura made a prediction that, in the future, there would be an increase in the occurrence of shiitake dermatitis, due to the growing popularity of this delicacy in the occidental diet.¹ Indeed, the world's mushroom industry markets more than two million tons of mushrooms per year and is still expanding.² Today, shiitake mushrooms are the second most produced edible mushrooms worldwide.³

Following initial reports in Japan - where shiitake mushrooms are part of the traditional diet -, new reports of shiitake dermatitis have been made in occidental countries.³⁻⁷ Nevertheless, there are only two previous reports of this condition in the Brazilian literature, and one of them is the report of a case occurred in Germany.³ Thus, there is only one Brazilian case described so far.⁵

We describe the case of 25-year-old male nurse technician, single, born and living in Rio de Janeiro-RJ, who sought medical attention due to a pruritic eruption. He reported that, two days after consumption of a salad containing raw shiitake mushrooms, he began to experience intense pruritus, which was followed by the appearance of skin lesions on the limbs and trunk (Figures 1 and 2). The patient denied any comorbidities and medication use. On examination, there were erythematous linear papules on the upper and lower limbs, and trunk, associated with perilesional petechiae. No mucosal lesions were detected.

Due to the self-limited nature of the condition and taking into account the nonspecific histopathology, we opted for conservative measures. The patient was treated with oral antihistamine (fexofenadine 180 mg/day) and topical steroids for symptomatic relief. He was also instructed to avoid eating raw shiitake mushrooms again.

The patient's lesions resolved completely in about 10 days, during which he did not have fever, gastrointestinal disorders or other systemic symptoms.

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FIGURE 1: Erythematous linear papules resembling whiplash marks on the lower limbs and more accentuated on the right leg



FIGURE 2: Erythematous linear papules on the abdomen

Flagellate dermatitis is caused by a toxic reaction to lentinan, a component of shiitake mushrooms. Lentinan is a labile thermolabile polysaccharide which decomposes upon heating. Thus, it can be safely consumed if cooked.⁴

In oriental medicine, lentinan is also known for its antihypertensive and hypolipidemic effects and for its anti-tumor properties in therapy against gastric and intestinal adenocarcinoma.⁸

Not all people seem to have the same susceptibility to cutaneous toxicity by shiitake mushrooms. Furthermore, when exposed to intravenous lentinan during a study on its antitumor properties, only 9 out of 500 patients developed flagellate dermatitis.⁹

It has been suggested that lentinan acts via secretion of interleukin-1 and other inflammatory cytokines, leading to vasodilation, hemorrhage and rash. The latter usually occurs 2-3 days after the ingestion of raw or undercooked shiitake mushrooms.⁴

In a series of 51 cases studied over 17 years, it was observed that almost all patients had linearly arranged erythematous papules. The authors believed that they were induced by the Köbner phenomenon. All subjects presented with lesions on the trunk, and the majority had involvement of the limbs, neck, face and head, in descending order of frequency. None developed symptoms of the gastrointestinal tract, nervous system or had involvement of the mucous membranes.⁴ Since lesions are self-limited, therapy is symptomatic. In more extensive cases, antihistamines and topical or oral corticosteroids may be used.⁵

Occasionally, transaminases alterations, leukocytosis or leukopenia, eosinophilia, and increased LDH level may occur.⁴

Histopathologic changes are nonspecific, consisting of acute dermatitis with spongiosis in the epidermis, papillary dermis edema and inflammatory infiltrate composed of lymphocytes and eosinophils.^{4,5,6}

Skin lesions are similar to those found in bleomycin-induced flagellate dermatitis, dermatomyositis, Still's disease and, rarely, in patients with positive serology for HIV with hypereosinophilic syndrome. However, differently from bleomycin-induced flagellate dermatitis, no mucosal lesions or hyperpigmentation are observed.⁷

The ingestion of shiitake mushrooms causes shiitake dermatitis, a direct toxicity reaction. However, there are also reports of allergic reactions such as asthma, allergic contact dermatitis and alveolitis in individuals who were in direct contact with the fungus or its spores, for example, during occupational exposure in shiitake mushrooms cultivation fields.

The recognition of this entity gains importance due to the increased consumption of shiitake mushrooms in occidental countries. Shiitake dermatitis is a rare condition and presents a characteristic clinical picture. Prior knowledge of this entity by the physician is essential, in order to make its diagnosis and reassure the patient about the favorable prognosis of this condition. □

REFERENCES

1. Nakamura T. Shiitake (*Lentinus edodes*) dermatitis. *Contact Dermatitis*. 1992;27:65-70.
2. Neves CFQ, Gracioli LA. Caracterização da produção em toros do cogumelo comestível *Lentinula edodes* (Berk.) Pegler na região oeste do Estado de São Paulo. *Acta Sci. Agron*. 2008;30:487-94.
3. Poppe LM, Anders D, Kneitz H, Bröcker EB, Benoit S. Flagellate dermatitis caused by shiitake mushrooms. *An Bras Dermatol*. 2012;87:463-5.
4. Nakamura T. Shiitake dermatitis. *Japan Medical Journal* 1986;3237:48-50.
5. Adriano AR, Acosta ML, Azulay DR, Quiroz CD, Talarico SR. Shiitake dermatitis: the first case reported in Brazil. *An Bras Dermatol*. 2013;88:417-9.
6. Chu EY, Anand D, Dawn A, Elenitsas R, Adler DJ. Shiitake dermatitis: a report of 3 cases and review of the literatura. *Cutis*. 2013;91:287-90.
7. Loo HV, Oon HH. Flagellate dermatitis following consumption of shiitake mushroom. *Dermatology Reports* 2011;3:e21.
8. Chihara G, Maeda Y, Hamuro J, Sasaki T, Fukuoka F. Inhibition of mouse sarcoma 180 by polysaccharides from *Lentinus edodes* (Berk.) Sing. *Nature*. 1969;222:687-8.
9. Curnow P, Tam M. Contact dermatitis to shiitake mushroom. *Australas J Dermatol*. 2003;44:155-7.
10. Aalto-Korte K, Susitaival P, Kaminska R, Mäkinen-Kiljunen S. Occupational protein contact dermatitis from shiitake mushroom and demonstration of shiitake-specific immunoglobulin E. *Contact Dermatitis*. 2005;53:211-3.

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