

Single Case

Flagellate Dermatitis by Shiitake Mushroom

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Keywords

Dermatitis · Flagellate dermatitis · Shiitake

Abstract

The authors present a case of flagellate dermatitis in a previously healthy young male, triggered by the consumption of shiitake mushrooms. Complete remission without complications was obtained within 7 days, simply by the application of dexamethasone cream 0.1%. Considering the growing use of this originally Asian fungus in cookery worldwide, it is likely that we will see increased occurrence of this benign and self-limited condition also in the Western world.

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Introduction

Lentinula edodes or shiitake is a widely consumed fungus in Asian cooking and currently the second most consumed mushroom worldwide [1] (Fig. 1). Shiitake's pharmacological properties are well-known in Oriental medicine, such as anticarcinogenic and antihypertensive characteristics and of the reduction of serum cholesterol levels. However, the consumption of raw or rare cooked shiitake may cause linear eruptions [2] forming small papules, papular vesicular eruptions, or intensely infiltrated pruriginous plaques called flagellate dermatitis (FD) [3].

Nakamura [4] described the first case of skin lesions after the ingestion of shiitake in 1977, followed by some other authors. The lesions typically appear within a period of 24–48 h after ingestion. The eruption preferably affects the trunk, limbs and neck, regressing spontaneously after a period of few days to up to 2 weeks [3]. The name “flagellate dermatitis” was chosen because of the association with the practice of self-flagellation by the early Christians, whipping each other as an act of purification to pay for their sins. FD lesions are linear and erythematous, resembling injuries caused by whiplashes [3].

Case Presentation

The patient was a previously healthy 23-year-old Caucasian male who complained of the sudden onset of linear rash on his trunk evolving for 2 days. The patient denied other symptoms, such as pruritus, arthralgia, mucosal abnormalities, and fever. When asked about consumption of shiitake, he confirmed that he had eaten those mushrooms 4 days before he sought medical assistance and stated that he thought the shiitakes had been well cooked. The patient denied the intake of other medications or changes of personal hygiene products.

At physical examination, the patient presented with small, grouped papules forming a linear design, spreading on the trunk and extending to the proximal part of the upper limbs (Fig. 2, 3, 4). No alterations on the face, scalp, or mucosa were observed. Dexamethasone ointment was applied for 5 days in the area of the lesions, and complete remission was observed after 7 days.

Discussion

The physiopathology of flagellate dermatitis is not yet well understood. The most accepted theory is that the development of skin lesions is caused by toxicity from the lentinan polysaccharide present in the mycelium of the fungus. This substance promotes vessel dilatation and inflammation caused by means of the interleukin protein [1, 4, 5, 6]. Lentinan is thermolabile, and at temperatures between 130 and 145°C, its molecular structure can be irreversibly changed, which explains why cooked shiitake usually does not cause flagellate dermatitis [1]. Patients treated for gastric and intestinal adenocarcinoma with fungus extract have already developed similar reactions to those caused by shiitake [4].

Discussions also suggest a possible involvement of late sensitization mediated by T cells [3]. Although contact tests for dermatitis by shiitake are negative, allergic reactions such as asthma, contact dermatitis, and alveolitis may occur after the first episode [7].

The histopathological findings are usually nonspecific. Epidermal spongiosis and lymphocyte infiltrate in the dermis can sometimes be noticed [3].

Dermatitis induced by bleomycin must be considered in the differential diagnosis. Clinical findings are similar to FD due to other causes, and histopathological examination is nonspecific; however, there may be mucosal involvement, and, as opposed to what occurs in “shiitake-induced dermatitis,” it may lead to hyperpigmentation [4]. Bleomycin is a cytostatic antibiotic of the glycopeptide class [3] produced by the fermentation of *Streptococcus verticillus* that exerts antitumor activity against cervix squamous cell carcinoma, testicle tumors, and lymphomas [8]. There is also a structural similarity between the sulfur component present in shiitake fungi and bleomycin, which may play a triggering role for FD [1]. Flagellate erythema associated with other drugs such as peplomycin (a bleomycin derivative) and docetaxel and

with adult Still's diseases, dermatomyositis, and HIV infection must be listed as differential diagnosis [9, 10].

The disease disappears spontaneously within up to 2 weeks [11]. Symptoms can be treated with antihistamines, topical corticosteroids, and eventually systemic corticosteroids [10]. It is advisable to avoid further exposure to the fungus to avert the occurrence of new episodes [1].

In this case, we did not perform a histopathological examination, considering that the physical examination and history of shiitake consumption were sufficient for the diagnosis of FD. A complete remission of the lesions was seen within 7 days after the use of dexamethasone ointment in the affected area for 5 days.

Conclusion

With the expansion of Oriental cuisine to the West, there is an increased possibility for new cases of flagellate dermatitis induced by shiitake consumption. The dermatologist, in presence of linear eruptions on the trunk resembling whip lashes, should always ask the patient if shiitake was consumed, considering that the patient would probably fail in associating mushroom ingestion with flagellate dermatitis.

Statement of Ethics

The authors have no ethical conflicts to disclose.

Disclosure Statement

The authors have no conflicts of interest to declare.

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Fig. 1. Shiitake mushrooms.



Fig. 2. Linear lesions formed by grouped papules on the back.



Fig. 3. Lesions on the lateral trunk.



Fig. 4. Close-up of the lesions with better evidence of the grouped papules.