

REPORT OF A CASE/DISCUSSION

A 65-year-old woman presented for patch test consultation in referral from her local dermatologist to evaluate a persistent condition of her mouth and lips. She had swelling, redness, and itching of her lower more than her upper lips starting in July 2019, more than 6 months before consultation. At the time of consultation, her main complaint was dry mouth; she also had some persisting redness and swelling of her lips. She had been evaluated by her dentist and ophthalmologist and denied dry eye or sun sensitivity. Her history was significant for lip swelling in 2016 thought due to fennel seed, which she had since avoided. Her dermatologic and other medical history was otherwise unremarkable. She denied any oral habits or devices. She was using topical hydrocortisone ointment several times weekly, which helped with her lip symptoms. Laboratory testing ordered at the time of consultation showed an antinuclear antibody titer of 1:80 and negative Sjogren's syndrome A and B autoantibodies.

Patch testing to a modified American Contact Dermatitis Society 80 allergen series plus an extended flavoring and fragrance series (Chemotechnique Diagnostics, Vellinge, Sweden) showed 1+ reactions to cobalt and triclosan at the 4-day reading. The cobalt reaction was thought not likely to be relevant, but the patient was advised to investigate that and the triclosan reaction by reviewing her products; she called to report that she had identified triclosan in her toothpaste, Colgate Total (Colgate-Palmolive Co., New York, NY), which she had been using since July. She called 2 weeks after completing patch testing to report a nearly complete resolution of oral and lip symptoms with avoidance of the triclosan-containing toothpaste.

DISCUSSION

Triclosan, a biocide formerly used widely in personal care products, such as antibacterial soaps and deodorants, was the active ingredient in Colgate Total toothpaste (Colgate-Palmolive Co.) based on data showing that it helped prevent gingivitis.² Triclosan and other antibacterial additives in personal care products were deemed no longer generally safe and effective by the US Food and Drug Administration in 2016, but triclosan was allowed to remain in some products, including toothpaste. In 2019, Colgate Total was reformulated as Colgate Total SE, with stannous fluoride replacing triclosan as the active ingredient.³ There are a few case reports of triclosan allergy causing oral or lip symptoms⁴; with the reduction in use and low rates of sensitization, some authors have questioned the need for continued routine patch testing with triclosan.⁵

PEARL OR ZEBRA

This case is a reminder of the benefits of including allergens of low sensitizing potential in extended patch testing series and the importance of the post-patch test history in determining the relevance of any positive reactions.

REFERENCES

1. Campbell L, Zirwas MJ. Triclosan. *Dermatitis* 2006;17(4):204–207.

2. Colgate Total® Toothpaste With Triclosan. Available at: <https://www.colgate.com/en-gb/oral-health/basics/selecting-dental-products/colgate-total-triclosan>. Accessed May 28, 2020.
3. Eliminated triclosan from its toothpaste. Could a ban be on the way? Available at: <https://qz.com/1540815/colgate-eliminated-triclosan-from-its-toothpaste-could-a-ban-be-on-the-way/Colgate>.
4. Robertshaw H, Leppard B. Contact dermatitis to triclosan in toothpaste. *Contact Dermatitis* 2007;57(6):383–384.
5. Tan A, Silverberg JL. Chapter 9: preservatives and vehicles in cosmetics and toiletries. In: *Fisher's Contact Dermatitis*. 7th ed. Phoenix, AZ: Contact Dermatitis Institute; 2019:252.

Lentian Dermatitis: Time to Rename Shiitake Dermatitis

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PRECIS

Few cases of shiitake mushroom dermatitis have been observed with other fungal species. We report a case of shiitake mushroom dermatitis after consumption of white button mushrooms.

DISCUSSION

A 22-year-old woman presented for evaluation of a rapidly progressive cutaneous eruption with a duration of 3 days. Physical examination revealed erythematous papules arranged in whiplash-like linear streaks predominantly on the torso (Figs. 1 and 2). Lesions were also present on the neck, chest, groin, and lower extremities. After the onset of the rash, she developed mild pruritus, but denied fever, mucosal involvement, or other systemic symptoms. Medical history was unrevealing, and the patient did not report known allergies to food or medications. Upon further questioning, the patient recalled eating raw white button mushrooms (*Agaricus bisporus*) at a restaurant 3 days before symptom onset. The restaurant confirmed that the dish in question contained mushrooms but only of the white button variety.

Given the unique clinical findings and the recent consumption of raw mushrooms, the patient was diagnosed with mushroom-induced flagellate erythema. Because of the expected self-limited course, she was treated with oral antihistamines. Skin biopsy and blood tests were not performed. Complete resolution of the erythema and pruritus occurred within 1 week of initiating therapy. Upon resolution, there was no residual pigmentary change, and the patient was advised to avoid future consumption of raw mushrooms.

Flagellate erythema is an uncommon cutaneous eruption that presents with a characteristic whiplash-like pattern. Although it may look like dermatographism induced by scratching, the lesions do not resolve as quickly as in external scratching and may last for several days. The rash in flagellate erythema is composed of small papules arranged in a linear distribution, which differentiates it from



Figure 1. Erythematous papules arranged in whiplash-like linear streaks on the back.

actual excoriations. The differential diagnoses of flagellate erythema include bleomycin- or docetaxel-induced drug eruptions, dermatomyositis, adult-onset Still disease, and shiitake mushroom dermatitis.

The lesions of shiitake mushroom dermatitis are almost always present on the torso and appear within days of oral consumption.¹ Approximately 2% of the population will present with shiitake dermatitis if they consume these mushrooms raw or undercooked.² Although it currently still remains a rare entity, we can expect to see more cases in years to come, given the recent increased consumption of these mushrooms worldwide. Shiitake dermatitis is a self-limited condition with an excellent prognosis, but treatment with steroids and antihistamines may help alleviate symptoms. Specific testing for allergy has not been frequently performed. Prick and patch tests have been inconsistent indicators of flagellate erythema due to shiitake mushroom dermatitis,³ but may be positive in other forms of reaction to shiitake mushrooms.⁴ Occupational exposure to shiitake mushrooms has been shown to induce allergic contact dermatitis and allergic alveolitis (known as mushroom worker's lung) in farmworkers exposed to mushroom spores through work; however, these are not associated with either flagellate skin markings or oral mushroom consumption.^{4,5}

The eruption in shiitake dermatitis is thought to be caused by lentinan, a 1152-Da β -D-glucan found in the cell walls of shiitake mushrooms (*Lentinula edodes*).^{1,6} A reaction similar to shiitake dermatitis was observed in 9 of 519 cancer patients receiving intravenous lentinan therapy.¹ Lentinan is a heat-labile polysaccharide that has been shown to induce interleukin (IL-1), IL-2, and tumor necrosis factor α secretion, as well as nitric oxide release, resulting in vasodilation and hemorrhage, skewing the immune system toward a T helper type 1-type response.³ One proposed mechanism involves the formation of a macrophage-major histocompatibility complex class 1-lentinan complex, which leads to CD8⁺ T lymphocyte activation with resulting interferon γ , tumor necrosis factor α , and IL-2 secretion.³

Flagellate erythema after consumption of other fungal species, such as porcini (*Boletus edulis*) and wood ear (*Auricularia auricula-judae*), has been reported in recent years.^{7,8} Further, lentinan-like



Figure 2. A and B, Characteristic linear pattern on the left flank.

β -D-glucan (1151 Da) has been extracted from different fungi, including the white button mushroom.⁶ These findings suggest that flagellate dermatitis is not unique to shiitake mushrooms. Using the term “lentinan dermatitis” rather than “shiitake mushroom dermatitis” would allow for inclusion of other fungal species. Furthermore, “lentinan dermatitis” would be representative of the actual underlying causative factor.

In patients presenting with a recent onset of flagellate skin markings, physicians should inquire about recent mushroom consumption and consider the diagnosis of lentinan dermatitis. In healthy patients lacking other risk factors, invasive testing is not required, and symptoms should be conservatively managed on a case-by-case basis. Patients should be warned of a potential recurrence with future raw or undercooked mushroom consumption.

ZEBRA

To our knowledge, this is the first case of flagellate dermatitis reported in the literature after consumption of white button mushrooms. The term “lentinan dermatitis” should replace “shiitake mushroom dermatitis.”

REFERENCES

1. Nakamura T. Shiitake (*Lentinus edodes*) dermatitis. *Contact Dermatitis* 1992; 27(2):65–70.
2. Boels D, Landreau A, Bruneau C, et al. Shiitake dermatitis recorded by French poison control centers—new case series with clinical observations. *Clin Toxicol (Phila)* 2014;52(6):625–628.
3. Nguyen AH, Gonzaga MI, Lim VM, et al. Clinical features of shiitake dermatitis: a systematic review. *Int J Dermatol* 2017;56(6):610–616.
4. Curnow P, Tam M. Contact dermatitis to shiitake mushroom. *Australas J Dermatol* 2003;44(2):155–157.
5. Uslu U, Linkner RV. Shiitake mushroom dermatitis. *Cutis* 2015;95(5): E11–E12.
6. Jamil N, Rahmad N, Rashid N, et al. LCMS-QTOF determination of lentinan-like β -D-glucan content isolated by hot water and alkaline solution from tiger's milk mushroom, termite mushroom, and selected local market mushrooms. *J Mycol* 2013. doi.org/10.1155/2013/718963.
7. Molin S, Summer B, Thomas P, et al. Boletus dermatitis: a new variant of flagellate erythema. *Ann Allergy Asthma Immunol* 2015;115(3):254–255.
8. Lang N, Enk AH, Toberer F. Streaky, whiplash-like erythema and succulent papules: flagellate dermatitis following consumption of *Auricularia auricula-judae*. *J Dtsch Dermatol Ges* 2016;14(3):303–304.