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# Simultaneous flagellate erythema in a husband and wife secondary to shiitake mushroom ingestion

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## Abstract

Flagellate erythema secondary to shiitake mushroom (*Lentinus edodes*) ingestion is a condition that was first documented in 1977 by Nakamura and has been reported in Japan, Europe, and the United States. Herein, we present two cases of flagellate erythema after a couple ate a meal containing shiitake mushrooms at a chain restaurant. We hypothesize that this condition may not be as rare or as dependent on volume of exposure as previously suggested, considering that two genetically unrelated individuals simultaneously developed the eruption after minimal exposure.

*Keywords: dermatitis, erythema, pruritus*

## Introduction

Shiitake-induced flagellate erythema was first documented in Japan in 1977 by Nakamura, detailing erythematous, urticarial lesions that arose in patients after the ingestion of shiitake mushrooms [1]. Since this initial report, cases of this reaction have been documented mainly in Europe and Japan, and now more frequently in the United States [1, 2]. Flagellate erythema arises typically as a pruritic, erythematous, linear eruption affecting the abdomen and less commonly the extremities [3]. On histology, it is common to see spongiosis, necrotic keratinocytes, and elongated rete ridges in the epidermis with a mixed perivascular infiltrate composed of eosinophils, neutrophils, and lymphocytes in the dermis along with papillary dermal edema [3, 4]. Although most reports describe shiitake dermatitis as

rare, follow up studies showed more than 100 cases of shiitake dermatitis occurring in Japan since its initial discovery [4]. Studies also suggest that shiitake dermatitis mainly arises in individuals consuming a large quantity of mushrooms [4]. However, it has been shown that variations in quantity ingested required to produce shiitake dermatitis may depend upon the individual [5].

## Case Synopsis

A nonconsanguineous married couple, 67-year-old man and a 66-year-old woman, were evaluated together for linear eruptions on the arms, legs, and abdomen noticed simultaneously upon waking three days after initial consumption of a meal containing shiitake mushrooms. At the time of presentation, both patients had eaten the meal twice, once at the restaurant and a second time the night prior to presentation. Neither patient had a history of similar eruptions, despite the husband having eaten shiitake mushrooms in the past; no treatments had yet been attempted.

Examination of the male patient revealed multiple, well-defined, several centimeter, linear, smooth, erythematous and purpuric papules and plaques affecting his legs, abdomen, and arms. Examination of the female patient revealed a similar eruption, though she appeared less severely affected (**Figure 1**). Both patients endorsed minimal pruritus and denied scratching. No dermatographism was noted in either patient. A cutaneous biopsy was obtained from the husband, which revealed an unaffected epidermis with a superficial perivascular infiltrate composed of eosinophils and lymphocytes with



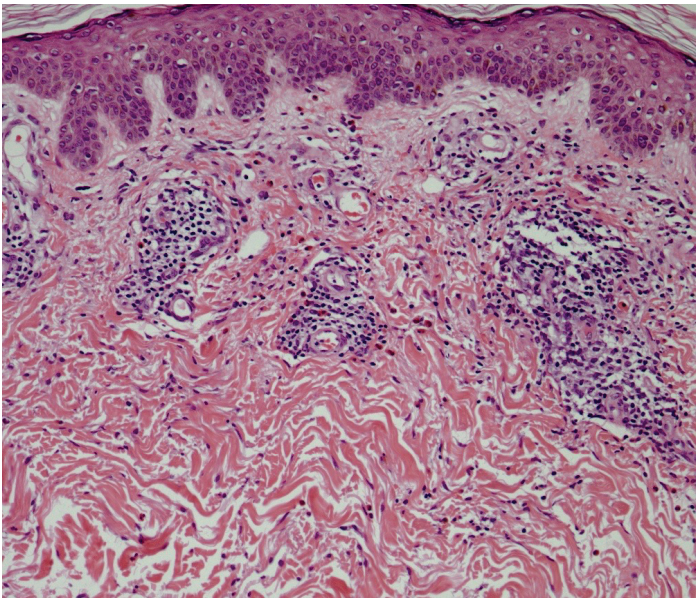
**Figure 1.** Eruptions on the leg of the male patient and arms of both patients with the wife less severely affected (husband's arm on top, wife's arm on bottom).

There have been cases reported after ingestion of fully cooked mushrooms [1]. Patients develop characteristically pruritic, erythematous plaques that are arranged in a linear fashion, perhaps related to the Köebner phenomenon resulting from intense pruritus with scratching [1]. The eruption occurs most commonly on the abdomen, may be less frequently seen on the extremities and back, and rarely can present with ulcerations on the oral mucosa [3].

The differential diagnosis of flagellate erythema may include reactions to medications such as bleomycin, peplomycin, or docetaxel [3], primary skin diseases such as herpes zoster, allergic contact dermatitis [2], or connective tissue disorders such as dermatomyositis and Still disease [5]. No laboratory abnormalities on serum testing in patients with shiitake-induced flagellate erythema have been found [6]. Classically, skin-prick and patch testing with shiitake mushrooms are negative.

papillary dermal edema (**Figure 2**), consistent with that reported in the literature [1]. Both patients were prescribed triamcinolone 0.1% ointment to use twice daily as needed for pruritus, and sun protection was advised. Avoidance of shiitake mushroom ingestion in the future was recommended.

Treatment for shiitake-induced flagellate erythema includes supportive modalities, such as topical steroids and oral antihistamines [4] to help reduce inflammation and pruritus. Recurrence does not necessarily occur after experiencing this reaction once; it has been suggested that simply cooking the mushrooms well will prevent this reaction from reoccurring [1]. No other severe or life-threatening sequelae have been seen in patients who have experienced shiitake-induced flagellate erythema. Shiitake-induced flagellate erythema resolves within 1 to 8 weeks without specific treatment.



**Figure 2.** Histopathology demonstrating unremarkable epidermis overlying superficial and mid-dermal lymphoeosinophilic tight perivascular inflammatory infiltrate. H&E 20%.

## Case Discussion

Shiitake mushroom-induced flagellate erythema is reportedly a rare condition that occurs exclusively after ingestion of undercooked shiitake mushrooms.

## Conclusion

Flagellate erythema is thought to be a rare phenomenon and factors for susceptibility are unknown [1]. This case is fascinating because two unrelated individuals both developed the eruption from a shared meal. Prior exposure did not prevent the husband from developing flagellate erythema with his wife, who had not been previously exposed. It is unknown whether the mushrooms in the dish were properly cooked and it is noted that the husband and wife only consumed a small amount of mushrooms. Through this case report, we hope to add more information to the current literature about

the variety of presentations of shiitake mushroom-induced flagellate erythema.

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