



Case Report

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A Case of the Rare Shiitake-Induced Flagellate Erythema in a Middle-Age Female

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Abstract

Shiitake dermatitis is an under-recognized *toxicoderma* characterized by a very distinct flagellate urticarious skin reaction. The rash appears after the consumption of raw or undercooked shiitake mushrooms (*Lentinula edodes*) that contain the thermolabile polysaccharide lentinan [1]. When cooked at inadequate temperatures the toxin remains biologically active and has the potential to trigger the reaction in susceptible individuals [2]. This severely uncomfortable condition has the potential to last weeks [3,4], and therefore warrants more awareness as it can be easily avoided through proper cooking.

Keywords: Shiitake dermatitis; flagellate erythema; lentinan; pruritus; *toxicoderma*

Introduction

Shiitake dermatitis is an acute dermatological condition that presents as a distinct generalized rash. It appears as erythematous pruritic streaks often described as “whip-like” that occur after the ingestion of undercooked shiitake mushrooms, *Lentinula edodes*. The underlying pathogenesis involves a hypersensitivity reaction to the toxin lentinan that remains stable unless subjected to a high enough temperature. Otherwise, the cutaneous reaction occurs on average 48 hours after consumption, followed by a persistent inflammatory phase. While most cases are self-limiting and last under two weeks, clinical duration has been documented to last up to 40 days. Shiitake dermatitis only occurs in an estimated 1.8-2.0% [4], of individuals who have ingested the toxin, therefore it is poorly

understood and is most likely heavily under-reported in the current literature.

Evidence suggests variable host sensitivity due to differences in genetic predispositions, immune status, prior sensitization [5], as well as the fact that it causes effects in a dose dependent manner. This being said, some people may not even appreciate a noticeable effect. On visual appearance this rash seems quite distinguishable, however it appears strikingly similar to a few other dermatological conditions, potentially contributing to it being underreported. Examples of such conditions include; dermographism or the Koebner phenomenon (self-inflicted cutaneous reactions that are the result of trauma or scratching of the skin [6]), jellyfish stings [7], and bleomycin-induced flagellate erythema [8].

Case Report

A 56-year-old female of Chinese descent with a documented history of allergic rhinitis and no known drug or food hypersensitivities presented to an acute care setting with a 48-hour history of an intensely pruritic, cutaneous rash. The patient remained afebrile, and denied any constitutional symptoms,

respiratory distress, genitourinary or gastrointestinal symptoms. Physical examination was remarkable for erythematous, linear streaks in a flagellate configuration across the entire body that the patient insists is not due to scratching (figure 1). The rash seemed to cover the entire body except the palms of the hands, soles of the feet and majority of the face (although it did seem to spread over the scalp and around the circumference of the face) (Figure 1).



Figure 1: Clinical presentation of shiitake dermatitis on the torso, posterior trunk, and back of the neck. Note the linear, non-confluent streaks that were apparent 48 hours following the ingestion of undercooked shiitake mushrooms.

While the patient reported an uneventful personal and family history of similar reactions or known allergies, her husband reported a subclinical and attenuated rash that was barely noticeable around the same time frame. She and her partner live in the same household and share many of the same meals. The patient noted that they had not used any new soaps/skincare products/laundry detergents or cleaning products- substances known to precipitate unknown allergic reactions. After discussion of what they had eaten in the past 2-3 days, it was discovered that they had cooked shiitake mushrooms for dinner two days prior to the onset of the reaction. One tablet of loratadine each morning for one week was recommended. After one week of follow up, the patient noted the rash began to subside.

Discussion

Given that the reaction to lentinan is likely dose-dependent and subject to variable host susceptibility, it is probable that the true population incidence remains significantly underestimated and under-reported in current literature. Broader clinical awareness of the condition would be beneficial for several reasons. First off, the easiest and most effective “treatment” for this condition appears to be prevention. Knowledge of the condition and following the proper cooking techniques precludes any costly workups, allergy testing or unnecessary systemic corticosteroid regimens that carry their own iatrogenic risks. Another benefit of clinical awareness is the expedited symptom management for a condition that has the potential to last up to 40 days. From a psychosocial standpoint, a skin condition of this temporal duration has the potential to impact occupational productivity, cause symptoms of acute body dysmorphia and anxiety, impact sleep hygiene and lead to

symptoms of depression [9].

Thus, this reaction is not a minor inconvenience, it is a chronic inflammatory state causing a multitude of effects. Embarrassment due to the rash being perceived as something potentially contagious or reflecting poor personal hygiene as it has been known to lead to social withdrawal and avoidance of public spaces including ones’ work environment [10], therefore affecting occupational productivity. Severely pruritic cutaneous reactions are also known to negatively impact sleep hygiene. Sleep deprivation and chronic fatigue are therefore serious sequelae to consider in a reaction that has the potential to last this long. Current research suggests that chronic inflammation triggered by long term release of cytokines can also cause feelings of anxiety and depression [11], exacerbating the clinical picture. Ultimately, the effects of shiitake dermatitis would be easily avoided by more widespread knowledge of the condition. Additionally, in an urgent care or emergency department setting, quick recognition of this condition relieves concerns of a more serious etiology [12].

Conclusion

Shiitake dermatitis is a distinctive yet under-recognized *toxicoderma* caused by ingestion of raw or undercooked shiitake mushrooms containing lentinan [13]. This case underscores the importance of recognizing its characteristic flagellate rash to avoid unnecessary diagnostic workups and inappropriate treatments. Increased clinical awareness can facilitate timely diagnosis, guide supportive care, and mitigate the physical and psychosocial burden associated with prolonged pruritic eruptions. Given its dose-dependent and variable presentation, clinicians should maintain a high index of suspicion in patients with compatible dietary history.

Ultimately, proper cooking of shiitake mushrooms remains a simple and highly effective strategy for prevention.

Acknowledgment

None.

Conflict of Interest

No Conflict of Interest.

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