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A Rare Cause of Phototoxic Dermatitis: *Chenopodium album*

Göknur Özaydın Yavuz,[1*] MD, İbrahim Halil Yavuz,[1] MD, Göktürk Dere,[1] MD, Gülay Bulut,[2] MD, Serap Güneş Bilgili,[1] MD

Address: Yüzüncü Yıl University, Medical Faculty, Department of Dermatology, Department of Pathology, Van, Turkey

E-mail: goknuroz1@gmail.com

** Corresponding Author:* Dr. Göknur Özaydin Yavuz, Yüzüncü Yıl University, Medical Faculty, Department of Dermatology, 65000, Van, Turkey

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Abstract

Observation: The toxic reaction development due to furocoumarins found in the constitution of plants is called phytophotodermatitis. Chenopodium album is a plant species prevalent worldwide. It particularly grows in moist areas. Chenopodium album can cause phototoxic reactions with exposure to sun following oral intake, due to its furocoumarin content. In this article, we present a case of Chenopodium album induced phototoxic dermatitis. We considered presenting this patient due to the rareness of the case.

Introduction

Furocoumarins are photosensitive chemicals that are found in plants, therapeutic agents and perfumes. Development of toxic reaction against furocoumarins present in plants and their products is called phytophotodermatitis [**1**]. Chenopodium album is a plant with fibrous roots. This plant can sometimes be eaten cooked [**2, 3**]. It is a plant that grows worldwide and is also consumed frequently as a vegetable in our region [**3**]. In this article we present a rare case of phototoxic dermatitis induced by Chenopodium album.

Case Report

A 50-year-old woman presented to our clinic with swelling of the eyelids and the hands, and bruises on the face and the hands. The patient was treated with prednol 250 mg/day and adrenalin for two days considering that she had angioneurotic edema in the other medical center. The patient had eaten boiled Chenopodium album known as "wild beet" (**Figure 1**) in the region and on the following day she was exposed to intense sunlight, 4 days before anamnesis. Similar symptoms were not observed in the other family members who had eaten the same plant and were exposed at least 2 hours to sunlight. Edema in the eyelids and the hands, and ecchymotic patches on the cheeks, nose and the dorsum of the hands were present in the first dermatological examination on admission (**Figure 2**). She was using levothyroxine due to hypothyroidism. Laboratory testing showed leukocyte count 9600 /mm^3 (normal 4000-11000 /mm^3), hemoglobin 12 g/dL (normal 11-18 g/dL), platelet count 300000 /mm^3 (normal 150000-400000/mm^3), glucose 130 mg/dL (normal 70-105 mg/dL), ALT 11 U/L (normal 0-41), AST 16 U/L (normal 0-

Figure 1. Chenopodium album known as "wild beet"

Figure 2. Edema in the eyelids and ecchymotic patches on the cheeks

Figure 3. A sparse lymphocyte exocytosis in the epidermis and a vacuolar degeneration in the basal layer, solar elastosis in the dermis, focal vasodilation in the upper dermis and the red blood cell extravasation

31) and creatinine 0.68 mg/dL (normal 0.7 to 1.3 mg/dL). A sparse lymphocyte exocytosis in the epidermis and a vacuolar degeneration in the basal layer, solar elastosis in the dermis, focal vasodilation in the upper dermis and the red blood cell extravasation were found in the biopsy sample. In the presence of clinical and histopathologicalfindings, we diagnosed it as Chenopodium album-induced phototoxic dermatitis. Prednisolone (1 mg/kg/day), low molecular weight heparin (7500 IU bemiparin sodium), cream containing chondroitin polysulfate and wet dressing treatments were initiated. On the 3rd day of hospitalization, edema of the eyelids and the dorsum of the hands regressed. Increase in ecchymotic lesions was not observed and necrosis developed only on the dorsum of the right hand (**Figure 3**). After 1 month, the lesions healed, with mild atrophy and hyperpigmentation.

Discussion

Chenopodium album (**Figure 3**) is a fast-growing plant with fibrous roots, multiple branching and yellowish-green stems [**2,3**]. It grows worldwide, typically in moist areas [**3**]. Chenopodium album grows in the Eastern Anatolian Region of Turkey and is also named as wild spinach, "silmask" or "selemez" [**2,3**]. It has various pharmacological properties such as antiviral, antifungal, anti-inflammatory, anti-allergic, antiseptic and immunomodulation [**4**]. Chenopodium album produces two distinct seeds with different morphologies; seeds with brown seed coats sprouting rapidly after the first harvest and with black seed coats which are dormant. Chenopodium album produces large amounts of black seeds under suitable conditions. Production of brown seeds increases under salty and other stressful environmental conditions for expanding the population [**5**]. Dermatitises induced by the plants (phytodermatitis) are classified in 3 main groups as allergic dermatitis, irritant dermatitis, and phytophotodermatitis [**6**].Development of toxic reaction against furocoumarins present in plants and their products are called phytophotodermatitis. The clinical symptoms such as erythema, edema, vesicles, bullae and subsequent hyperpigmentation may occur in phototoxic reactions due to sun exposure after topical administration or ingestion of agents containing furo-

coumarins [**1, 2, 3**]. Phototoxic reactions are more common during the period of mid- to late summer when concentrations of psoralen and exposure of skin to sunlight increase[**7**].

Chenopodium album includes nitrate, phosphate and oxalate salts, sugars, chlorophyll, laxatives, iron salts, iodine, vitamins (B, C and D), betalain alkaloids, phenolic acids, betaine, oxalic acid, oleanolic acid, sitosterol, beta carotene, saponin and furocoumarins. In our region, it is a plant that can be cooked and eaten similar to spinach [**2,3**]

It can be confused with angioneurotic edema as it results in widespread edema of hands, lips and the eyelids. As a matter of fact, we initially treated the patient according our diagnosis of angioneurotic edema. However, the resulting manifestation was that of phototoxic dermatitis due to furocoumarins present in Chenopodium album [**1, 2, 3, 8**].

The severity of the reactions depends on to the patient-related factors such as hydration and thickness of stratum corneum, presence of pigmentation and hair, and environmental factors such as temperature, friction and the duration of exposure to sunlight and toxin concentration [**3,8**]. Moreover, initial treatment with low molecular weight heparin resulted in less necrosis emergence in our case, when compared with the cases reported by Çalka et al. [**2**], and thus it may be interpreted that an early initiation of this treatment could provide less destruction in the course of the disease.

Finally, we presented this case of phototoxic dermatitis induced by ingesting Chenopodium album due to its rareness and the fact that its clinical presentation may be confused initially with angioneurotic edema.

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