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Contact Dermatitis

Contact Point

Title: Airborne allergic contact dermatitis caused by coffee beans in a coffee roaster

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Airborne allergic contact dermatitis (ACD) is a type of contact dermatitis(CD) caused by allergen particles dispersed in the air and adhering to exposed body areas. We present the case of a coffee roaster with ACD to coffee beans.

Case Report

An otherwise healthy 20-year-old non-atopic Japanese woman presented with itchy edematous erythema and red papules on the entire face, anterior neck, bilateral forearms, and dorsum of the hands (Figure 1). The erythema spread to the postauricular folds and submandibular area, but was spared around the nose. She had started working as a coffee roaster two months earlier, responsible for roasting green coffee beans and grinding the roasted beans. The eruption appeared within the first few days, initially only on the forearms and hands, subsequently spreading over the face and neck. Areas covered by the work uniform were intact. She didn't have any wheezing nor diarrhea throughout the course and the eruption didn't disappear even after discontinuing contact with the coffee beans for several days. All eruptions became depigmented with topical corticosteroid treatment within a week. Suspecting allergic reactions to coffee beans, patch tests with the patch test panel (Sato, Tokyo, Japan), and the green coffee bean and roasted coffee powder she uses at work applied “as is” using Finn Chambers on Scanpor (SmartPractice, Phoenix, AZ) were performed. After 48 hours of occlusion, positive results were observed only to green coffee bean (D2/3: 2+, D7:+) and roasted coffee powder (D2/3: 2+, D7:+) (Figure 2). Ten control patients were all negative to both samples. Based on the distribution of the eruption and the patch test results, ACD caused by coffee beans was diagnosed. By covering exposed body areas with protective equipment, she has been able to continue her work.

Discussion

ACD is diagnosed based on the patient's medical history, the presence of dust or volatile causative

agents, the distribution of the lesions, and the results of skin tests. In particular, the appearance of dermatitis on the upper eyelids, postauricular folds, and submandibular area is highly suggestive of ACD¹. Besides, the nose, which has high sebaceous content, may be spared.¹

According to several coffee-related CD reports, green coffee beans^{2,3} or roasted coffee powder^{4,5} were considered as the possible cause. Allergens have not yet been identified. In the past cases²⁻⁵, dermatitis was mainly limited on the site of direct contact, whereas in our case, dermatitis additionally occurred on vast areas such as face, neck, and postauricular folds, lacking direct contact to coffee products. The patient lacked eruption only on the skin covered by her uniform. This characteristic distribution of skin lesions made ACD highly suspicious. In our case, patient was able to continue her job without any relapse by covering the skin with long sleeves, gloves, and a face shield.

Coffee beans are not a common cause of CD including ACD, but as shown in our case, ACD can occur. As coffee are worldwide popular grocery, it should be noted that they can cause ACD in daily practice.

Figure Legend

Figure 1

Clinical findings of airborne allergic contact dermatitis caused by coffee beans;

(A) Edematous erythema of the entire face, sparing the area around the nose.

(B) Erythematous plaque on the submandibular area and scattered erythematous papules on the anterior neck. There was no eruption on the anterior chest, which is covered by work uniform.

(C) Solitary erythematous papules scattered from the forearm to the dorsum of the hands.

(D, E) Multiple erythematous papules on bilateral forearms. The symptoms of right arm (D) was more severe than the left arm (E). Note that the patient was right-handed.

Patient authorized all photographs to be taken and published.

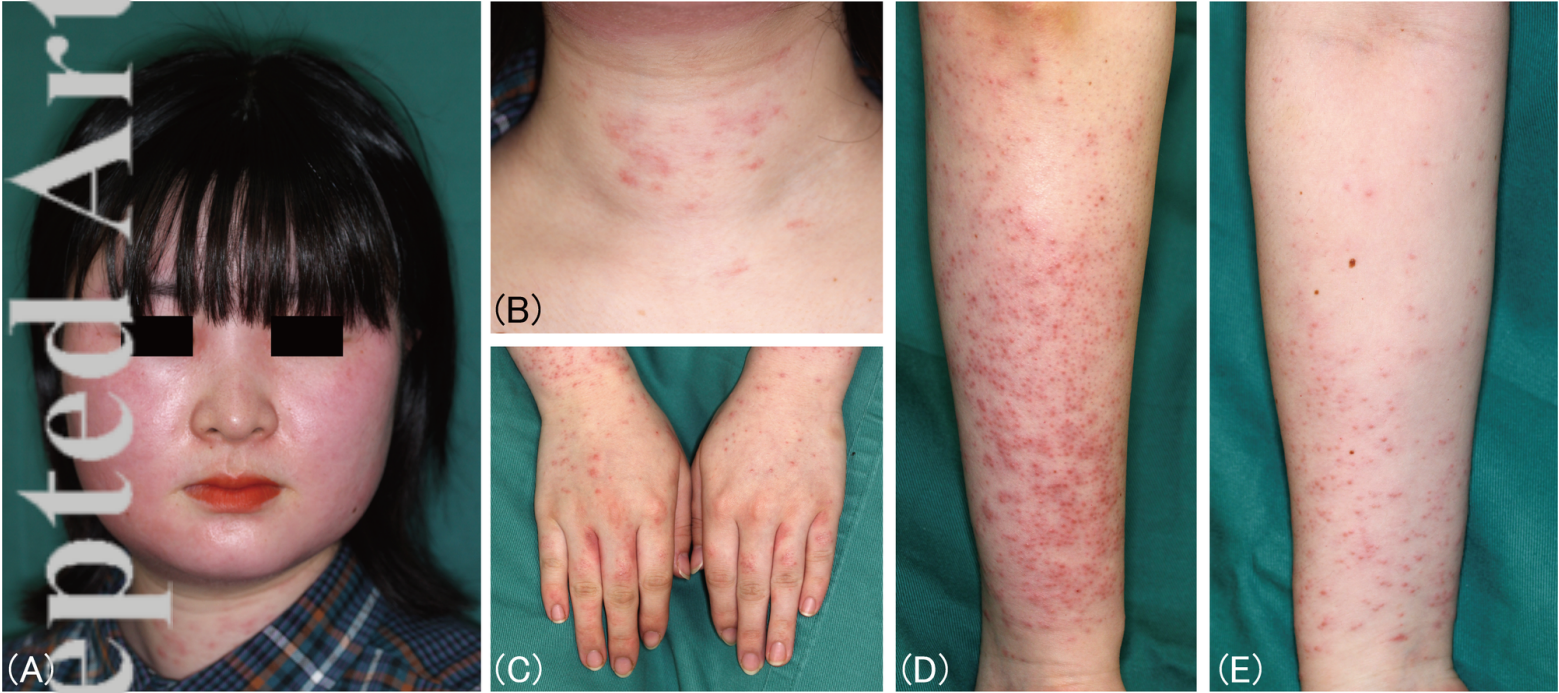
Figure 2

Patch test results; The test substances were crashed green coffee beans in petrolatum "as is," roasted coffee powder in petrolatum "as is" and petrolatum as control using Finn Chambers on Scanpor 8mm.

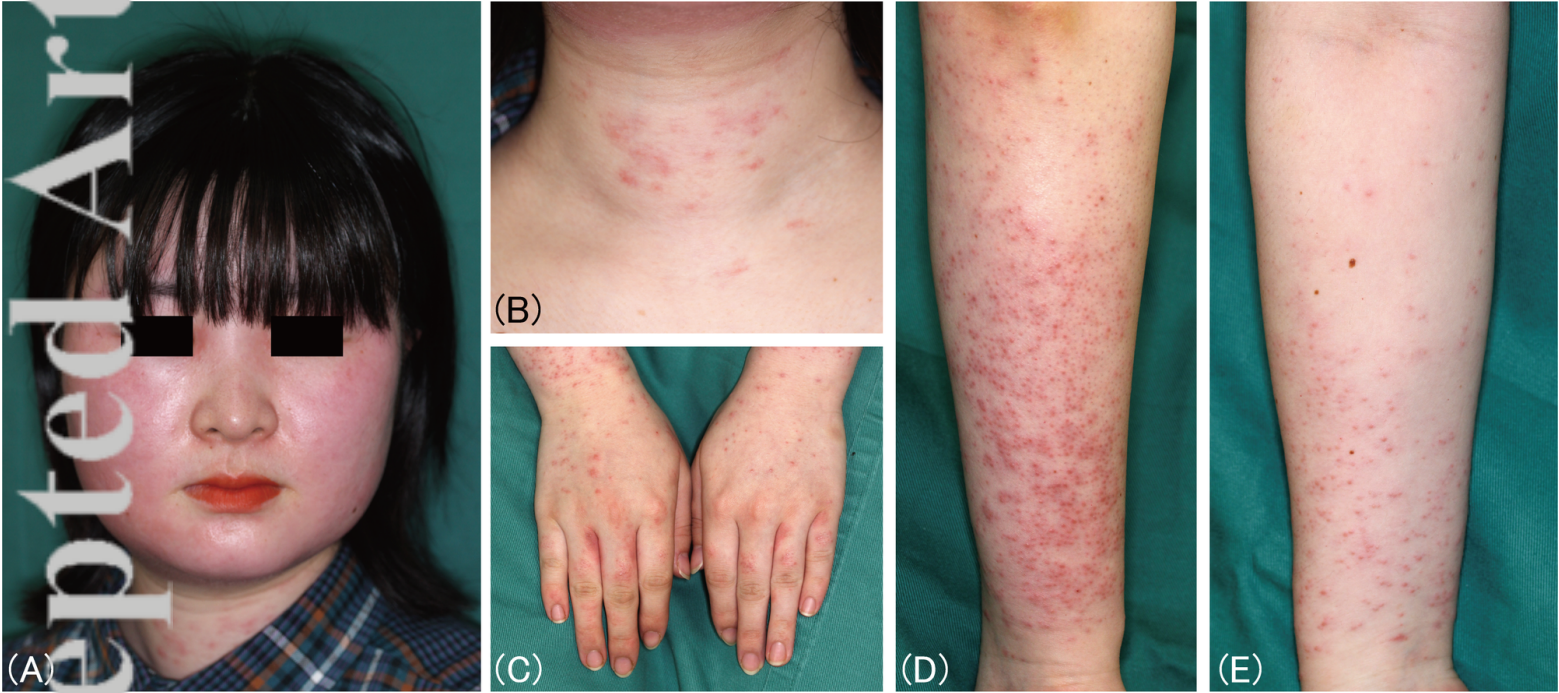
According to ICDRG guideline, positive results were observed only to green coffee bean (day (D)2/3: 2+, D7:+) and roasted coffee powder (D2/3: 2+, D7:+) and a negative result to petrolatum.

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COD_13964_Figure1.png



COD_13964_Figure1.png

Control Coffee Bean



Roasted Coffee Powder



Control (Petrolatum)



2D

3D

7D

COD_13964_Figure2.png

Control Coffee Bean



Roasted Coffee Powder



Control (Petrolatum)



2D

3D

7D

COD_13964_Figure2.png