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Outbreak of Bronchiolitis obliterans Associated with Consumption of *Sauropus androgynus* in Japan – Alert of Food-Associated Pulmonary Disorders from Japan

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Bronchiolitis obliterans (BO) is a rare disease with poor prognosis characterized by stenosis and obstruction of bronchioles. It has been reported that BO is caused by various factors such as collagen diseases, infections, drugs, toxic fumes and bone marrow or lung transplantation. In 1995, Lai et al. [1] reported an outbreak of BO in Taiwan. Interestingly, BO was associated with consumption of uncooked *Sauropus androgynus* (SA). SA, a Malaysian food, is a member of the Euphorbiacae family and a perennial shrub, and young and middle-aged women started to use SA for weight control. SA was proved to be able to cause BO by statistical analysis in Taiwan [2]. A total of 278 patients with BO associated with consumption of SA (SA-associated BO) were reported in Taiwan. Eight of the patients had received lung transplantation and 9 patients had died [2]. Corticosteroid therapy is not effective, the only effective treatment is lung transplantation [3].

Recently, a new outbreak of SA-associated BO occurred in Japan and here we report the first 5 cases (table 1).

Although we did not perform lung biopsy, we diagnosed BO in our cases because of the following reasons: (1) all patients showed severe obstructive disturbance in pulmonary function tests; (2) high-resolution chest CT (marked variability in attenuation of the lung parenchyma image in the expiratory phase) and/or ventilation scanning (patchy defects) patterns were compatible with BO, and (3) in all patients treatment with corticosteroids and bronchodilators did not improve symptoms (case 3 was complicated by asthma). Since all patients had ingested enough SA before symptom occurrence and did not have any known cause of BO except for SA, we diagnosed the patients as SA-associated BO. All our cases were female, and the mean period to develop BO was 6 months (7 months in Taiwan) after the ingestion of SA, like in the Taiwanese report [1]. Interestingly, 4 of our cases are related (mother and daughter). This is the first report of familial occurrence of SA-associated BO indicating the necessity to pay attention to the genetic factor to clarify the pathogenesis of SA-associated BO.

In Japan, cultivation of SA started in 1996, and recently it has also been used for weight control by young and middle-aged women, similar to Taiwan. In Taiwan, the outbreak was ceased by stopping the ingestion of SA. In Japan, we made a report of the outbreak of SA-associated BO to the Japanese Ministry of Health, Labor and Welfare and it immediately took response, stopping the distribution of dried SA powder. A nationwide survey is now being conducted by us to be able to answer the question 'how many cases might be affected?'

Food, which should be safe and good for humans, can also be a cause of disease. Therefore, we must be alert to SA-associated BO, which might cause serious health problems not only in Taiwan and Japan but also allover the world.

References

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Table 1. Summary of the clinical data of 5 female patients

	Case 1	Case 2	Case 3 (daughter of case 2)	Case 4	Case 5 (daughter of case 4)
Age, years	47	55	29	73	50
Total dose of dried SA powder, g	1,000	1,440	2,190	300	360
Duration of intake, days	130	360	300	300	120
FEV_1, liters	0.64	0.62	1.0	0.45	0.50
FEV_1/FVC, %	36.4	40.3	54.3	29.0	23.0
Improvement with steroids and bronchodilators	no	no	no	no	no

FEV_1 = Forced expiratory volume in 1 s; FVC = forced vital capacity.

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