

Ingestion of *Rhus* chicken causing systemic contact dermatitis in a Korean patient

K. H. Yoo, S. J. Seo, K. Li and C. K. Hong

Department of Dermatology, Chung-ang University College of Medicine, Seoul, Korea

doi:10.1111/j.1365-2230.2010.03832.x

Summary

Rhus chicken is a common traditional remedy used to cure gastrointestinal diseases and as a health food in Korea. Unfortunately, systemic contact dermatitis (SCD) due to the ingestion of *Rhus* occasionally occurs. In this study, the clinical and laboratory findings were reviewed and analysed for 30 Korean patients with SCD developing after ingestion of *Rhus* chicken. Summer was found to be the commonest period for hospital visits because of this condition. The mean period of incubation for SCD, was 4 ± 1.5 days. The commonest skin features were generalized maculopapular eruptions. Of the 30 patients, 10 had a known history of allergy to *Rhus* chicken. Many of the patients developed neutrophilia and leucocytosis. All the patients responded well to standard treatments. The commonest reason for their ingestion of *Rhus* chicken was indigestion. We conclude that SCD often occurs in Koreans after ingestion of *Rhus* chicken. Patients should be educated about the harmful effects of *Rhus* chicken and advised not to ingest it.

The *Rhus* tree, which is found in most subtropical areas, often causes allergic contact dermatitis (ACD).¹ About 30 species of this group sensitize humans. In Korea, there are six species in this group: *Rhus chinensis* (Chinese sumac), *Rhus ambigua* (Asian poison ivy, now known as *Toxicodendron radicans*), *Rhus succedanea* (Japanese wax tree, now known as *Toxicodendron succedaneum*), *Rhus trichocarpa* (Japanese sumac), *Rhus sylvestris* (woodland sumac) and *Rhus verniciflua* (lacquer tree, now known as *Toxicodendron vernicifluum*).² In this group, *R. trichocarpa* and *R. succedanea* are the commonest causes of 'Rhus dermatitis' in Korea.

In contrast to other countries, *Rhus*-related illnesses in Korea are mostly caused by ingestion of parts of the *Rhus* tree, which produces systemic contact dermatitis (SCD) rather than ACD.¹ The commonest manner of *Rhus* ingestion is ingestion of a dish called *Rhus* chicken (Fig. 1), which is a traditional remedy for functional

gastrointestinal conditions such as indigestion, loose stool, bloating, and other irritable bowel syndrome-like symptoms.² For this reason, SCD occurrence after ingestion of *Rhus* chicken is very common in Korea.^{3,4}

Report

As the study was retrospective, ethics approval was not required.

In total, 30 Korean patients with SCD due to ingestion of *Rhus* chicken, who were treated in Chung-ang National University Hospital, were enrolled in the study. The seasonal variation of their condition, mean incubation period, cutaneous symptoms, associated systemic symptoms, history of allergy to *Rhus* chicken (SCD and ACD), treatments used, and the reason for ingestion of *Rhus* were analysed.

Summer was the commonest period for hospital visits ($n = 17$ patients; 57%), followed by autumn ($n = 8$; 27%), spring ($n = 3$; 10%) and winter ($n = 2$; 6%). Duration of onset (mean \pm SD) was 4 ± 1.5 days (range 12 h to 7 days).

The commonest cutaneous features were generalized erythematous maculopapular eruptions ($n = 20$

Correspondence: Dr Chang Kwun Hong, Department of Dermatology, Chung-ang University College of Medicine, Seoul, Korea
E-mail: hongck@cau.ac.kr

Conflict of interest: none declared.

Accepted for publication 22 December 2009



Figure 1 Boiled chicken with several branches of the *Rhus* tree (white arrow).

patients; 66%) (Fig. 2a), followed by erythroderma ($n = 6$; 21%) and erythema multiforme (EM)-like lesions ($n = 4$; 13%) (Fig. 2b). Systemic symptoms and laboratory abnormalities included neutrophilia ($n = 22$; 73%), leucocytosis ($n = 18$; 60%), fever ($n = 10$; 33%), gastrointestinal discomfort ($n = 8$; 26%) and increase in liver enzymes ($n = 4$; 13%).

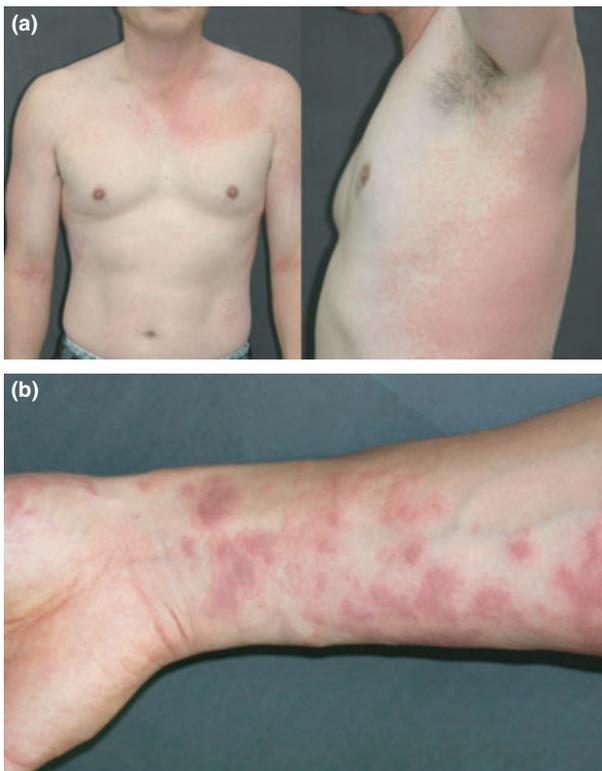


Figure 2 (a) Generalized maculopapular eruption on the trunk; (b) typical target lesions of erythema multiforme.

In 10 patients (33%), there was a known history of allergy to *Rhus*. However, there was no difference in the clinical features between these patients and those with no history of allergy to *Rhus*.

Systemic corticosteroids and antihistamines were effective in all the patients with SCD. In total, 21 patients (70%) were admitted to hospital for treatment; the mean duration of the eruptions in these patients was 9.2 ± 1.5 days (range 7–14). The remaining nine patients (30%) had less severe skin eruptions or systemic symptoms and were treated as outpatients; in these patients, full resolution took 7.8 ± 1.2 days (range 6–12).

Nearly half of the patients ($n = 12$; 40%) ingested *Rhus* chicken to treat their indigestion. Other reasons included use as a health supplement (10; 33%), to 'cool the body' ($n = 5$; 16%), to relieve epigastric pain ($n = 2$; 5%) and to relieve constipation ($n = 1$; 3%).

The active component causing allergenicity of the *Rhus* tree is pentadecylcatechol (PDC), which is contained in urushiol, the oil secreted by the tree. PDC is not a complete antigen; it acts as a hapten that becomes a complete antigen after it binds to certain carrier proteins in the skin.² The antigen-presenting cells (APCs) in the skin are Langerhans cells and keratinocytes. These APCs present the urushiol antigens to both CD8+ T cells and CD4+ T cells through an endogenous or exogenous (endosomal) antigen-processing pathway, respectively. The small number of memory cells that remain in the body after the sensitization will respond to the allergen, resulting in the development of symptoms.² Upon systemic exposure to urushiol, a presensitized person produces SCD after a latency period.

Presensitization is regarded as essential to the development of SCD.⁵ However, only one-third of patients with SCD caused by *Rhus* chicken have a positive patch test.⁶ Furthermore, a large proportion of patients with *Rhus*-associated SCD deny previous exposure.⁶ It is possible that such patients were sensitized through exposure to *Rhus* lacquer, which is used on the surface of traditional Eastern furniture. Once applied to the furniture, the *Rhus* lacquer retains its allergenicity for hundreds of years. Because of this, around 10–30% of the general population in Korea is allergic to *Rhus* lacquer.⁷

In this study, summer, which is the hottest and wettest season in Korea, was found to be the commonest season for SCD, which conflicts with other studies.⁸ This may be explained by the reasons given for *Rhus* ingestion. Nearly half of our patients ($n = 15$; 50%) ingested *Rhus* chicken as a health supplement and to cool the body. Many Koreans believe that they need to

take some health food especially in summer because they feel more tired during this season.

In conclusion, we found that SCD often occurs in Koreans after ingestion of *Rhus* chicken, causing unpleasant and inconvenient symptoms. We hope this study will warn westerners interested in traditional oriental remedies of the dangers associated with *Rhus*. To determine the potential roles of *Rhus* in SCD, further studies with larger numbers of subjects are required.

References

- 1 Choi JM, Lee JD, Kim HO *et al.* A case of connubial contact dermatitis due to *Rhus*. *Korean J Dermatol* 1998; **36**: 469–72.
- 2 Ahn BM. *Rhus* chicken. *Taehan Kan Hakhoe Chi* 2002; **8**: 245–7.
- 3 Park SD, Lee SW, Chun JH, Cha SH. Clinical features of 31 patients with systemic contact dermatitis due to the ingestion of *Rhus* (lacquer). *Br J Dermatol* 2000; **142**: 937–42.
- 4 Oh SH, Haw CR, Lee MH. Clinical and immunologic features of systemic contact dermatitis from ingestion of *Rhus* (*Toxicodendron*). *Contact Derm* 2003; **48**: 251–4.
- 5 Kalish RS, Wood JA, Laporte A. Processing of urshiol hapten by both endogenous and exogenous pathways for presentation to T cells in vitro. *J Clin Invest* 1994; **93**: 2039–47.
- 6 Park YM, Park JG, Kang H *et al.* Acute generalized exanthematous pustulosis induced by ingestion of lacquer chicken *Br J Dermatol* 2000; **143**: 230–2.
- 7 Kook HI, Woo TH. Experimental study on latent sensitivity to *Rhus* tree. *Korean J Dermatol* 1971; **9**: 9–14.
- 8 Rademaker M, Duffill MB. Allergic contact dermatitis to *Toxicodendron succedaneum* (*Rhus* tree): an autumn epidemic. *N Z Med J* 1995; **108**: 121–3.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.