

## Medical Concern for Colloidal Silver Supplementation: Argyria of the Nail and Face

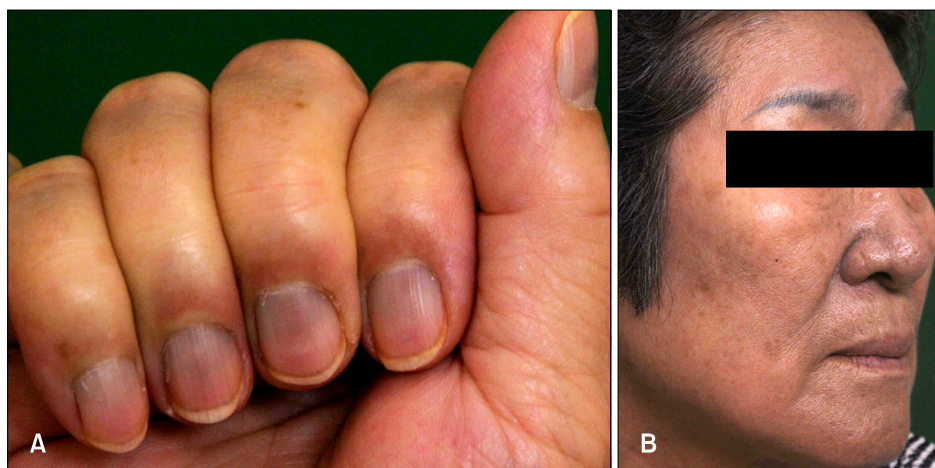
Se-Won Park, Hyun-Tae Shin, Kyung-Tae Lee, Dong-Youn Lee

Department of Dermatology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Dear Editor:

A 75-year-old female presented to our hospital concerned about gray discoloration of the skin. The patient began to notice changes in her complexion approximately a year prior to presentation. She had been ingested colloidal silver for four years to treat her diabetes. The patient's medical history included type II diabetes, hypertension and early gastric cancer. Skin examination revealed gray discoloration involving the proximal half of the finger nails and patches on the face (Fig. 1). Skin biopsy of her face was performed. The biopsy specimen revealed a few fine brown-to-black granular deposits concentrated around eccrine glands and hair follicles (Fig. 2). The diagnosis of argyria in our patient is suspected clinically and confirmed by skin biopsy conducted on her face. We recommended the patient to limit the intake of colloidal silver and avoid sunlight. Argyria results from prolonged ingestion of silver

salts. The deposition of silver in the skin produces a slate-gray pigmentation. The discoloration of the skin is typically apparent in sun-exposed areas. Also, the silver deposition mechanism and pathogenesis of argyria is not fully understood. In addition, the discoloration may be caused by the reduction of elemental silver by sunlight and melanocyte stimulation<sup>1</sup>. By literatures, histopathological examination of argyria reveals black granules in the basement membrane zone surrounded by sweat glands and connective tissue sheaths around pilosebaceous structures<sup>2</sup>. Silver deposition and discoloration of the skin in argyria is a rare condition, especially in fingernails. There is no effective treatment except for the discontinuation of silver salt. The differential diagnosis for argyria includes Wilson disease, ochronosis, hydryrosis, and antimalarial drugs<sup>3</sup>. Colloidal silver is widely marketed as a folk remedy for diabetes, acquired immune deficiency synd-

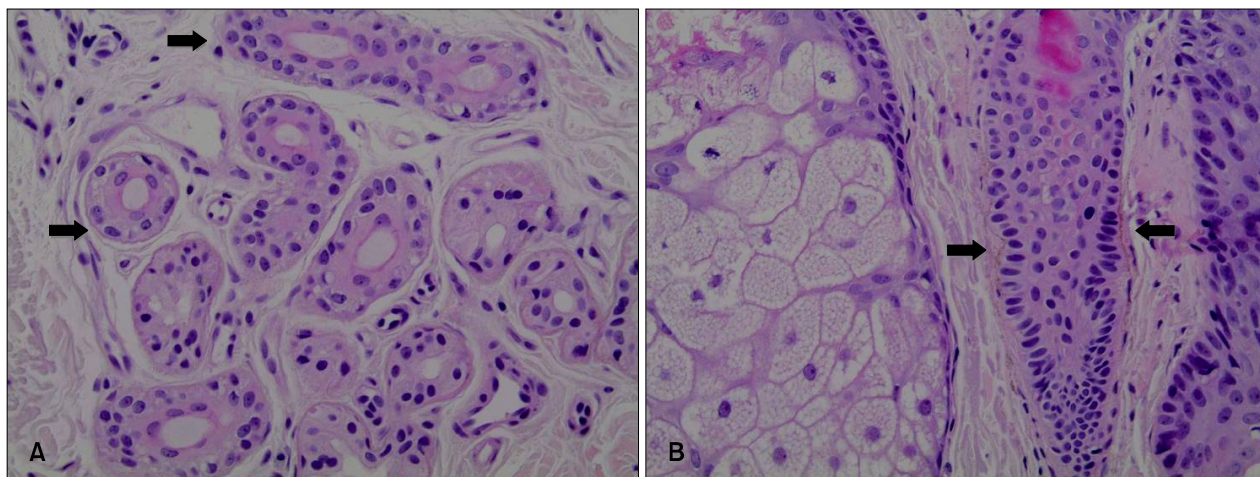


**Fig. 1.** Clinical findings. (A) Slate-blue pigmentation of the lunula of the finger nails. (B) Slate-gray colored patches on face.

Received February 28, 2012, Revised May 7, 2012, Accepted for publication May 10, 2012

**Corresponding author:** Dong-Youn Lee, Department of Dermatology, Samsung Medical Center, 81 Irwon-ro, Gangnam-gu, Seoul 135-710, Korea. Tel: 82-2-3410-3543, Fax: 82-2-3410-3869, E-mail: dylee@skku.edu

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.



**Fig. 2.** Histopathological findings. (A) Fine brown-to-black granular deposition around eccrine glands (arrows) (H&E,  $\times 400$ ). (B) Around hair follicles (arrows) (H&E,  $\times 400$ ).

rome, cancers and infections. Most reported cases of argyria had occurred following ingestion of 4~5 g<sup>4</sup>. People believe colloidal silver based products as cure-alls despite its unsubstantiated claims of effectiveness against major illnesses. With an increasing number of reports of problems associated with silver ingestion, dermatologists should warn patients in regards to the use of colloidal silver for medicinal purposes.

## REFERENCES

1. Chung IS, Lee MY, Shin DH, Jung HR. Three systemic argyria cases after ingestion of colloidal silver solution. *Int J Dermatol* 2010;49:1175-1177.
2. Kalouche H, Watson A, Routley D. Blue lunulae: argyria and hypercopperaemia. *Australas J Dermatol* 2007;48:182-184.
3. Plewig G, Lincke H, Wolff HH. Silver-blue nails. *Acta Derm Venereol* 1977;57:413-419.
4. McKenna JK, Hull CM, Zone JJ. Argyria associated with colloidal silver supplementation. *Int J Dermatol* 2003;42: 549.