

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2017, 6(3): 91-94

Argyria: A Rare Case Report Venkata Madhav M, Prathyusha T*, Santikiran S, and Eswar G

Department of General Medicine, Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Chinoutpalli, Gannavaram Mandal, Krishna, India *Corresponding e-mail: <u>prathyu.3287@gmail.com</u>

ABSTRACT

Argyria is a rare and one of the unrecognized cause of cutaneous pigmentation in patients after a prolonged exposure to ayurvedic medications containing inorganic metals like silver. The term "argyria" was coined by Fuchs. It was prevalent in 19th and early 20th century. We report a case of argyria due to chronic ayurvedic drug intake and patient was advised stoppage of drugs and antioxidants. Later hyperpigmentation resolved.

Keywords: Argyria, ayurvedic medications, silver

INTRODUCTION

Silver is a metallic element present naturally in nature, normal concentration in human body is <2.5 mcg/l. silver absorbed in body through inhalation, ingestion, and parenteral routes. Silver on absorptions gets metabolised to silver ion and binds to proteins like albumin and macroglobulins. silver on chronic usage in lower amounts gets accumulated in higher concentration in skin, liver, spleen, and adrenal glands. We report a case of argyria due to chronic ayurvedic drug intake containing inorganic metals.

CASE REPORT

A 65 years old man, non-diabetic, non-hypertensive, teacher by profession presented with complaint of progressive blackish discoloration of hands, foot, and soles for 10 years. patient elicited a history of usage of local native ayurvedic medication containing heavy metals like silver and mercury for cough and sneezing to dust for 15 years. Patient had no history of itching, anasarca, rash over body. Written informed consent was taken from patient, explaining the study procedure, possible benefits of the study, risks, and discomfort of participating, and right to withdraw from the study.

General Examination

Patient was moderately built and moderately nourished, vitals stable, systemic examination was normal.

Uniform brownish black discoloration of face, palms, soles, and feet up to middle of legs. No hyperpigmentation of mucous membrane (Figure 1).



Figure 1 General examination of patient with argyria

Investigations

Complete blood picture, RBS, serum electrolytes, cortisol, TSH, chest X-ray,

USG abdomen: normal.

Punch biopsy was done showing increased melanisation in melanophages of dermis and epidermis, focal ballooning degeneration of basal layer with mild pigment incontinence. Picture suggestive of chronic dermatitis due to argyria (Figure 2).

Biopsy



Figure 2 (a) Photomicrograph of H&E stain of skin (scanner view) Skin lined by keratinized stratified squamous epithelium, hyperkeratotic, acanthotic (b) Photomicrography of H&E stain of skin (20×) Focal balloon degeneration of basal layer seen with mild pigment incontinence. Sparse chronic inflammation seen in sub epithelial region (c) Fine black granules of silver along the elastic fibers in papillary dermis (H and E, 400×)

Concentration after 24 h (urine serum concentration) was 3 mcg/l. Serum concentration was 4 mcg/l.

Venkata Madhav M et al.,

Treatment

Patient was advised stoppage of ayurvedic drugs and given antioxidants. Patients hyperpigmentation gets reduced in 3 months (Figure 3).



Figure 3 Pigmentation before and after the treatment

DISCUSSION

The term "argyria" was coined by Fuchs [1]. The most significant effect of silver over exposure in humans is argyria, a permanent bluish green discoloration of skin from silver throughout integument.

- It can be occupational exposure or iatrogenic overuse.
- Two variants of argyria: generalized and localized.

Generalized occurs either by mechanical impregnation of skin by silver particle or inhalation or oral absorption [2]. Localized argyria or argyrosis results usually due to deposition in eyes, wound scars, tongue and gingivae [3]. Skin discoloration of argyria comes from either silver itself or induction of increased melanin production, most common cause for hyperpigmentation is melanin deposition [4]. Silver granules initial found in fibroblasts and macrophages, then along basement membrane of blood vessels, sweat glands and later along dermo epidermal junction [5,6].

Commonly presented as hyperpigmentation over sun exposed areas. Though not yet understood reduction of complex silver proteins to elemental silver forms by photo activation stimulate melanogenesis.

No pathological changes or inflammatory reaction visible on histology from silver deposition diagnosed is by measurement of 24 h urine concentration of silver and serum silver concentration.

Normal serum silver concentration is 1 mcg/l or below and 24 h urine concentration is 2 mcg/l or below in a patient without history of exposure to silver ingestion [7].

Skin biopsy shows light microscopy black brown globules that are adherent to dermal elastic fibres, blood vessels, basement membrane, hair follicles, sweat glands [8].

Dark field microscopy shows refractile particles. Electron microscopy with energy dispersive radiography shows silver deposits over basement membrane [4-6,9-11].

Antioxidants such as selenium and vitamin E supplementation and sunscreen applications are effective in reducing further pigmentation [4,12,13].

Recently, Q-switched 1064-nm neodymium-doped yttrium aluminium garnet laser has been reported to be useful for resolving the skin discoloration in argyria [4].

CONCLUSION

Ingestion of chronic ayurvedic drugs containing heavy metals like mercury and silver is one of cause for hyperpigmentation, so we concluded that argyria was a diagnosis made on clinical history and careful examination. Failure to recognize argyria may result in prolonged psycho-social morbidity and unnecessary investigations and treatments.

REFERENCES

[1] Wadhera, Akhil, and Max Fung. "Systemic argyria associated with ingestion of colloidal silver." *Dermatology Online Journal* 11.1 (2005).

[2] Drake, Pamela L., and Kyle J. Hazelwood. "Exposure-related health effects of silver and silver compounds: A review." *Annals of Occupational Hygiene* 49.7 (2005): 575-585.

[3] Kapur, N., Landon, G., and Yu, R. C. "Localized argyria in an antique restorer." *British Journal of Dermatology* 144.1 (2001): 191-193.

[4] Robinson-Bostom, Leslie, et al. "Localized argyria with pseudo-ochronosis." Journal of the American Academy of Dermatology 46.2 (2002): 222-227.

[5] Al-Talib, R. K., Wright, D. H., and Theaker, J. M. "Orange-red birefringence of gold particles in paraffin wax embedded sections." *Histopathology* 24.2 (1994): 176-178.

[6] Granstein, Richard D., and Arthur J. Sober. "Drug-and heavy metal-induced hyperpigmentation." *Journal of the American Academy of Dermatology* 5.1 (1981): 1-18.

[7] Lansdown, Alan B. G. "A pharmacological and toxicological profile of silver as an antimicrobial agent in medical devices." *Advances in pharmacological sciences* 2010 (2010).

[8] Han, Tae Young, et al. "Successful treatment of argyria using a low-fluence Q-switched 1064-nm Nd: YAG laser." *International journal of dermatology* 50.6 (2011): 751-753.

[9] Saager, Rolf B., et al. "Quantitative near infrared spectroscopic analysis of Q-Switched Nd: YAG treatment of generalized argyria." *Lasers in surgery and medicine* 45.1 (2013): 15-21.

[10] Kubba, Asha, et al. "Argyria an unrecognized cause of cutaneous pigmentation in Indian patients: A case series and review of the literature." *Indian Journal of Dermatology, Venereology, and Leprology* 79.6 (2013): 805.

[11] Wickless, Scott C., and Schwader, T. A. "Medical mystery-The answer." *New England Journal of Medicine* 352 (2004): 2349-2350.

[12] White, J. M. L., et al. "Severe generalized argyria secondary to ingestion of colloidal silver protein." *Clinical and experimental dermatology* 28.3 (2003): 254-256.

[13] Brandt, Douglas, et al. "Argyria secondary to ingestion of homemade silver solution." *Journal of the American Academy of Dermatology* 53.2 (2005): S105-S107.