

Letter to the Editor

Nickel release and surveying in surgical clip alopecia

Chandler W. Rundle, Sharon E. Jacob¹School of Medicine, Loma Linda University, ¹Department of Medicine (Dermatology), Veterans Affairs Hospital, Loma Linda and Department of Dermatology, Loma Linda University, Loma Linda, CA, USAE-mail: Chandler W. Rundle - chandler.rundle@gmail.com; *Sharon E. Jacob - sjacob@contactderm.net

*Corresponding author

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Sir,

We read with interest the article by Ono *et al.* in which a woman experienced onset of redness, itching, and focal hair loss 3 weeks after clipping surgery of her cerebral aneurysm.^[3] It was noted that the four metal pins of the Sugita head holder contain allergens such as cobalt, nickel, chromium, and mercury. It was later determined that the woman had a history of contact dermatitis to metal jewelry, supporting the nickel in the etiology.

While this patient did not receive confirmatory patch testing, the authors made several key observations that are notable because contact alopecia is a rarely reported entity. First, the eczematous inflammatory response preceding the alopecia is a hallmark of contact alopecia. Whereas, in alopecia areata, round, smooth patches occur where hair once was. Second, the authors astutely state that the symptoms occurred 3 weeks after the surgery and re-growth occurred at 6 months; this time course of contact associated telogen effluvium has been previous described by Tosti *et al.*^[4]

That said, it is important (and easy) to test that nickel release from the surgical stainless steel in question to have a more definitive answer. While the percentage of nickel in the alloy is important, the amount of free release nickel in direct and prolonged contact is critical [Table 1].^[2] We suggest surgical metals including stainless steel be

tested for free nickel release using the dimethylglyoxime (DMG) nickel spot test. DMG, often dissolved in ethanol, is a colorless liquid in its unchelated state. When two molecules come into contact with a free nickel ion, a chelate forms that is red/pink in color [Figures 1 and 2]. The higher the releasable amount of nickel, the greater the



Figure 2: Dimethylglyoxime test in a paper clip

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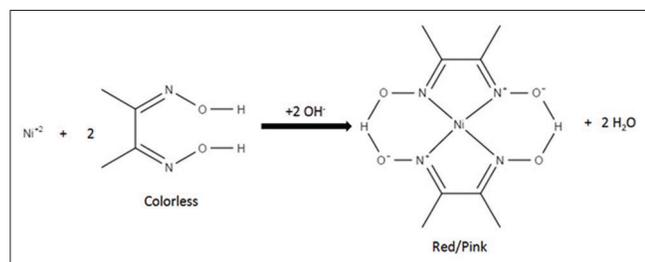


Figure 1: Reaction of dimethylglyoxime with free nickel ion

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Table 1: Grades of stainless steel and their compositions

	Iron	Chromium	Nickel	Copper	Niobium	Molybdenum	Carbon
SUS316L (Sugita Frame)	65-69%	16-18%	10-12%	0%	0%	2-3%	≤0.08%
SUS630 (Mayfield Head-Pins)	71-77%	15-17%	3-5%	3-5%	0.15-0.45%	0%	≤0.07%

pink precipitate.^[1] We do agree that patch testing is the gold standard for diagnostic confirmation of sensitization, but have also had patients refuse the testing.

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Conflicts of interest

There are no conflicts of interest.

Commentary

Metal allergy in the medical field

I read a very interesting report regarding the accuracy of the dimethylglyoxime (DMG) nickel spot test by the authors. Basically, the patch test is the most important inspection item for the evaluation of allergic patients. In addition, DMG nickel spot test^[2] can be added to the evaluation of medical equipment. It is an effective inspection method in the medical field.

Even in SUS316L, nickel is present in the content of 12–15%. In patients with metal allergy, the possibility of allergic reactions.

Therefore, considering the frequency of occurrence of metal allergies in patients, allergic reactions caused by medical instruments seems to occur more often.

In the European Union countries, the nickel content of medical stainless steel has been severely limited as a countermeasure for serious metal allergies; it cannot be sold as medical biological material if it is not tailored according to the criterion.^[1]

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In other words, there are no legal restrictions on nickel allergy in Japan; there is a gap in the regulation compared with other countries. Standard maintenance and management of nickel-free stainless steel is not determined as a national policy. It is necessary to establish a global criterion for metal allergy, including medical equipment in the future.

Finally, I emphasize that checking the history of a patient's allergy is most important as a method of preventing the metal allergic reaction in the medical field.

Hajime Ono

Division of Neurosurgery, St. Marianna University School of Medicine,
Toyoko Hospital, Kanagawa, Japan
E-mail: gen21@marianna-u.ac.jp

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