

# Nummular eczema on an old burn scar

Toshiyuki Yamamoto

Department of Dermatology, Fukushima Medical University, Fukushima, Japan

**Corresponding author:** Prof. Toshiyuki Yamamoto, MD PhD, E-mail: toyamade@fmu.ac.jp

Sir,

Herein, I describe two cases of nummular eczema on an old burn scar.

## CASE 1

A 72-year-old male visited our department complaining about itchy eruptions on the lower leg during the winter season. A physical examination revealed a depigmented oval scar with peripheral brownish pigmentation on the right lower leg and erythema with slight scales on the scar (Fig. 1). Although diffuse dry skin was observed, eczema was confined to the scar, and there were multiple senile leukoderma lesions near the scar. The patient stated that the scar was the result of a burn injury caused by contact with heated metal that had occurred more than 30 years previously. He had no medical history and was not taking any medications. Itchy erythema improved by topical corticosteroid ointment within two weeks.

## CASE 2

A 60-year-old male visited our department complaining about an itchy eruption on the lower extremity during the winter season. A physical examination showed scaly erythema on the left lower leg (Fig. 2). The patient stated that erythema initially appeared on a scalded scar by boiling water fifty years previously and spread around the scar. A closer physical examination revealed hair loss on the deep burned site (Fig. 2 arrow). He had no medical history and was not taking any medications. The lesions improved with topical corticosteroid ointment within one month.

Herein, I presented two cases of nummular eczema on an old burned scar, which were considered to



**Figure 1:** Nummular eczema confined to the burn scar on the lower extremity (case 1).



**Figure 2:** Nummular eczema on the old scar with hair loss (arrow) on the lower leg (case 2).

be induced as a result of Köbner response. Boyd and Nelder [1] previously classified the pattern of isomorphic response of Köbner into four categories: true Köbner response, pseudo-Köbner response, occasional traumatic localization of lesions, and

**How to cite this article:** Yamamoto T. Nummular eczema on an old burn scar. *Our Dermatol Online*. 2025;16(1):108-109.

**Submission:** 10.07.2024; **Acceptance:** 03.09.2024

**DOI:** 10.7241/ourd.20251.24

poor/questionable trauma-induced processes. Eczema is included in the last category, along with a number of conditions.

Injured skin is not normal and is susceptible to developing other lesions. We have recently reported a case series of nummular eczema that developed on an old surgical scar [2]. Epidermal T cells, including tissue resident memory T cells ( $T_{RM}$ ), exist in the epidermis of the surgical scar [3].  $T_{RM}$  in the scar epidermis may be involved in the development of nummular eczema; however, the stimuli that activate resting  $T_{RM}$  and convert into activated  $T_{RM}$  have not yet been clarified. Köbner response may be associated with vascular, immunologic, neural, and hormonal factors. Environmental factors such as xerosis or dry season may also be triggers for an eczematous reaction. The patients in the present two cases had 30- and 50-year-old burn scars, suggesting the long-term local presence of  $T_{RM}$  at scar sites.

Another possible mechanism of the nummular eczema on the scar may involve the role of absent in melanoma 2 (AIM2). AIM2 activation in keratinocytes drives the development of immune disorders such as psoriasis, as well as the wound healing process, suggesting that AIM2 might be the key marker modulating trained

immunity in inflammation-experienced epidermal keratinocytes [4,5]. Further studies are necessary to clarify the mechanism of the development of nummular eczema on the scar.

## Consent

The examination of the patient was conducted according to the Declaration of Helsinki principles.

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**Source of Support:** This article has no funding source.

**Conflict of Interest:** The authors have no conflict of interest to declare.