



## CASE REPORT

# Persistent Reaction to Bacitracin after Patch Testing with Thin Layer Rapid Use Epicutaneous Test

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Long-lasting allergic patch test reactions (LLAPTR) are reactions that remain positive for two weeks or more after the application of the allergen. LLAPTR of longer than 6 weeks duration is rarely seen. Here we present a 54-year-old female patient who had a positive allergic reaction to bacitracin with the thin layer rapid use epicutaneous test (TRUE test), which lasted for about 11 weeks duration. To our knowledge this is the first reported case of LLAPTR related to the bacitracin. (*Ann Dermatol* 32(4) 331 ~ 333, 2020)

**-Keywords-**

Bacitracin, Complications, Patch tests

## INTRODUCTION

Long-lasting allergic patch test reactions (LLAPTR) are defined as persisting reactions that become positive 2~7 days after the application of the allergen and remain positive for two weeks or more<sup>1</sup>. LLAPTRs persisting for longer than 6 weeks have rarely been reported<sup>2</sup>. Bacitracin is a metalloprotein antibiotic produced by *Bacillus subtilis* and *Bacillus licheniformis* and has a potent bactericidal ef-

fect on gram-positive organisms<sup>3</sup>. To the best of our knowledge, bacitracin-induced LLAPTR has not yet been reported in the literature.

## CASE REPORT

A 54-year-old female patient presented at our clinic with pruritic skin lesions on the genital region, neck and arms. The patient stated that the genital pruritus had been present for about 10 years and the lesions on the neck and arms had started one week ago after the use of a deodorant spray. She also complained of mild pruritus and erythematous lesions in various sites of the body occurring at intervals. The patient stated that she occasionally used various topical cortisone and topical antibiotics, containing bacitracin and neomycin sulfate, for pruritic lesions of the eyelids and genital area.

On dermatological examination, mild erythema on the labium minus and erythematous plaques on bilateral arms and neck were seen. We performed a biopsy from the genital region due to the history of pruritus and erythema for about 10 years. The histopathology of a biopsy from the labium minus was consistent with lichen simplex chronicus. Upon the history of nickel allergy, the patient was advised to avoid colored undergarments which are known to contain nickel and the pruritus on labium minus regressed after 1 month. The erythematous plaques on the neck and arms healed after 1 month, leaving hyperpigmented macules in their place (Fig. 1).

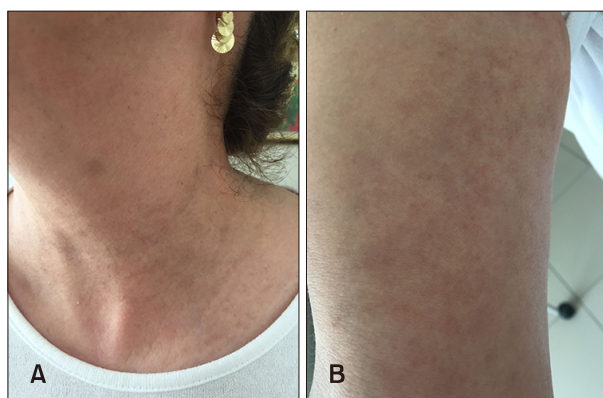
A thin layer rapid use epicutaneous test (TRUE test; Smart-Practice, Denmark Aps, Hillerød, Denmark) was performed on the back of the patient. The 48-hour results revealed a positive reaction to nickel sulphate (+ +) and bacitracin (+), and the 96-hour results showed a positive reaction to nickel sulphate (+ +) and bacitracin (+ +) again.

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**Fig. 1.** Healing lesions on the neck (A) and arm (B) leaving post-inflammatory hyperpigmentation.

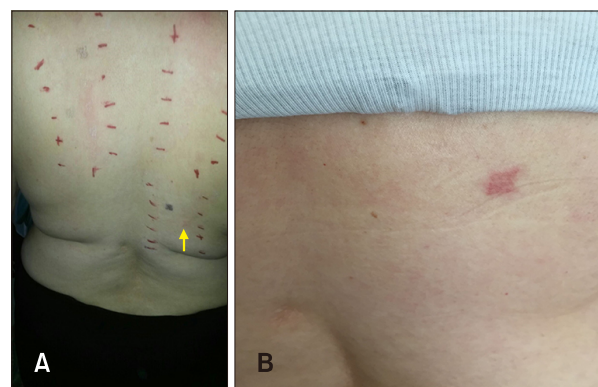
When the patient comes back after 4 weeks later, the erythema on the area that was applied bacitracin during the TRUE test was still persistent. The erythema was refractory to treatment despite the application of topical clobetasole 17-propionate ointment for one week (Fig. 2). However, it subsided spontaneously 11 weeks later.

We received the patient's consent form about publishing all photographic materials.

## DISCUSSION

Though previously considered to occur rarely, LLAPTR has been reported to be not so rare after a patch test, occurring in up to 17.9% of the patients with allergic reactions<sup>1</sup>. LLAPTR generally presents as palpable erythema, local pruritus and hyperpigmentation<sup>4</sup>. The patch test results are generally strongly positive (++ or more) and clinically highly consistent<sup>1</sup>. The 4th day reading of the TRUE test in our case similarly revealed a strongly positive allergic reaction (++) to bacitracin. We believe the neck and arm lesions also could be due to the patient's deodorant as many such products contain bacitracin but we were unable to access the exact content of the patient's preferred product.

LLAPTR shows no sex predilection but older patients are more frequently affected. Atopy and the presence of strong patch test reactions pose a risk for LLAPTR. The pathophysiologic mechanism of LLAPTR has not been fully elucidated. The healing process of allergic contact dermatitis has been related to the clearance of the allergens from the skin but recent studies have demonstrated the long-term existence of some allergens in the skin leading to constant antigen stimulation, which is suggested as one of the etiopathogenetic mechanisms for LLAPTR. Disregulation in the downregulation of the cell-mediated immune response is



**Fig. 2.** (A) Positive patch test reaction to bacitracin at 48 hours (yellow arrow). (B) Persistent erythema on the bacitracin applied area at the 5th week, despite the application of topical clobetasole 17-propionate ointment for one week.

also thought to be responsible in the etiopathogenesis<sup>1,5</sup>. The histopathology of LLAPTR is generally characterized by mild epidermal changes and perivascular dermal lymphocytic infiltration<sup>6</sup>. Some of LLAPTR related to gold sodium thiosulphate demonstrate lymphocytic infiltrate intermingled with epithelioid like cells showing a tendency to form a granulomatous tissue reaction and pseudolymphomatous structures not leading to overt epidermal eczematous changes<sup>7,8</sup>. García-Rodiño et al.<sup>9</sup> has reported a long lasting reaction to minoxidil which was consistent with cutaneous lymphoid hyperplasia. Lichenoid reaction pattern was observed in the skin biopsy of four LLAPTR to inorganic mercury<sup>10</sup>. In our case since the patient did not accept biopsy unfortunately the histopathology result was not obtained.

Here we report a case of LLAPTR related to bacitracin, revealing the importance of evaluating patch test results after day 4 and informing the patients about the possibility of long-lasting allergic reactions in the test area. This is the first case demonstrating LLAPTR associated with bacitracin as far as we are aware.

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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