

Allergic contact dermatitis caused by paromomycin

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Paromomycin, previously named aminosidine, is an aminoglycoside that was isolated in the 1950s from *Streptomyces krestomuceticus*. Its spectrum of activity includes Gram-negative and Gram-positive bacteria, *Mycobacterium tuberculosis*, and non-tubercular mycobacteria. Paromomycin is used worldwide for the topical and systemic treatment of visceral, mucocutaneous and cutaneous leishmaniasis.¹ Topical paromomycin was first used for the treatment of cutaneous leishmaniasis in 1985.^{2,3} It is usually employed at a concentration of 15% along with 12% methylbenzethonium chloride in white pet., and is applied once or twice daily for 3 to 4 weeks.⁴ Paromomycin is often irritant; however, to our knowledge, no cases of allergic contact dermatitis (ACD) have been reported. We report five cases of ACD caused by paromomycin.

CASE REPORTS

Complete patient characteristics are shown in Table 1. In all patients, the clinical diagnosis was confirmed by cytological and histopathological examinations, culture on Novy-MacNeal-Nicolle medium, and positive anti-*Leishmania* IgG (immunochromatography) and IgM (western blot) findings. Polymerase chain reaction gave a positive result for *Leishmania infantum*. All patients had been treated with 15% paromomycin sulfate ointment by two applications daily for 3 weeks under occlusive dressings. The ointment also contained glycerin, vaseline, sepiigel 305, sodium bicarbonate, and sodium hydrate.

The dermatitis was characterized by erythema (one patient), erythema and vesicles (two patients), erythema and erosions (one patient)



FIGURE 1 A 64-year-old patient with erythema and erosions on the right arm

(Figure 1), itching (four patients), and burning sensation (one patient). All patients were patch tested with the Società Italiana di Dermatologia Allergologica, Professionale e Ambientale (SIDAPA) baseline series. Four patients had positive reactions (++/+++ to 20% neomycin sulfate. All patients had positive reactions (++/+++ on day (D) 3 and D4 to paromomycin sulfate 10% and 50%, both in aq. and in pet., respectively, and negative results with the other compounds. Five controls had negative results. We also tested 10% kanamycin sulfate: four patients had positive reactions (++) (Table 1). It was not possible to perform patch tests with bacitracin and framycetin.

TABLE 1 Patient characteristics and results of patch tests

Sex	Age (y)	Locations	Clinical manifestations	Neomycin	Paromomycin	Kanamycin
M	58	Forehead, left leg	Erythema, itching	—	++	—
F	40	Right thigh	Erythema, vesicles, itching	+++	+++	++
M	52	Left leg	Erythema, vesicles, itching	+++	+++	++
M	72	Left forearm	Erythema, burning sensation	++	++	++
M	64	Right arm	Erythema, erosions, itching	+++	+++	++

Abbreviations: F, female; M, male.

DISCUSSION

As previously mentioned, paromomycin is often irritant. Cases of erythema,^{1,5-10} oedema,^{1,6-8,10,11} vesicles,^{8-10,12} blisters,⁶ erosions,¹³ folliculitis,¹³ itching,^{1,5,7,9-13} burning sensation^{3-5,7,10-12} and pain^{1,5-10,13-15} have been reported. In a Colombian study published in 1998, pruritus and burning sensation occurred in 25% of patients, and vesicular lesions in 15% of them.¹² However, to our knowledge, no cases of ACD have been described so far. In a study carried out in Panama, the authors stated that they observed 89 cases (44.9%) of "contact dermatitis" out of a total of 198 patients treated with paromomycin in a hydrophilic vehicle (one application daily for 20 days). However, patch tests were not performed.¹³

The cross-sensitivity of paromomycin with neomycin, bacitracin, framycetin and kanamycin is attributable to the fact that all of these drugs contain a deoxystreptamine moiety (1,3-diamino-4,5,6-trihydroxycyclohexane).^{16,17} In addition, framycetin is identical to neomycin B.¹⁶ In summary, we have reported, probably for the first time, five cases of ACD caused by paromomycin. However, it is possible that some cases reported in the literature and diagnosed as irritant contact dermatitis were actually cases of ACD.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

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