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ACUTE PRIMARY CUTANEOUS *NOCARDIA ASTEROIDES* INFECTION IN A PATIENT WITH SYSTEMIC LUPUS ERYTHEMATOSUS. CASE REPORT

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SUMMARY

We report a case of acute primary cutaneous infection of traumatic origin caused by *Nocardia asteroides*, appeared as cellulitis in a patient with systemic lupus erythematosus. Diagnosis was established by direct examination and cultures from aspirate specimens. The clinical forms of *Nocardia* infections that affect the skin, reported in Rio Grande do Sul and Uruguay, are discussed.

KEYWORDS: Acute primary cutaneous infection;*Nocardia asteroides*; Systemic lupus erythematosus.

INTRODUCTION

Acute primary cutaneous nocardiosis occurs following traumatic introduction of nocardiae spores into the cutaneous or subcutaneous tissues [2]. The infectious process induce an inflammatory response which results in either a cellulitis or pyoderma, appearing as diseases caused by common pyogenic bacteria [6, 10]. Although the incidence of acute primary cutaneous nocardiosis was thought to be relatively rare, some authors have pointed out that this clinical form of the infection is possibly more common than is usually appreciated [6, 10] This paper reports a case of the acute primary cutaneous nocardiosis appeared as cellulitis in a patient with systemic lupus erythematosus. We discuss the clinical forms of *Nocardia* infections that affect the skin, diagnosed in Rio Grande do Sul, the southermost state in Brazil, and in Uruguay, a neighbouring country with similar economic and geographic conditions.

CASE REPORT

A 55-year-old man, living in Santiago, RS, was hospitalized at the Santa Maria University Hospital on 21 February 1995. The patient suffered from systemic lupus erythematosus, and since 1976 had been receiving prednisone and furosemide. On occasion he presented in a poor condition, with unproductive cough, jaundice, mental disturbance, metabolic acidosis, renal insufficiency and rheumatic arthritis. He complained of severe arthralgia on the left wrist and hand, and on the left foot. The lesion of the foot started after a wound on the hallux, one month before, and presented as cellulitis with hematic bullae (Fig. 1). Laboratory findings revealed creatinine 2.0 mg/dl; uric acid 10.0 mg/dl; alkaline phosphatase 3185 IU; lactate dehydrogenase 535 IU; aspartate aminotransferase 1110 IU, and alanine aminotransferase 791 IU. Gouty arthritis and pyogenic abscess of the foot were considered in diagnosis. Aspirate specimen revealed gram

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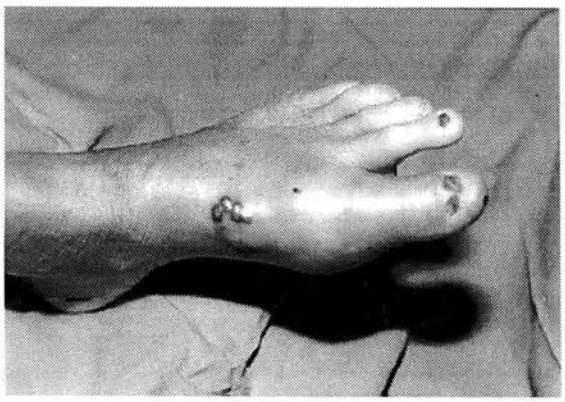

Fig. 1 - Acute primary cutaneous *N. asteroides* infection: cellulitis with hematic bullae.

positive, partially acid-fast, slender ramified fragmented filaments consistent with nocardiae (Fig. 2).

Cultures on Sabouraud's agar and BHI broth, incubated at 25 and 37°C aerobically, revealed slow growing colonies, granular and orange in color, identified as *N. asteroides*. Treatment with trimethoprin 320 mg-sulfamethoxazole 1600 mg, three times a day was started, with improvement of the lesion. The patient was discharged on 16 March in good conditions, with normal laboratory parameters.

DISCUSSION

The host/parasite relationship may play an important role in the establishment of the clinical form of nocardiosis, specially involving the cell-mediated immunity and the pathogenic power of different strains [2, 4]. Cutaneous manifestations of the infection may be the result of primary inoculation or of the seeding of the skin from a disseminated infection [1]. Attempts to classify the clinical forms of nocardiae infections that affect the skin reveals differences among authors [5]. Since the nocardiae infections of the skin tend to be more indolent than diseases caused by common pyogenic bacteria [2], LOPES et al. [8] proposed the following classification: 1) acute primary cutaneous; 2) chronic primary cutaneous or nocardial mycetoma and 3) disseminated infection with skin involvement.

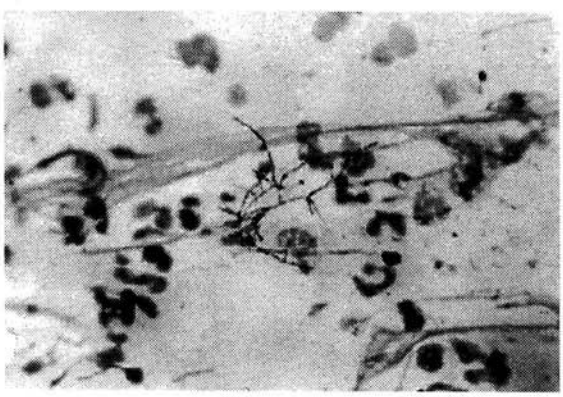

Fig. 2 -*N. asteroides*: slender ramified fragmented filaments, partially acid-fast. Kinyoun, x630.

Cutaneous nocardiae infections in Brazil and Uruguay were usually considered as nocardial mycetoma or premycetomatous lesions [3, 7]. Considering the classification proposed [8], a review of 14 cases diagnosed in these regions revealed that acute primary cutaneous nocardiosis are more common than is usually appreciated (Table 1). Nine cases (64.3%) may be classified as acute primary cutaneous. These cases appeared as cellulitis, papules, nodules or abscesses, similar in appearence to disease caused by common pyogenic bacteria. In three cases the lymphocutaneous syndrome mimmicking sporotrichosis were observed [3]. In this form of cutaneous nocardiosis, nocardiae grows in tissues usually as slender branching filaments, but grains formation were observed in some cases. *N. brasiliensis* was identified in four Uruguayan cases and two in Brasil. *N. asteroides* was identified once in each region and *Nocardia* sp. once in Uruguay. The apparent rarity of acute primary cutaneous nocardiosis may be explained because the self-limited lesions may mimic other pyogenic infection, and the slow growing nocardiae are usually not cultured, as occurred in case nº 7. Cases nº 2 and 7, however, are examples of the acute primary cutaneous form that have appeared as subcutaneous nodule or abscess, and later evolve to chronic primary cutaneous form or nocardial mycetoma. The absence of grains, sinus and/or swelling in this clinical form of nocardiosis may reflect only a shorter duration of illness and less extensive disease than a distinct clinical and histological condition [10].

Four cases (28.5%) may be classified as chronic primary cutaneous nocardiosis. This clinical form represent the nocardial mycetoma, the end-stage of the acute primary cutaneous nocardiosis. Mycetoma is defined as a localized, desfiguring tumour with draining sinuses and grains of the agent in the infected tissues [9]. The initial lesion noticed by the patient is often a small painless cutaneous or subcutaneous nodule or abscess of traumatic origin. The lesion

TABLE 1

Nocardia infections of the skin: reported cases in Rio Grande do Sul (Brazil) and Uruguay

Nº	Pat/ref	Wound/site	Evolution	Lesion/clinical form	Agent in tissue
1.	32,M/7	not done/leg	11 years	nocardial mycetoma/CPC	*N. brasiliensis*/G
2.	20,W/7	yes/foot	2 months	subcutaneous nodule, sinus/APC	*N. brasiliensis*/G
			↓	↓	
			3 years	nocardial mycetoma/CPC	
3.	31,W/7	not done/foot	3 years	nocardial mycetoma/CPC	*N. brasiliensis*/G
4.	19,M/7	not done/arm	6 months	cutaneous nodule, sinus/APC	*N. brasiliensis*/G
5.	74,M/8	no,COPD/arm	6 days	pustules/disseminated	*N. asteroides*/F
6.	55,M/Pr	yes, SLE/foot	1 month	cellulitis/APC	*N. asteroides*/F
7.	25,M/3	no/leg	8 months	subcutaneous abscess/APC	negative
			↓	↓	
			4 years	nocardial mycetoma/CPC	*N. asteroides*/G
8.	68,M/3	no/leg	2 years	nocardial mycetoma/CPC	*N. asteroides*/G
9.	33,W/3	not done/foot	8 months	papules/APC	*Nocardia* sp.
10.	11,M/3	not done/foot	2 months	subcutaneous nodule/APC	*N. asteroides*/F
11.	61,M/3	yes/hand	not done	lymphocutaneous/APC	*N. brasiliensis*/F
12.	50,W/3	not done/hand	not done	lymphocutaneous/APC	*N. brasiliensis*/F
13.	29,M/3	yes/arm	2 weeks	lymphocutaneous/APC	*N. brasiliensis*/F
14.	70,W/3	no/shoulder	3 months	cutaneous abscess/APC	*N. brasiliensis*/F

Abbreviations: M-male; W-female; Pr-present report; COPD-chronic obstructive pulmonary disease; SLE-systemic lupus erythematosus; CPC-chronic primary cutaneous; APC-acute primary cutaneous; G-grains; F-filaments.

spreads slowly into deeper adjacent or lympho-cutaneous tissues, enlarges and ruptures to the surface, forming sinus tracts and causing desfiguring swelling. With time, the infection involves the muscle and bone. Curiously, mycetoma in Brazil were caused by *N. brasiliensis* [7] and in Uruguay by *N. asteroides* [3]. Although traumatic origin was denied or not done in some cases, it is likely that inoculation into cutaneous or subcutaneous tissues originated the infection, since nocardiae are ubiquitous in the soil. This fact explain the localization of the lesions in sites exposed to traumatism, like feet and hands.

In disseminated nocardiosis the patients may present single or multiple lesions of the skin or subcutaneous tissues. In early stages, these cases appear as pustules, cellulitis, abscesses or subcutaneous nodules [2]. Usually there is evidence of an underlying visceral focus and absence of local trauma of the skin. The reported case appeared as pustules caused by *N. asteroides*, in a patient with chronic obstructive pulmonary disease [8].

The male/female ratio in the reported cases was 1.8:1. *N. brasiliensis* was identified in eight cases (57.1%), *N. asteroides* in five (35.7%), and *Nocardia* sp. in one (7.1%).

Diagnosis of primary cutaneous or disseminated nocardiosis with skin involvement is often delayed because the clinical features are inespecific. The diagnosis therefore relies on the isolation of nocardiae, which can be difficult: *Nocardia* species grows slowly on agar media and the discard of routine cultures after 48 to 72 hours makes the isolation of nocardiae impossible. However, the early diagnosis of these infections is the result of a prompt medical consultation, and depends on a careful integration of clinical and laboratory parameters.

RESUMO

Infecção primária cutânea aguda por *Nocardia asteroides* em paciente com lupus eritematoso sistêmico.

Relatamos um caso de infecção primária cutânea aguda de origem traumática, causada por *Nocardia asteroides*, que manifestou-se como celulite em paciente com lupus eritematoso sistêmico. O diagnóstico foi feito pelo exame direto e cultivos do aspirado da lesão. São discutidas as formas clínicas das infecções por *Nocardia* que afetam a pele, relatadas no Rio Grande do Sul e no Uruguai.

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