

## Cutaneous *Nocardia brasiliensis* Infection in an Immunocompetent Patient

Alexandre G Lellouch<sup>1,3</sup>,  
Lior Amsallem<sup>3</sup>,  
Zhi Yang Ng<sup>1,2</sup> and  
Nicolas Robert<sup>3</sup>

### Abstract

*Nocardia Brasiliensis* infections involving the hand are uncommon. Optimal treatment involves a combination of surgical debridement and appropriate antimicrobial therapy. However, identification of this pathogen is usually delayed and the lack of timely may compromise on functional outcomes.

**Keywords:** *Nocardia brasiliensis*; Immunocompetent; Adenophlegmon; Lymphangitis

**Received:** December 12, 2016; **Accepted:** January 11, 2017; **Published:** January 20, 2017

### Introduction

In the field of hand surgery, phlegmon is a common emergency. Microbiological sampling during surgical treatment is recommended with staphylococcus and streptococcus commonly identified [1]. In most cases, broad-spectrum intravenous antibiotic therapy is required in the postoperative phase [2,3]. However, some pathogens require specific antibiotic treatment. We report here a rare case of *Nocardia brasiliensis* infection of the hand in an immunocompetent elderly patient.

### Case Study

A 72-year-old French woman presented to the emergency department with an infection of the left index finger. Her past medical history was significant for bipolar disorder for which she is on valproate, oxazepam and zopiclone. She had previously been seen two days ago by her general practitioner who prescribed amoxicillin+clavulanic acid. Clinical examination revealed a pulpar phlegmon on the left index (**Figure 1**) with pain along the flexor sheath, ascending lymphangitis and an adenophlegmon in the antecubital fossa (**Figure 2**). Standard hand X-rays did not reveal any osteitis or foreign body. On further questioning, the patient denied preceding trauma and infections. She lived alone, did not do any gardening and had not travelled within the past year.

The patient was then transferred to the operating room for definitive surgical treatment under loco-regional anesthesia: necrotic tissue of the pulpar phlegmon was excised (**Figure 3**) and a counter incision was performed for anterograde cleansing and drainage of the flexor sheath, and synovectomy of the adenophlegmon. Frank pus was found and samples were taken

- 1 Division of Plastic and Reconstructive Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA
- 2 Vascularized Composite Allotransplantation Laboratory, Center for Transplantation Sciences, Massachusetts General Hospital, Boston, MA, USA
- 3 Hand Surgery Department, Saint Antoine Hospital, 75012 Paris, France

### Corresponding author:

Alexandre G Lellouch

✉ lellouchalexandre@gmail.com

HandSurgery Department, Saint Antoine Hospital, 75012 Paris, France.

**Tel:** 9141245548

**Fax:** 6177264067

**Citation:** Lellouch AG, Amsallem L, Ng ZY, et al. Cutaneous *Nocardia brasiliensis* Infection in an Immunocompetent Patient. J Aesthet Reconstr Surg. 2017, 3:1.

for microbiology. Due to regional extension of the infection, empiric antibiotic coverage with IV amoxicillin+clavulanic acid was initiated. Cultures were positive for *N. brasiliensis* (**Table 1**) and a three-month course of PO cotrimoxazole was started. In view of the bacterial isolate, further workup with staging scans were done (CT chest/abdomen/pelvis, CXR) as well as immunologic assessment (HIV serology, fasting blood sugar, protein electrophoresis); all test results returned negative. The patient's recovery was otherwise unremarkable and no septic recurrence was observed after completing antibiotic treatment.

*N. brasiliensis* has been found in the soil in many tropical and subtropical areas but rarely in temperate regions. Diagnosis is



**Figure 1** Pulpar phlegmon on the volar aspect of the left index finger.



**Figure 2** Adenophlegmon of the left arm.



**Figure 3** Post-debridement.

**Table 1:** Antibigram.

ANTIBIOGRAM: <i>Nocardia brasiliensis</i>	
R: Ampicillin	S: Gentamycin
S: Amoxicilin	S: Tobramycin
S: Amoxicilin+Clavulanic acid	S: Amikacin
S: Ticarcillin+Clavulanic acid	S: Minocycline
S: Piperacillin+Tazobactam	R: Doxycycline
R: Imipenem	S: Tigecycline
R: Meropenem	R: Erythromycin
R: Ertapenem	S: Linezolid
R: Doripenem	R: Vancomycin
S: Cefuroxime	R: Trimethoprim
S: Cefotaxime	S: Trimethoprim+sulfamethoxazole
S: Ceftriaxone	R: Ciprofloxacin
S: Cefepime	S: Levofloxacin
R: Pristinamycin	R: Rifampicin

challenging because the clinical picture is non-specific [4,5] and presents in various forms: Primary cutaneous (superficial skin infection), subcutaneous abscess [6], pyoderma [6], ulceration [6], cellulitis [6], lymphangitis, mycetoma (chronic form) and even necrotizing cutaneous tissue [7]. Nevertheless, some clinical signs are highly suggestive such as nodular lymphangitis [8,9]. Typically, traumatic inoculation of *N. brasiliensis* into the skin develops into an infection in immunocompetent hosts, resulting in acute inflammatory responses as depicted in our case. The optimal treatment strategy for cutaneous *N. brasiliensis* infection is a combination of surgical excision and pus drainage together with cotrimoxazole antibiotic therapy. The duration of antibiotic treatment is not well-defined, but current evidence suggests that it must be sufficient to allow complete eradication especially in immunocompetent patients [4,10-12].

In cases with hand involvement, should clinical improvement not be achieved following surgery and empirical IV antibiotics, further surgery and early initiation of cotrimoxazole may be required prior to identification of the pathogen. Indeed, clinical recognition of the possibility of *N. brasiliensis* infections by hand surgeons is essential to prevent delay in appropriate treatment

and the attendant sequelae including permanent hand stiffness. According to the literature, typical penicillin-based, broad-spectrum antibiotics are inappropriate for the treatment of *N. brasiliensis* infections in most cases [10].

## Conclusion

Acute *N. brasiliensis* phlegmon is uncommon but has to be suspected in cases associated with adenophlegmon in the

ipsilateral limb. Cotrimoxazole antibiotic therapy has to be of at least 6 weeks' duration [13,14] to allow sufficient eradication. Additional work-up during the time of presentation should also be performed to evaluate for possible underlying etiologies that may contribute towards an immunocompromised state.

## Acknowledgement

There is no conflict of interest. Verbal consent was obtained from the patient.

## References

- 1 Carmes S, Tekam A, Rogier A, Brouste Y, Dumontier C (2011) Epidemiology of the panaris of the pulp. *Chir Main* 30: 428.
- 2 Delgrande D, Pierrart J, Mamane W (2014) Panaris and post-operative antibiotherapy: evaluation of practice. *Chir Main* 33: 420.
- 3 Delgrande D, Pierrart J, Mamane W (2014) Inutility of antibiotics in postoperative treatment Load of panaris: prospective series of 46 cases. *Chir Main* 33: 420.
- 4 Dodiuk-Gad R, Cohen E, Ziv M (2010) Cutaneous nocardiosis: report of two cases and review of the Literature. *Int J dermatol* 49: 1380-1385.
- 5 Schall K, Lee H (1992) Actinomycete infections in humans: à review. *Gene* 115: 201-211.
- 6 Tara Lykowski A, Emil Orpilla R, Richard Hayek J (2008) The history holds the key in this gardener with a skin infection. *JAAPA* 21: 35-37.
- 7 Joseph Ricci A, Ana Weil A, Kyle Eberlin R (2015) Necrotizing cutaneous Nocardiosis of the Hand: A case report. *J Hand Microsurg* 7: 224-227.
- 8 Sharma NL, Mahajan VK, Agarwal S, Katoch VM (2008) Nocardial mycetoma: Diverse clinical presentations. *Indian J Dermatol Venereol Leprol* 74: 635-640.
- 9 Lohmeyer JA, Machens HG, Werber KD (2010) A case of severe cutaneous nocardiosis. *J Hand Surg Eur* 35: 72-73.
- 10 Smego R, Moeller M, Gallis H (1983) Trimethoprim-sulfamethoxazole therapy for Nocardia infections. *Arch Intern Med* 143: 711-718.
- 11 Burgert SJ (1999) Nocardiosis: a clinical review. *Inf Dis Clin Pract* 8: 27-32.
- 12 Shifren JD, Milliken RG (1996) An acute Nocardia brasiliensis Infection of the Hand: a case report. *J Hand Surg Am* 21: 309-310.
- 13 Kalb RE, Kaplan MH, Grossman ME (1985) Cutaneous nocardiosis. Case reports and review. *J Am Acad Dermatol* 13: 125-133.