

Clinical manifestations and pronostic factors of nocardiosis in Alicante, Spain, over a fifteen-year period

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INTRODUCTION/OBJECTIVE

Nocardial infections are unusual and difficult to diagnose. The purpose of this study was to describe the demographic, clinical and microbiological characteristics as well as prognostic factors of patients with infection by *Nocardia spp.* occurred in four public teaching hospitals belonging to the province of Alicante (Spain).

METHODS

A multicenter, observational and retrospective chart review study was done in patients diagnosed of *Nocardia spp.* infection, including a period of fifteen-years, according to the databases of Microbiology and Admission Services of Vega Baja hospital in Orihuela, General hospital in Alicante, San Juan hospital and Marina Baixa hospital in Villajoyosa, that provide healthcare to approximately 863.280 inhabitants.

RESULTS

From January 2000 through April 2015, 93 patients were diagnosed of nocardiosis, but only 87 charts had enough clinical information to be included for the analysis, 83 of them (95,4%) had underlying diseases, the mean age-adjusted Comorbidity Charlson Index was 5,2 (3). Clinical characteristics and presentation are shown in tables 1 and 2.

CLINICAL CHARACTERISTICS	N (%)
Male sex	69,3%
Mean age years, range	67,8 (15,4) (12-92)
Current or former smoker	51 (58,6%)
Pulmonary underlying condition	
- Chronic obstructive pulmonary disease	51 (58,6%)
- Healed pulmonary tuberculosis	10 (11,5%)
- Bronchiectasis	33 (37,9%)
- Pulmonary Fibrosis	3 (3,4%)
- Cystic Fibrosis	1 (1,1%)
- Pulmonary alveolar proteinosis	1 (1,1%)
- Asbestosis	1 (1,1%)
- Bronchial asthma	7 (8%)
- Bronchiolitis obliterans organising pneumonia	5 (5,7%)
Non-pulmonary underlying condition	
- Cardiovascular diseases	28 (32,2%)
- Diabetes mellitus	24 (27,6%)
- Connective tissue diseases	2 (2,3%)
- Hepatic diseases	3 (3,4%)
- Renal failure	16 (18,4%)
- Solid/ Hematologic malignancies	20 (21%)
- Inflammatory bowel diseases	4 (4,6%)
- Common variable immunodeficiency	5 (5,7%)
- HIV infection	2 (2,3%)
- Alcoholism	6 (6,9%)
- Myasthenia gravis	2 (2,3%)
- ADVP	1 (1,1%)
Others	
- Glucocorticoid therapy (oral, inhaled)	36 (41,1%)
- Anti TNF therapy	11 (12,6%)
- Chemotherapy/Radiotherapy	12 (13,8%)

Table 1: Clinical characteristics of patients with nocardiosis

CLINICAL PRESENTATION	N %
Pulmonary (Bronchitis, pneumonia)	72 (82,3%)
Cutaneous	11 (12,6%)
Others (Bone, eye)	4 (4,5%)
Disseminated	3 (3,4%)
RADIOGRAPHIC FINDINGS (XRAY, CT)	
Air-space consolidation	37 (42,5%)
Cavity	14 (16,1%)
Pleural effusion	14 (16,1%)
Abscess	2 (2,3%)

Table 2. *Nocardia* infections clinical manifestations

The median time up to the diagnosis was 20 days (IQR 12-30). All *Nocardia spp.* isolates were identified by standard procedures and 45 of them (51,7%) also by 16S rRNA gene polymerase chain reaction (PCR) and sequencing (fig.1).

Forty one percent patients had polymicrobial infections. Antimicrobial sensibility study was obtained in 55 isolates (63,2%), 8% presented resistance to cotrimoxazol and 3,4% to amikacin. Twenty one patients (24%) died, 11 (12,6%) of them were considered related to infection.

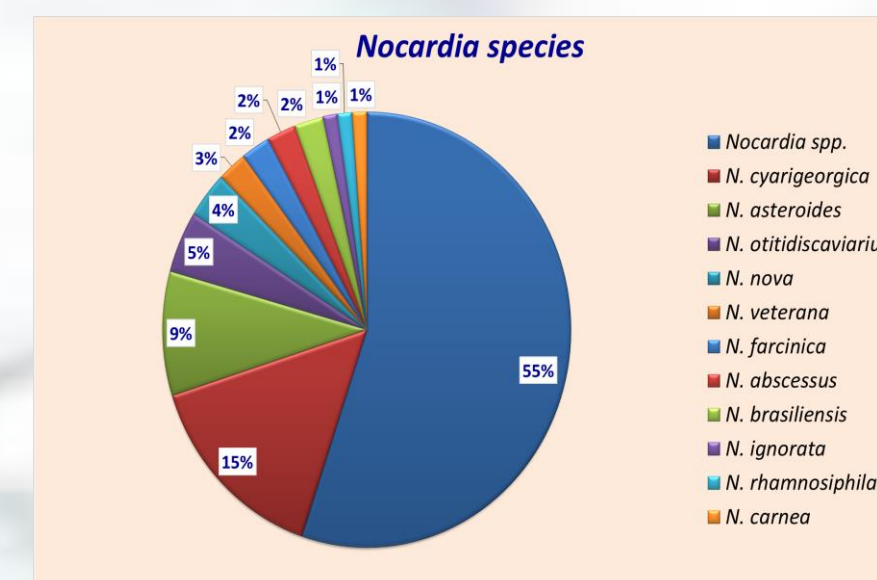


Figure 2. *Nocardia spp.* distribution

Factors associated with infection-related mortality were Charlson score greater than 6 (OR 5,63; CI 95%: 1,48-21,48; p=0,006), hematogenous spread (OR 10,5; CI 95%: 5,43-20,29; p<0,001) and chronic kidney disease (OR 4,92; CI 95%: 1,27-18,95; p=0,013).

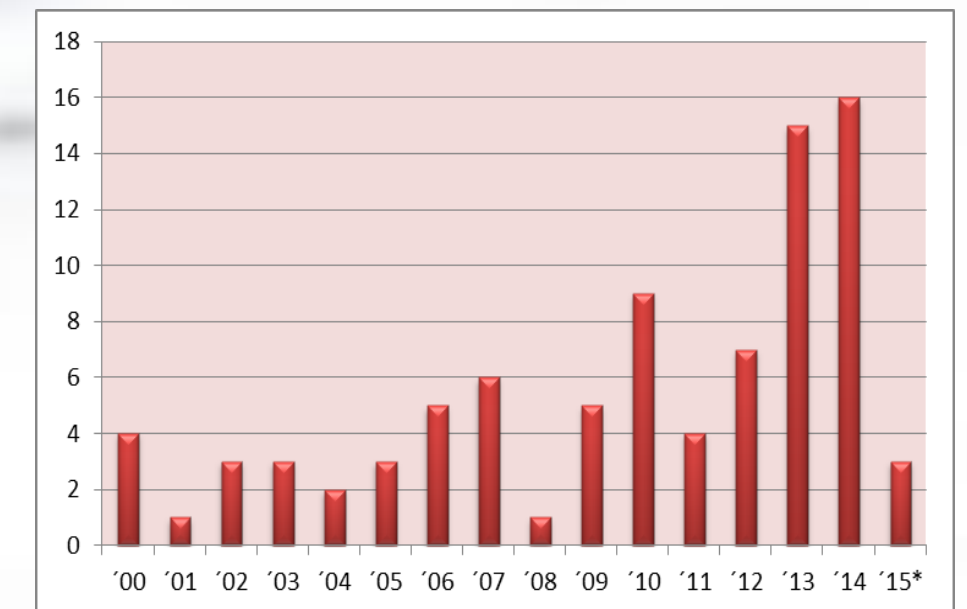


Figure 1. *Nocardia spp.* infections 2000-April 2015

CONCLUSIONS

- 1) Nocardiosis affects patients with high index of comorbidity.
- 2) Chronic lung diseases were the most common underlying condition.
- 3) New species of *Nocardia* were identified.
- 4) A significant proportion of *Nocardia spp.* isolates were resistant to cotrimoxazole.
- 5) Polymicrobial infections were frequent in our study but were not associated to mortality.
- 6) Comorbidity, chronic renal disease and disseminated presentation increased mortality related to infection.

