Leishmania spp./Mycobacterium leprae COINFECTION IN CHOLUTECA (HONDURAS) AND CHINANDENGA (NICARAGUA)

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The aim of the study is to identify the etiological agent present in skin lesions suspicious of leprosy or *Leishmania* in some individuals of the populations of Choluteca (Honduras) and Chinandega (Nicaragua) and potential implications for their household members.
METHODS

- 2011

STUDY AREA

- Central America (Pacific Coast)
- The seasons are largely in function of elevation
- Hot and humid almost year-round. Temperatures vary by altitude rather than season.
- The average high temperature nationwide is 32°C (90°F) and the average low is 20°C (68°F). Temperatures are coolest in mountain areas.
METHODS

- Clinical examination

SAMPLES

Cases suggestive of leprosy or *Leishmania*:
- 35 biopsies of 33 individuals from skin lesions (erythematous macules)
- 18 post biopsy swabs from the biopsy excision/16 individuals
- 99 nasal swabs of 98 different individuals
METHODS

TECHNIQUES

All samples were analyzed by the Polymerase Chain Reaction (PCR):

- Detection of specific genus/specie DNA of *Leishmania* spp. (ITS-1 gene target) by nested PCR
  
- Detection of *Mycobacterium leprae* DNA (groEL and RLEP gene target)
  Nested PCR (Plicaytis et al., 1990; Donoghue et al., 2001)

PCR-RFLP (Hae III) (Schönian *et al.*, 2003)
RESULTS

A total of 111 individuals were included in the study:
• 83 females and 28 males
• Their ages varied between 6 and 83 years, mean age: 30 years
• 47 from Honduras and 64 from Nicaragua

They all presented skin lesions compatible with leprosy or *Leishmania* or were contacts of these cases.

**Biopsies:**

• *M. leprae* DNA: 5/35 were positive using primers that amplify a specific fragment of the groEL gen and 8/35 for the RLEP repetitive sequence.

• *Leishmania* spp. DNA was detected in 24/35 biopsies (22 individuals) and *Leishmania infantum* was identified in all the samples.

DNA of both species was detected in 5/35 samples (5 patients).
RESULTS

Post biopsy swabs:

- **2/18** were positive for the *M. leprae* RLEP target and all negative for the groEL gen.
- Leishmania spp. DNA was amplified in **13 swabs/11 patients** and the species detected was *L. infantum* and correlation with the biopsies was 62.5%.
- The post biopsy swab was DNA *Leishmania* positive in 3 biopsy negative samples and 3 DNA biopsy positive were post biopsy swab negative.
- The post biopsy swabs and corresponding biopsies results presented 100% correlation. *Leishmania* spp.

DNA of both species was detected in **1 post biopsy** swab and was 100% concordant with the biopsy result.

Nasal Swabs:

- **99 nasal/98** individuals nasal swabs were negative for PCR amplification of the gene groEL but **4/99** were positive for the RLEP *M. leprae* target.
  
  - *Leishmania* spp. DNA was detected in **1/99** nasal swab which correlated with one of the 3 positive post-biopsy swabs and skin biopsy negative.
RESULTS

*M. lepraem* DNA was detected in 10/111 (8 biopsies and 2 nasal swabs) individuals and *Leishmania infantum* DNA in 25/111 (24 biopsies and 1 nasal swab) individuals

5 individuals was *coinfected*

2 from Honduras

3 from Nicaragua
CONCLUSIONS

- The presence of unspecific skin lesions in areas where leprosy and *Leishmania* are endemic emphasizes the need of a correct diagnosis.

- Prospective studies that correlate the presence of the etiological agent with the clinical evolution of the lesion are necessary for the implementation of the proper treatment and clinical evolution.