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**Title:** Molecular detection of Nocardia by Semi-Nested PCR, and compare with culture and biochemical test

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**Abstract:**

**Background:**

Nocardiosis is a rare and potentially life-threatening infection caused by several species of the Nocardia genus. Inhalation of the organism is the most common mode of entry, since the lungs are most frequently involved. The majorities of human nocardiosis cases (80%) are caused by Nocardia asteroides and usually occur in immunocompromised hosts. The morbidity and mortality brought about by pulmonary nocardiosis can be substantially reduced through prompt diagnosis and management. Conventional identification of Nocardia species in routine medical laboratories which is based on phenotypic methods is often laborious a time-consuming. The need for new methods allowing identification of Nocardia is crucial.

**Objective:**

The objective of this study was to develop and evaluate a rapid new method of identifying clinically relevant Nocardia species. We reported and validated a Semi-Nested PCR to perform a diagnosis directly from BAL samples.

**Material and Methods:**

Two hundred and fifty patients with advanced symptomatic pulmonary infection were studied in the course of an 18 month period. Then nocardial DNA was extracted with an MTB respiratory specimen preparation kit. Primers NG1, NG2, and NS were used to amplify a Nocardia genus-specific 402-bp fragment of 16S rRNA. Also the BAL specimens were cultured in blood agar and SDA, and then incubated in 37 °C. Afterwards biochemical tests (casein, tyrosine, xanthine, hypoxanthine, and urease) were conducted for the organisms grown.

**Results:**

Our results revealed that the bronchopulmonary infection was an important index for the primary diagnosis of nocardiosis. As the important finding of the present research, 33 samples (13.2%) were positive with PCR and 7 samples (2.8%) were positive with conventional methods. All samples with positive cultures also were positive Semi-Nested PCR.

**Discussion:**

Rapid and accurate diagnosis for treat severe infections caused by Nocardia spp, especially prevention of brain abscess, is essential. This study showed that Semi-Nested PCR has high sensitivity and accuracy in the detection of Nocardia.

**Conclusion:**

Rapidity and sensitivity Semi-Nested PCR in the detection of Nocardia are much more compared with conventional methods. Therefore, Molecular methods can be a suitable method to isolate and identify bacteria in BAL samples.

Nocardia, Semi-Nested PCR, culture, and biochemical test

**Presentation:** Poster