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Detection of *Mycobacterium tuberculosis* in synovial fluid from patients with arthritis using PCR

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Abstract

Aim and Background: Bacterial arthritis is one of the arthritis diseases known that can rapidly cause joint damage. Among the bacteria causing septic arthritis, *Mycobacterium tuberculosis* (MTB) is one of those that rarely produce arthritis. The aim of this study is to examine the presence of MTB in synovial fluid of patients with arthritis using Polymerase Chain Reaction (PCR)

Materials and Methods: This study was carried out on 70 synovial fluid samples gathered from Shariati Hospital. DNA was extracted using Phenol-Chloroform standard extraction technique. PCR test optimized on the basis of *IS6110* target gene. Samples were analyzed by PCR test after evaluation of specificity and sensitivity of PCR.

Results: PCR test was optimized and the 317-bp amplicon detected by 1.5% agarose gel electrophoresis. Limit of detection (LOD) was estimated as 100 copy/Reaction. MTB DNA was detected in 4 (5.7%) synovial fluid samples of patients with arthritis.

Conclusion: First step in treatment is rapid and accurate diagnosis. MTB have some characteristics including slow generation making the identification difficult and exhausting through culturing and biochemical tests that sometimes leads to ambiguous results. Results of this study confirm that MTB could play a role in bacterial arthritis and rapid diagnosis using PCR provides us with accurate treatment.

Keywords: *Mycobacterium tuberculosis*, Diagnosis, Synovial, PCR.

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