بسم الله الرحمن الرحيم

قال تعالى:

﴿ اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ ﴾

صدق الله العظيم

سورة العلق الآية (1)

Dedication

I dedicate this research to

My father.....

My mother.....

Who taught me how I could be humanate

My brothers and sisters....

For their support and kindness

My friends and my colleagues.....

The persons whom I love, respect and appreciate.....

&

Every one from whom I learned...

Acknowledgment

♦ First of all, thanks for Allah who gave me the power for preparation and completion of this study.

♦ With a great deal of respect I would like to express my thanks to my supervisor Dr. Mugahid Mohamed Elhassan, Head of Microbiology Department, College of Medical Laboratory Science, Sudan University of Science and Technology for his advice, enthusiasm, help and endless guide.

♦ My deep thanks are extended to Dr. Misk Elyaman Abdela'ati for her help and encouragement.

♦ This study is honored by the help of Miss. Salma Farouk and Miss.Samar Mohamed Saeed.

♦ Finally, thanks to staff members of National Tuberculosis Reference Laboratory for their help and support.

Abstract

This study aimed to identify and characterize *Mycobacterium tuberculosis* among tuberculous patients in Khartoum state by using polymerase chain reaction (PCR).

Sputum Specimens were collected from Abu Anga Hospital, Alsha'ab Teaching Hospital and Tuberculosis Reference Laboratory. Patients were consented and informed. All sputum samples that showed AFB-positive results were included. 66 (93%) samples of AFB-positive showed typical growth of *Mycobacterium tuberculosis.*

Cultural properties of all isolates of *Mycobacterium tuberculosis* complex on Lowenstein Jensen medium at 37°C were almost the same and all colonies showed appearance of *Mycobacterium tuberculosis* complex (dry, rough and pale yellow).

Out of 71 samples, 57 (80.2%) of the isolates were *Mycobacterium tuberculosis* complex organisms, biochemical tests showed 68 (95.8%) were sensitive for Para-nitrobenzoic acid (growth was inhibited by PNB); 56 (78.9%) were resistant to Thiophene – 2 – Carboxylic Acid Hydrazide TCH; 68 (95.8%) were positive for nitrate reduction and 65 (91.6%) isolates were catalase negative at 68°C. while 5 (7.1%) revealed no growth.

Sixty six *Mycobacterium tuberculosis* complex isolates were subjected to PCR. Fifty two (78.8%) isolates showed a band typical in size (123 bp) to the target gene (*IS 6110*) as indicated by the standard DNA marker.

.Fourteen (21.2%) isolates were negative

This results revealed clearly the importance of conventional methods including Z.N stain and culture techniques in the diagnosis of TB especially if there is other invaders like Mycobacteria other than tuberculosis are .suspected