BACTEC MGIT 960 TB SYSTEM IN DIAGNOSIS OF BOTH PULMONARY AND EXTRA PULMONARY TUBERCULOSIS

Essay

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Background. Tuberculosis is the leading cause of death from a curable infectious disease and a major cause of morbidity in the world. The tuberculin skin test (TST) has been used for more than 100 years for the diagnosis of both active and latent tuberculosis. Bacteriological examination of the clinical specimens plays an important role in the diagnosis of any mycobacterial infection, more so for TB. The introduction of broth based growth systems, has significantly reduced the time to detection and increased the total number of positive cultures. Aim of the study is to compare the use of BACTEC MGIT 960 TB system and to compare with conventional method such as TST and Lowenstein-Jensen (LJ) medium for detection of Mycobacterium tuberculosis in pulmonary TB and extra pulmonary TB.

Methods. Pulmonary samples and extra pulmonary samples were taken from 20 patients diagnosed as pulmonary TB and 20 patients diagnosed as extrapulmonary TB. All patients will be subjected to the following: Full history taking, thorough clinical examination, laboratory investigations: Liver function tests: ALT, AST, serum bilirubin, Prothrombin time (PT) and Prothrombin Concentration (PC), Complete blood picture (CBC), ESR & CRP, kidney function test, fasting blood sugar & 2hrs post prandial radiological examination (e.g. chest X-ray), abdominal ultrasonography, Tuberculin Skin Test. All samples will also be examined microscopically using the ZN stain for the presence of acid fast bacilli as per the standard protocol. All the processed clinical specimens, both directly and after digestion and decontamination, will be inoculated onto the LJ medium slopes and into The BACTEC MGIT 960 culture tube the time to detection and total number of positive cultures recovered by both the methods will be recorded.

Results. Patients were classified into two groups; group I patients with pulmonary TB (20 patients 16(80%) of them were men and 4(20%) were women their mean age was 37+13 years and group II patients with extra-pulmonary TB (20 patients (Meningitis 5patients 12.5%, Peritoneal 8 patients 20%, and lymphadenitis 7 patients 17.5%) 14(70%) of them were men and 6(30%) were women their mean age was38.5+17 years. A) Pulmonary tuberculosis patients presented clinically with: Night fever and night sweating in 100% of the patients. Weight loss in 80% of the patients. Hemoptysis in 60 % of the patients. Cough and expectoration in 80% of patients. Pulmonary Tuberculosis patients presented radiologically with heterogenous opacity in the upper zone of the lung in 90% of the patients and pleural effusion in 40% of patients.B) Extrapulmonary tuberculosis patients presented as the following: 1-TB Meningitis: Toxic symptoms (night fever night sweating and weight loss) in 100% of the patients Persistent Headache in 100% of the patients Neck rigidity in 100% of patients. 2- TB Peritonitis: Toxic symptoms (night fever night sweating and weight loss) in 90% of the patients b. Liver cirrhosis and ascites in 40% of patients. c. Liver cirrhosis and refractory ascites in 60% of patients. TB Lymphadenopathy: Toxic symptoms (night fever night sweating and weight loss) in 100% of the patients Generalized lymphadenopathy in 50% of the patients. Cervical lymphadenopathy in 50% of the patients. **CSF specimens:** Revealed a high protein content of 4–6 g/L (400–600 mg/dL); and a low glucose concentration leukocyte count (up to 1000/L), usually with a predominance of lymphocytes but with a predominance of neutrophils in two patients. **Ascitic fluid specimens:** Revealed exudative fluid with a high protein content 5-7 g/L and leukocytosis usually with a predominance of

lymphocytes. **Lymph nodes specimens:** Histologic examination of lymph node biopsies showed caseating granulomatous lesions.

Conclusion. We conclude by noting that clinicians must always rely on clinical judgment, BACTEC MGIT 960 system is valuable, sensitive, specific, accurate and rapid test especially useful in diagnosis of extra-pulmonary TB.

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List of abbreviations

TST	Tuberculin skin test
PPD	Purified protein derivative
BCG	Bacillus Calmette-Guerin
MDR TB	Multidrug resistant tuberculosis
HIV/ AIDS	Human immunodeficiency virus/ Acquired immunodeficiency syndrome
TB	Tuberculosis
ZN	Zeil – Nelson
LJ	Lowenstein Jensen
NTM	non tuberculosis mycobacteria
ATT	anti TB therapy
MGIT	Mycobacteria Growth Indicator Tube
WHO	World Health Organization
TNF-α	Tumor necrosis factor alpha
IFN-γ	interferon-gamma
M. tuberculosis	Mycobacterium Tuberculsois
CSF	cerebrospinal fluid
AFB	Acid fast bacilli
INH	isoniazid
RIF	rifampicin
CDC	Centers for Disease Control and Prevention
ADA	Adenosine deaminase
ESAT	early secreted antigenic target
CFP	culture filtrate protein
RD1	region of difference 1
ELISPOT	enzyme-linked immunospot
PCR	Polymerase chain reaction
DOT	Direct Observation Treatment

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Introduction
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Review of Literature

Patients and Methods