

**DIAGNOSIS OF BACTERIAL MENINGITIS FROM MENINGITIS
SUSPECTED PATIENTS ATTENDING TRIBHUVAN
UNIVERSITY TEACHING HOSPITAL (TUTH)**

A

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BY

BINDU GHIMIRE

CENTRAL DEPARTMENT OF MICROBIOLOGY

TRIBHUVAN UNIVERSITY, KIRTIPUR,

KATHMANDU, NEPAL, 2010

RECOMMENDATION

This is to certify that **Miss. Bindu Ghimire** has completed this dissertation work entitled “**DIAGNOSIS OF BACTERIAL MENINGITIS FROM MENINGITIS SUSPECTED PATIENTS ATTENDING TRIBHUVAN UNIVERSITY TEACHING HOSPITAL (TUTH)**” as partial fulfillment of Master of Science Degree in Microbiology (Medical) under our supervision. To our knowledge this work is original and has not been submitted to any other Degree.

.....
Prof. Bharat Jha
Head of Department
Department of Biochemistry
IOM, TUTH,
Kathmandu

.....
Dr. Dwij Raj Bhatta
Associate Professor
Head of Department
Central Department of
Microbiology,
Tribhuvan University
Kathmandu

.....
Dr. Vijay K. Sharma
Assistant Professor
IOM, TUTH, Kathmandu
NMC 3250

Date:2067- -

CERTIFICATE OF APPROVAL

On the recommendation of **Dr. Dwij Raj Bhatta, Prof. Barat Jha** and **Dr. Vijay K. Sharma**, this dissertation work of **Miss. Bindu Ghimire**, entitled “**DIAGNOSIS OF BACTERIAL MENINGITIS FROM MENINGITIS SUSPECTED PATIENTS ATTENDING TRIBHUVAN UNIVERSITY TEACHING HOSPITAL (TUTH)**” has been approved for the examination and is submitted to the Tribhuvan University in the partial fulfillment of the requirements for **Master of Science Degree in Microbiology (Medical)**.

.....
Dr. Dwij Raj Bhatta
Head of Department
Central Department of Microbiology
Tribhuvan University
Kirtipur, Kathmandu
Nepal

Date: 2067- -

BOARD OF EXAMINERS

Recommended by:

.....
Dr. Dwij Raj Bhatta
Supervisor

.....
Prof. Bharat Jha
Supervisor

.....
Dr. Vijay K. Sharma
Supervisor

Approved by:

.....
Dr. Dwij Raj Bhatta
Head of Department
CDM, TU

Examined by:

.....
Prof. Dr. Bharat Mani Pokhrel
Head of Department
Department of Microbiology
IOM, TUTH
External Examiner

.....
Mr. Dev Raj Joshi
Lecturer, CDM, TU
Internal Examiner

Date: 2067- -

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Date: 2067- -

.....
Miss. Bindu Ghimire

ABSTRACT

Meningitis, an acute medical emergency, is one of the leading causes of mortality, morbidity and neurological sequel in developing countries like Nepal. With the view to elucidate characteristics of Cerebrospinal Fluid in meningitis suspected patient, present work was carried out in Tribhuvan University Teaching Hospital (TUTH) within period of five months (16th September, 2009 to 16th February, 2010).

A total of 183 CSF samples received, 162 samples suspected of meningitis were processed in the laboratory. The macroscopic observation was made. Microscopic observation (viz. Gram staining) and microbiological study was done after centrifugation of CSF at 3000 rpm/10min. Antibiotic Susceptibility was determined. A set of CSF variables referred as routine parameters (i.e. detecting protein, Glucose and cellular changes) were analyzed.

Altogether 11 (6.7%) bacterial isolates were recovered; 6 (54.5%) were Gram negative and 5 (45.5%) were Gram positive. From 10 (90.9%) CSF samples, bacterial isolates were identified and Antibiotic Susceptibility pattern was recorded. Male and female were found not to differ significantly with cases of meningitis ($P < 0.05$; M:F::1.75:1). The association of the higher count of leukocyte with the cases of meningitis was found to be statistically significant ($P < 0.05$).

Of 11 cases of meningitis *Streptococcus pneumoniae* (27.4%), 18.2% *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus aureus* and a *Pseudomonas aeruginosa* (9%) were isolated and identified and 1 Gram negative diplococci was seen only by Gram staining of fresh CSF sample.

Specificity and PPV of glucose test for suspected cases of Bacterial Meningitis were 88.07% and 37.93%, and of protein test were 84.10% and 31.42%. Specificity and PPV of determined CSF/serum glucose ratio in suspected cases of meningitis were higher, 96.68% and 69.43% respectively as compared to CSF glucose and protein test only. Antibiotic Susceptibility pattern of the isolates showed that most of the isolates were susceptible to Chloramphenicol (70%).

Key words: Meningitis, CSF (Cerebrospinal fluid), cell count, Gram Stain.

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LIST OF ABBREVIATIONS

ABM	Acute Bacterial Meningitis
AFB	Acid Fast Bacilli
AIDS	Acquired Immune Deficiency Syndrome
ATCC	American Type Culture Collection
BBB	Blood Brain Barrier
BCG	Bacillus Calmette-Guerin
CDC	Centers for Disease Control and Prevention
CFR	Case Fatality Rates
CIE	Counter Current Immunoelectrophoresis
cm	Centimeter
CMV	Cytomegalovirus
CNS	Central Nervous System
CNs	Cranial Nerves
CO ₂	Carbondioxide
CRP	C-reactive Protein
CSF	Cerebrospinal fluid
DIC	Disseminated Intravascular Coagulation
DOL	Days of Life.
DRSP	Drug resistant <i>Streptococcus pneumoniae</i>
Ed.	Editor
ed.	edition
ELISA	Enzyme Linked Immunosorbent Assay
GBS	Group B Streptococci

GLUT	Glucose Transporter
GI	Gastrointestinal Tract
Hib	<i>Haemophilus influenzae</i> type b
HIV	Human Immuno Deficiency Virus
HSV	Herpes Simplex Virus
IgA	Immunoglobulin A
IL-1	Interleukin-1
IV	Intravenous
L3	Third Lumbar Spine
L4	Fourth Lumbar Spine
L5	Fifth Lumbar Spine
LAT	Latex Agglutination Test
LDH	Lactate Dehydrogenase
LP	Lumbar Puncture
MAC	MacConkey Agar
μl	Microliter
mg	Milligram
ml	Milliliter
mm	Millimeter
mm ³	Cubic Millimeter
MHA	Mueller Hinton Agar
MHBA	Mueller Hinton Blood Agar
MR	Methyl Red
NA	Nutrient Agar
No.	Number
NPV	Negative Predictive Value
OD	Optical Density

PCR	Polymerase Chain Reaction
PPV	Positive Predictive Value
RBC	Red Blood Cells
rpm	Revolutions per minute
SDA	Sabouraud Dextrose Agar
SIM	Sulphide Indole Motility
TB	Tuberculosis
TBM	Tuberculous Meningitis
TSI	Triple Sugar Iron
TUTH	Tribhuvan University Teaching Hospital
VDRL	Veneral Disease Research Laboratory
VP	Voges Proskauer
VZV	Varicella Zooster Virus
WBC	White Blood Cells
WHO	World Health Organization
ZN	Ziehl-Neelsen

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