Antenatal Screening for Streptococcus Agalactiae

Thesis

Submitted for the Partial Fulfillment of Master Degree in
Clinical Pathology

By

Nesreen Mohammed Nagi

M.B.B.Ch. Mansoura University

Supervised by

Profesor/ Manal Abd El-Alim Abd El-Sattar

Professor of Clinical and Chemical Pathology

Faculty of Medicine, Ain Shams University

Doctor/ Samia Abdou Girgis

Assistant Professor of Clinical and Chemical Pathology

Faculty of Medicine, Ain Shams University

Doctor/ Samar Saad Rashad

Lecturer of Clinical and Chemical Pathology

Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
٢٠١٢

List of Contents

I-List of Tables---------- i
II- list of Figures---------- iii
III- of Abbreviations---------- iv
IV-Introduction and Aim of the Work----------١
V-Review----------٥

- **Streptococci----------٥**
  - Classification
  - Identification
- **Streptococcus Agalactiae ----------٩**
  - **Virulence factors----------٩**
    - Capsule----------١٠
    - Heamolysin/cytolysin----------١٢
    - CAMP---------- ١٣
    - C٥a – peptidase----------١٣
    - Hyaluronatre lyse---------- ١٤
    - C protein----------١٥
    - Superoxide dismutase---------- ١٥
    - Pillus---------- ١٦
  - **Diagnosis of GBS---------- ١٨**
    - Morphology---------- ١٨
    - Culture---------- ١٨
    - Biochemical reactions---------- ١٩
    - Immunological methods----------٢٠
    - Molecular methods---------- ٢١
  - **Infections caused by group B streptococcus----------٢٥**
    - **Prevention of neonatal group B streptococcal diseases --٤٣**

VI-Subjects and Methods----------٥٠

VII- Results ---------- ٦٤

VIII-Discussion---------- ٧٧

IX-Summary----------٩٠

X-Conclusion----------٩٣

XI-Recommendation ----------٩٤

XII-References----------٩٥

XIII- Arabic Summary ----------

List of Abbreviations

GBS	**:**	Group B streptococci
CAMP	**:**	Chtistie, Atkins and Munch-Petersen
Cps	**:**	Capsule synthesis operon
C٣	**:**	Complement٣
FN	**:**	Fibronectin
PCR	**:**	Polymerase chain reaction
TNF	**:**	Tumor necrosis factor
CLSI	**:**	Clinical and laboratory standards institute
PROM	**:**	Premature rupture of membranes
VP	**:**	Voges Proskauer
HIP	**:**	Hippurate hydrolysis
ESC	**:**	Esculin
PYRA	**:**	Pyrrolidonyl arylamidase
αGAL	**:**	Alpha galactosidase
βGUR	**:**	Beta glucuronidase
βGAL	**:**	Beta galactosidase
PAL	**:**	Alkaline phosphatase
GLYG	**:**	Glycogen
LAP	**:**	Leucine aminopeptidase
ADH	**:**	Arginine dihydrolase
RIB	**:**	D-Ribose
ARA	**:**	L-arabinose
MAN	**:**	D-Mannitol
SOR	**:**	D-Sorbitol
LAC	**:**	D-Lactose
TRE	**:**	D-Trehalose

INU	**:**	Inulin
RAF	**:**	D-Raffinose
AMD	**:**	Amidone

List of Tables

Table No.	Title	Page No
١	Species of Streptococci medical importance	٦
٢	Identification of Streptococci	٨
٣	Key virulence factors of group B Streptococcus	١٧
٤	Biochemical reactions of GBS	٢٠
٥	Intravenous treatment of early-onset group B Streptococcal infections	٣٥
٦	Intravenous treatment of late - onset group B streptococcal infections	٣٦
٧	Antibiotic regimen of S. agalactiae according to Clinical and laboratory standards institute	٤٨
٨	Reagents and material required for API test.	٥٧
٩	Component of API strep.	٥٩
١٠	Reading table of API test.	٦١
١١	Identification table for Streptococcus agalactiae.	٦٢
١٢	Association between GBS colonized mothers and colonization in newborns.	٦٩

١٣	Association between GBS colonized mothers and age in years.	٧٠
١٤	Association between GBS colonized mothers and parity.	٧٢
١٥	Association between GBS colonized mothers and risk factors.	٧٣
١٦	Association between GBS colonized neonates and risk factors.	٧٦

List of Figures

Figure No.	Title	Page No.
١	Extra cellular virulence factors of GBS.	١٠
٢	Stages of molecular and celluler pathogenesis of neonatal infection by Streptococcus agalaciae.	٢٨
٣	Gram positive cocci arranged in chains.	٦٤
٤	Orange pigmented colonies of groupB streptococcus on Islam medium.	٦٥
٥	Beta Heamolytic colonies of groupB streptococcus with characteristic ring-like hemolytic zones.	٦٦
٦	Positive CAMP test.	٦٧
٧	A purple colouration showing positive reaction.	٦٧
٨	GBS positive API test.	٦٨
٩	Non GBS by API test.	٦٨
١٠	Association between GBS colonized mothers and colonization in newborn.	٦٩
١١	Association between GBS colonized mothers and age in years.	٧١
١٢	Association between GBS colonized mothers and parity.	٧٢
١٣	Positive GBS in mothers with history of using IUD.	٧٤
١٤	Positive GBS in mothers with history of DM.	٧٤

Introduction

Aim of the Work

Review of Literature

Patients and Methods

Results

Discussion

Summary