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شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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قسم

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علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

Prevalence, Resistance profile & Virulence genes of *Streptococcus Agalactiae* Colonizing Near-Term Pregnant Women Attending Ain Shams University Hospital

Thesis

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in ***Medical Microbiology and Immunology***

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Noha Gad Abdallah

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List of Abbreviations

Abb.	Full term
ACP	Alpha C protein
Alps	Alpha-like family of surface-expressed proteins
AMPs	Antimicrobial peptides
CAMP	Christie, Atkins, and Munch-Peterson
CDC	Center for Disease Control and Prevention
CLSI	Clinical and Laboratory Standards Institute
CRM197	Cross-reacting material 197
CspA	Cell-surface-associated serine protease A
ECM	Extracellular matrix
EOD	Early onset disease
GBS	Group B streptococcus
IAP	Intrapartum antibiotic prophylaxis
LOD	Late onset disease
LTA	Lipoteichoic acid
MHA	Muller Hinton Agar
NAAT	Nucleic acid amplification tests
PBP	Penicillin binding protein
PCR	Polymerase chain reaction
ScpB	Streptococcal C5a Peptidase B
SOD	Superoxide dismutase
µg	Microgram

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INTRODUCTION

GBS is detected in 10-30% of pregnant women as a colonizing agent in the vagina and/or rectum. The infants of these women may be at high risk of developing disease if they exposed to this bacteria before or after birth ***(Spellerberg, 2000; Edwards et al., 2011).***

Early-onset infection, the most prevalent kind of newborn GBS disease, and late-onset infection are the two types of GBS infections in neonates. The early-onset infection occurs in neonates under the age of seven days, while the late-onset infection occurs in those aged seven to ninety days ***(Schuchat, 1998; Capan et al., 2012).***

Intrapartum antibiotic prophylaxis (IAP) has been shown to interrupt the transmission of GBS from mother to infant & so reduce the incidence of early-onset GBS disease. Guidelines from the Federal Centers for Disease Control and Prevention (CDC) recommended two different strategies for the selection of candidates for IAP: either screening for GBS via obtaining rectovaginal cultures at 35-37 weeks of gestation or identification of maternal clinical risk factors for early onset neonatal GBS disease & administer IAP to all cases showing any of these risk factors ***(Schrag et al., 2002; Verani et al., 2010).***

GBS is still responsive to penicillin and most beta lactam antibiotics, but some investigations have found that GBS susceptibility to penicillin has decreased ***(Onipede et al., 2012).***

Alternative antibiotics such as vancomycin, clindamycin, and erythromycin are given to pregnant women who are allergic to penicillin. Emerging clindamycin and erythromycin resistance strains have been found in several parts of the world, including Egypt ***(Shabayek & Abdalla, 2014).***

However, available data suggests that erythromycin and clindamycin given to pregnant women may not reliably reach foetal tissues, and cefazolin may be a suitable alternative for patients who do not have a severe penicillin allergy ***(Verani et al., 2010).***

GBS strains are able to cause infections not only because of the development of resistance but also due to their virulence traits. The most important virulence factor is capsule, but other virulence factors include; surface protein Rib & C5a peptidase ***(Sadowy et al., 2010)***.

A substantial percentage of GBS strains, that have caused invasive infections in newborns, have the invasin rib protein, which is generated by the *rib* gene ***(Hannoun et al., 2009).***

C5a peptidase is a surface enzyme that can deactivate the human complement component C5a. The *scpB* gene encodes it, and it may be horizontally transmitted between pyogenic

streptococci. C5a peptidase also makes GBS strains adhere to epithelial cells and extracellular matrix proteins easier ***(Lysakowska et al., 2011)***.

ScpB gene is used as a standard gene for checking prevalence rate of GBS in pregnant women via polymerase chain reaction (PCR) due to its high prevalence among GBS human isolates ***(Rallu et al., 2006)***. Only strains with the *scpB* gene are thought to be infective to humans ***(Lysakowska et al., 2011)***.

These virulence proteins have been studied as possible vaccine candidates due to their capacity to generate a strong protective immunity against GBS infections ***(Maione et al., 2005).***

The sensitivity of cultures in identifying GBS colonisation ranges from 54-87%, results are acquired in 36 to 72 hours, and identification of colonies, which are not necessarily beta-hemolytic, requires an experienced technician ***(Mousavi et al., 2016).***

Rapid methods of identifying GBS colonisation in pregnant women have been available in recent years, such as DNA probes and nucleic acid amplification tests (NAAT) like PCR, and they have become the primary method of research. PCR is said to be highly sensitive and specific, with results appearing in 30 to 45 minutes ***(Mousavi et al., 2016).***

Aim of the Work

The aim of this study was to determine the prevalence of GBS carriage among pregnant women, the antimicrobial susceptibility pattern of colonizing GBS isolates and check the presence of *scpB* & *rib* virulence genes.