



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



MONA MAGHRABY



Screening of Asymptomatic Bacteriuria in Sickle Cell Pediatric Patients

Thesis

***Submitted for Partial Fulfillment of Master
Degree in Clinical Pathology***

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سَبَّحَانَكَ لَا إِلَهَ إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Full term
ACS	Acute chest syndrome
AER	Albumin excretion rate
ASB	Asymptomatic bacteriuria
AST	Antimicrobial susceptibility testing
BA	Blood agar
CA	Chromogenic agar
CFU	Colony forming unit
CLED	Cystine lactose electrolyte deficient
CMV	Cytomegalovirus
<i>E.coli</i>	<i>Escherichea coli</i>
<i>EBV</i>	<i>Epstein-Barr virus</i>
FISH	Fluorescence in situ hybridization
GFR	Glomerular filtration rate
Glu	Glutamic acid
Hb	Hemoglobin
HIV	Human immunodeficiency
HPF	High power field
MAC	MacConkey agar
MALDI-TOF	Matrix-assisted laser desorption ionization-time of flight
RBCs	Red blood cells
<i>S. saprophyticus</i>	<i>Staphoccocus saprophyticus</i>
<i>S. typhi</i>	<i>Salmonella typhi</i>
<i>S.aureus</i>	<i>Staphylococcus aureus</i>
SCA	Sickle cell anaemia
SCD	Sickle cell disease

List of Abbreviations Cont...

Abb.	Full term
<i>SPP</i>.....	<i>Species</i>
<i>Strept.pneumoniae.</i>	<i>Streptococcus pnumoniae</i>
UPEC.....	Uropathogenic <i>E.coli</i>
UTIs	Urinary tract infections
Val	Valine

INTRODUCTION

Sickle cell disease (SCD) is a multi-systemic disease of episodic acute illness and severe organ damage. It is one of the autosomal-recessive monogenic disorders worldwide (**Piel et al., 2017**). SCD is a genetic mutation in which GTG is substituted for GAG in the sixth codon of the β -globin gene leading to replacement of the hydrophilic glutamic acid residue (Glu) with a hydrophobic valine residue (Val) at the sixth position in the β -globin chain, resulting in a mutated hemoglobin molecule in individuals RBCS (**Eaton and Bunn, 2017**).

Evidence from several studies indicated that SCD patients are more prone to develop bacteriuria compared to their healthy counterparts (**Chukwu et al., 2011**). Urinary tract infection (UTI) in SCD patients is precipitated by impaired immunological state like deficiency in serum opsonins and defective phagocytosis as well as altered blood flow in renal vasculature (**Nicolle et al., 2005**).

Urine samples are relatively sterile. Bacteriuria is considered significant if colony count is equal to or greater than 1×10^5 CFU/ml (**Rowe and Juthani, 2014**), significant bacteriuria may be either symptomatic or asymptomatic (**Vasudevan, 2014**). Asymptomatic bacteriuria (ASB) is isolation of bacteria with count equal to or greater than 10^5 CFU/ml in two consecutive appropriately collected fresh voided mid- stream urine samples of the same organism for a

child with no accompanying symptoms of infection (**Nicolle et al., 2019**). Urine culture is the gold standard method to diagnose ASB (**Selek et al., 2017**).

Traditionally Blood agar (BA) and MacConkey agar (MAC) media are being used together by most of the laboratories, Cystine lactose electrolyte-deficient (CLED) agar has been added lately. In last few decades, several chromogenic media have been developed and commercialized as **UriSelect™ 4** and **CHROMagar** media allowing direct and presumptive identification of organisms on the plate itself on the basis of distinct colony colour by reaction of genus-or species-specific enzyme with a suitable chromogenic substrate, this consequently reduce the burden of biochemical reactions and reduce the reporting time (**Biji et al., 2017**).

AIM OF THE WORK

The current study aims to investigate the prevalence of asymptomatic bacteriuria, its major determinants and its effect on kidney functions in SCD for early detection & treatment.