DEDICATION

To my family

The bacteriological work described in this thesis was carried out at the department of Microbiology, Faculty of Veterinary Medicine University of Khartoum under supervision of Professor Sulieman Mohamed El Sanousi.

The molecular part of the study was conducted at the Center of excellence, Department of Zoology, Faculty of Science, University of Khartoum under supervision of Dr. Mai Abd Elrahman Mohamed El Masri.

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Abstract

A total of 500 samples were collected from patients with suspected Streptococcal infection. These included throat swabs (150 samples) collected from patients who attended Khartoum Ear Nose Throat (ENT) Teaching Hospital, suffering from sore throat, vaginal swabs (125 samples) collected from pregnant women (35-37 weeks of gestation) who attended the Saudi Maternal Hospital, Urine (125 samples) and blood (100 samples) samples collected from patients who attended Omdurman and Khartoum North Teaching Hospitals. All samples were collected from suspected patients regardless of their age.

The samples were cultured on 5% sheep blood agar. The type of haemolysis and the colony morphology were recorded as part of the diagnosis and the Gram's stain was done from overnight cultures using the standard technique.

Suspected Streptococcus isolates were subjected to different biochemical reactions to confirm the diagnosis. Commercial Lancefield grouping kits were then used to confirm the group identification.

Finally Polymerase Chain Reaction (PCR) was done to confirm the results of traditional diagnosis. Three types of primers were used: genus specific primer to confirm that the organism isolated was Streptococcus and the other two were used for sequencing in an attempt to identify isolates at the level of species

Antimicrobial sensitivity was done to find out the susceptibility of these organisms to antibiotics.

The results showed that group F Streptococci was isolated from swabs of patients suffering from sore throat (3.48%) beside group A Streptococci (96.52%).

Out of 125 samples of vaginal swabs, 4 samples (3.2%) were diagnosed as group B Streptococci, while 8 samples were isolated from 125 samples of urine and 5 samples were isolated from 100 samples of blood cultures.

Out of the 35 samples selected for sequencing, 28 samples were identified to the level of species. PCR results using genus specific primer indicated that ~ 100% of the isolates were of Streptococcus species. Sequencing results indicated that isolates were similar to the GenBank data base.

بسم الله الرحمن الرحيم

ملخص الاطروحة

تم جمع 500 عينة من المرضى منها مائة وخمسون مسحة حلقية من المرضى المترددين على مستشفى الاذن والانف والحنجرة التعليمى بالخرطوم المصابين بالتهاب الحلق بغرض عزل ومعرفة نوع الباكتيريا المسببة للمرض من النوع المكورات السبحية (استربتوكوكس). ومنها مائة خمسة وعشرون مسحة مهبلية من النساء الحوامل المترددات على المستشفى السعودى بامدرمان فى عمر 35 – 37 اسبوع من الحمل ومائة خمسة وعشرون عينة من البول ومائة عينة من الدم من المرضى المترددين على مستشفى امدرمان التعليمى و مستشفى بحرى التعليمى.

تم جمع هذا العدد من المرضى المترددين من مختلف الاعمار وتمت زراعة جميع العينات فى الاوساط الملائمة لنمو هذا النوع من الباكتريا لمدة اربعة وعشرين ساعة ولمدة ثمانية واربعون ساعة اخرى فى حالة عدم نموها قبل التخلص منها. وتم ملاحظة الشكل العام للباكتيريا ونوع التخثير الذى تفرزه على كرويات الدم الحمراء كجزء من التشخيص. وتم صبغ العينات بصبغة جرام وبعد ذلك تم اجراء كل الاختبارات الكيميائية التى تمكن تشخيص هذا النوع من الباكتيريا ومعرفة مجموعاتها. كما تم استخدام الامصال التجارية (لانسفيلد) التى تحدد ايضاً انواع المجموعات لهذا النوع من الباكتيريا. كما تم اختبار جميع العينات للمضادات الحيوية.

وقد اثبتت النتائج ان هناك مجموعات اخرى غير النوع المعروف للاصابة بالتهاب الحلق (أ) حيث ظهرت المجموعة (ف) ايضاً. كما تم اجراء التحليل الكهربى للعينات واختبار البلمرة المتسلسل كوسيلة تشخيصية حديثة للمرض بدلاً عن الوسائل التقليدية. واخيراً تمت قراءة شريط الحامض النووى للتأكد من التشخيص ومقارنة النتائج مع بنك الجينات.

Contents

Chapter One

Chapter Two
Literature Review

Chapter Three

Materials and Methods

Chapter Four

Results

Chapter Five

Discussion

List of Tables

Page No

Statistical analysis tables

List of figures

Page No