

CLINICOMICROBIOLOGICAL STUDY OF CHRONIC DACRYOCYSTITIS

Thesis

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

By

Mariam Tag El-Din Noufal

M.B.,B.Ch.El-Mansura University

Supervised By

Professor / Magda Salah El Dine Gabr

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
2011

دراسة إكلينيكية ميكروبيولوجية للالتهاب المزمن للكيس الدمعي

رسالة

توطئة للحصول على درجة الماجستير
فى الباثولوجيا الإكلينيكية والكيميائية

مقدمة من

الطبيبة / مريم تاج الدين نوفل

بكالوريوس الطب والجراحة العامة - كلية الطب - جامعة المنصورة

تحت إشراف

الأستاذ الدكتور / ماجدة صلاح الدين جبر

أستاذ الباثولوجيا الإكلينيكية والكيميائية
كلية الطب - جامعة عين شمس

الدكتور / سمر سعد رشاد

مدرس الباثولوجيا الإكلينيكية والكيميائية
كلية الطب - جامعة عين شمس

كلية الطب
جامعة عين شمس

2011

Chronic dacryocystitis is an inflammatory condition of the lacrimal sac commonly associated with partial and total obstruction of the nasolacrimal duct, which affects patients of every age more commonly occurring in women than in men. It is most often unilateral . In addition to the irritation and discomfort caused by this disease, it may sometimes also be sight threatening. The main symptoms are chronic discharge, lacrimal sac distension and even abscess. The treatment of chronic dacryocystitis is by either external or endonasal dacryocystorhinostomy (DCR), and less commonly by lacrimal silicon intubation. Chronic dacryocystitis should be surgically treated before intraocular surgery is performed.

And up-to-date knowledge of the spectrum of causative bacteria and their sensitivities is a valuable asset in the treatment of this disease, and contributes significantly to postoperative recovery following surgery.

Contents

	Page
Introduction	1
Aim of the work.....	3
Review of literature.....	4
Chapter I : Anatomy Of Nasolacrimal System.....	4
Chapter II : Dacryocystitis.....	10
• Acute Dacryocystitis	18
• Chronic Dacryocystitis.....	21
Chapter III : Microbiology Of Chronic Dacryocystitis...	32
<i>I.Non Specific Bacterial Causes Of Chronic</i>	
<i>Dacryocystitis</i>	33
- Staphylococcus aureus.....	33
- Methicillin Resistant Staphylococcus aureus...	36
- Staphylococcus epidermidis.....	40
- Streptococcus pneumoniae	43
<i>II. Specific Bacterial Causes Of Chronic</i>	
<i>Dacryocystitis</i>	46
-Tuberculosis.....	46

Contents (Cont....)

	Page
-Hansen' s Disease (HD).....	50
-Syphilis.....	51
-Actinomycosis.....	54
<i>III. Specific Chlamydial Causes Of Chronic</i>	
<i>Dacryocystitis.</i>	57
- Trachoma.....	57
<i>IV. Specific Mycotic Causes Of Chronic</i>	
<i>Dacryocystitis</i>	60
-Candidiasis.....	60
-Aspergillosis.....	67
-Sporotrichosis.....	68
-Blastomycosis.....	69
-Cryptococcosis.....	71
<i>V. Specific Parasitic Causes Of Chronic</i>	
<i>Dacryocystitis</i>	72
-Ascariasis.....	72
-Distoma felineum.....	74

Contents (Cont....)

	Page
-Myiasis.....	74
Materials and methods	76
Results	101
Discussion	121
Summary	132
Conclusion and Recommendations	135
References	137
Arabic summary	161

List of Tables

Table No.	Title	Page No.
1	Reading table of biochemical reaction of API 10S.	90
2	Description of cases according to age groups.	102
3	Distribution of cases according to complaint duration.	103
4	Distribution of cases according to side of affected eye.	104
5	Description of cases according to associated diseases.	105
6	Description of cases according to specimen.	106
7	Description of cases according to culture results.	106
8	Description of the results according to overall cultured swabs.	108
9	Description of Gram positive organisms.	108
10	Description of Gram negative organisms.	109
11	Description of fungal isolates.	110
12	Comparison between diabetic and non diabetic cases as regard infecting organism.	111
13	Comparison between hypertensive and non hypertensive cases as regard infecting organism.	112

List of Tables (Cont....)

Table No.	Title	Page No.
14	Comparison between patients with different age groups as regard infecting organism.	113
15	Comparison between patients with different complaint duration as regard infecting organism.	114
16	Description of the sensitivity of different antibiotics used for Staph. aureus organisms.	115
17	Description of the sensitivity of different antibiotics used for MRSA organisms.	115
18	Description of the sensitivity of different antibiotics used for Staph. epidermidis.	116
19	Description of the sensitivity of different antibiotics used for Streptococcus pneumoniae.	116
20	Description of the sensitivity of different antibiotics used for Micrococci.	117
21	Description of the sensitivity of different antibiotics used for Citrobacter freundii.	117
22	Description of the sensitivity of different antibiotics used for Escherichia coli.	118
23	Description of the sensitivity of different antibiotics used for Klebsiella pneumoniae.	118
24	Description of the sensitivity of different antibiotics used for Acinetobacter.	119
25	Description of the sensitivity of different antibiotics used for Pseudomonas aeruginosa.	119

List of Figures

Fig. No.	Title	Page No.
1	Anatomy Of The Nasolacrimal System.	4
2	Acute Dacryocystitis.	19
3	Chronic Dacryocystitis.	24
4	Lacrimal probing.	27
5	Lacrimal sac irrigation.	27
6	Dacryocystorhinostomy(DCR) surgery.	30
7	Gram stain of Staph. aureus.	34
8	Colonies of Staph. aureus on blood agar.	34
9	Green colonies of Staph. aureus on S. aureus ID medium.	35
10	Denim-blue colonies of MRSA on Chromogenic MRSA agar.	38
11	Gram stain of Staph. epidermidis.	41
12	Staph. epidermidis colonies on blood agar	41
13	Staph. epidermidis is sensitive to novobiocin.	42
14	Staph. saprophyticus is resistant to novobiocin.	42
15	Streptococcus pneumoniae Gram stain.	43
16	Pneumococci growth on blood agar .	44
17	Pneumococci growth on blood agar with optochin disc.	45
18	Hansen 's bacilli	51
19	Microscope of Actinomyces.	56

List of Figures (Cont....)

Fig. No.	Title	Page No.
20	Tarsal follicles of trachoma.	58
21	Wet film of Candida albicans.	63
22	Candida growth on Sabouraud 's dextrose agar.	63
23	Candida growth on blood agar.	63
24	Aspergillus fumigatus.	66
25	Aspergillus flavus.	66
26	Aspergillus niger.	67
27	Culture of Blastomycosis.	70
28	Blastomycosis microscopy.	70
29	Cryptococcus neoformans.	72
30	DNase agar plate.	81
31	Bile esculin test.	84
32	The bile solubility test of Streptococcus pneumoniae.	86
33	The oxidase strip.	87
34	Candida albicans Germ tube production.	94
35	Staph. aureus.	99
36	staph. epidermidis.	99
37	Escherichia coli.	99
38	Klebsiella pneumoniae.	99
39	Pseudomonas aeruginosa.	99
40	Aspergillus fumigatus.	99
41	Citrobacter freundii.	100
42	API identification of Citrobacter freundii.	100

List of Figures (Cont....)

Fig. No.	Title	Page No.
43	Distribution of cases according to age groups.	102
44	Distribution of cases according to complaint duration.	103
45	Distribution of cases according to side of affected eye.	104
46	Distribution of cases according to associated diseases.	105
47	Distribution of cases according to culture results.	106
48	Distribution of Gram positive organisms.	108
49	Distribution of Gram negative organisms according to all Gram negative organisms.	109
50	Distribution of fungal organisms.	110
51	Comparison between diabetic and non diabetic cases as regard infecting organism.	111
52	Comparison between hypertensive and non hypertensive cases as regard infecting organism.	112
53	Comparison between patients with different age groups as regard infecting organism.	113

List of Abbreviations

A.	Aspergillus
AFB	Acid fast bacilli
BCG	Bacilli Calmette-Guerin vaccination
C.	Candida
CA-MRSA	Community Associated Methicillin Resistant Staphylococcus aureus.
CDCR	Canaliculo-Dacryo-Cysto-Rhinostomy
CLSI	Clinical and laboratory Standard Institute.
CoNS	Coagulase negative Staphylococci.
CT	Computerized Tomography
DCR	Dacryocystorhinostomy
D.M	Diabetes Mellitus
DNA	Deoxyribonucleic acid
DNase agar	Deoxyribonucleic agar
E. COLI	Escherichia Coli
ELISA	Enzyme-linked Immunoassay
ENT	Ear , Nose and Throat
FDA	Food and Drug Administration
FTA-Abs	Fluorescent Treponemal Antibody Absorbed test
H.	Haemophilus
HD	Hansen's disease

HIV	Human Immune Deficiency Virus
HTN	Hypertension
IG	Immunoglobulin
ID	Identification
IFN-g	Inteferon gamma
LTBI	Latent tuberculosis infection
M.	Mycobacterium
MHA-TP	Microhemagglutination assay for Treponema pallidum
MIC.	Minimal inhibitory concentration.
MPL	Medial palpepral ligament
MRSA	Methicillin Resistant Staphylococcus aureus
NLD	Nasolacrima duct
NLDO	Nasolacrima duct obstructin
PCR	Polymerase chain reaction
QFT-G	Quantiferon TB Gold test
R	Resistant
RPR	Rapid Plasminogen Reagent
S.	Sensitive
SPP.	Species
Staph.	Staphylococcus
S. aureus	Staphylococcus aureus
S.epidermidis	Staphylococcus epidermidis
S.pneumoniae	Streptooccus pneumoniae

TB	Tuberculosis
TST	Tuberculin skin test
VDRL	Venereal disease research laboratory
WB	Western Blot assay
WBC	White blood cell

Introduction

Dacryocystitis is the inflammation of the lacrimal sac, characterised clinically by epiphora and regurgitation of pus or mucopus through the punctum on pressure over the sac and caused frequently by bacteria . Nasolacrimal duct obstruction convert the lacrimal sac into a stagnant pool which become easily infected, leading to chronic dacryocystitis. Bacteriological analysis of chronic dacryocystitis has been gaining importance to prevent the vision threatening complication like endophthalmitis, hypopyon and corneal ulcer after intra-ocular operation like cataract surgery and glaucoma filtration surgery (**Mandal et al., 2008**).

The predisposing factors of chronic dacryocystitis are recurrent or chronic unilateral conjunctivitis, previous acute dacryocystitis, chronic nasolacrimal duct obstruction, facial fracture and foreign bodies (e.g. punctual or canalicular plug) (**Sun et al., 2005**).