



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



شبكة المعلومات الجامعية
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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Impact of mucosal biofilm and bony osteitis on chronic rhinosinusitis with nasal polyps

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لسببائك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

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List of Contents

Subject	Page No.
List of Abbreviations	i
List of Tables	iii
List of Figures	iv
Introduction	1
Aim of the Study	3
Review of Literature	
Classification of Chronic Rhinosinusitis	4
Pathology of Osteitis in Chronic Rhinosinusitis	11
Mucosal Biofilm.....	17
Patients and Methods	24
Results	36
Discussion	65
Summary	69
Conclusion	71
Recommendations	72
References	73
Arabic Summary	—

List of Abbreviations

Abbr.	Full-term
BBF	: Bacterial biofilm
CI	: Confidence interval
CRS	: Chronic rhinosinusitis
CRSsNP	: Chronic rhinosinusitis without nasal polyps
CRSwNP	: Chronic rhinosinusitis with nasal polyps
CT	: Computerized tomography
EPOS	: European position paper on rhinosinusitis and nasal polyp
FESS	: Functional endoscopic sinus surgery
FISH	: Fluorescent in situ hybridization
HPF	: High power field
IL	: Interleukin
LM	: Light microscope
LMS	: Lund Mackay Score
MMP	: Matrix metalloproteinase
NPs	: Nasal polyps
PAS	: Periodic acid Schiff
PBS	: Phosphate buffered saline

QOL	: Quality of life
SD	: Standard deviation
SE	: Standard error
SEM	: Scanning electron microscope
SNOT-22	: Sinonasal outcome treatment score
SPECT	: Single photon emission topography
SPSS	: Statistical package for social science
TGF	: Tissue growth factor beta
TH	: T-helper
TNF	: Tissue necrotic factor
3D	: 3-Dimensional

List of Tables

Table No.	Title	Page No.
Table (1):	Global Osteitis Score.....	14
Table (2):	SNOT Score.	27
Table (3):	Lund-Mackay CT Score according to.....	29
Table (4):	Demographic characteristics of both study groups.....	36
Table (5):	Prevalence of risk factors in both study groups.....	37
Table (6):	SNOT-22 score in both study groups.....	38
Table (7):	Endoscopic grading in both study groups.....	40
Table (8):	Lund-Mackay CT score in both study groups.....	42
Table (9):	Results of histopathological and biofilm examination in both study groups.....	45
Table (10):	Risk analysis for relation between biofilm and CRSwNP	48
Table (11):	Correlations of endoscopic, radiological and histological grading with relevant clinical variables in cases of CRSwNP	50

List of Figures

Figure No.	Title	Page No.
Figure (1):	CRSwNP.....	5
Figure (2):	CRSsNP.....	5
Figure (3):	Phenotyping of CRS.....	8
Figure (4):	View of unorganized woven bone.	13
Figure (5):	Examples of radiographic osteitis and GOSS score of anterior ethmoid sinus.....	15
Figure (6):	Mean SNOT-22 score in both study groups.....	39
Figure (7):	Endoscopic grading of right side in both study groups.....	41
Figure (8):	Endoscopic grading of left side in both study groups.....	41
Figure (9):	Mean Lund-Mackay score in both study groups. Error bars represent the standard error (SE).....	43
Figure (10):	Bone grading in both study groups.....	46
Figure (11):	Mucosal grading in both study groups.....	46
Figure (12):	Eosinophilia grading in both study groups.....	47
Figure (13):	Prevalence of a biofilm in both study groups.....	47
Figure (14):	Scatter plot illustrating the correlation between sex and Lund-Mackay score in cases of CRSwNP.	53

Figure (15): Scatter plot illustrating the correlation between allergy and endoscopic grading of either side in cases of CRSwNP. 54

Figure (16): Scatter plot illustrating the correlation between allergy and Lund-Mackay score in cases of CRSwNP..... 55

Figure (17): Stacked bars plot illustrating the association between allergy and biofilm formation in cases of CRSwNP..... 56

Figure (18): Stacked bars plot illustrating the association between bronchial asthma and biofilm formation in cases of CRSwNP. 57

Figure (19): Scatter plot illustrating the correlation between Lund-Mackay score and endoscopic grading on either side in cases of CRSwNP. 58

Figure (20): Scatter plot illustrating the correlation between bone grading and mucosal grading in cases of CRSwNP..... 59

Figure (21): Scatter plot illustrating the correlation between bone grading and eosinophilia grading in cases of CRSwNP..... 60

Figure (22): Scatter plot illustrating the correlation between mucosal grading and eosinophilia grading in cases of CRSwNP. 61

Figure (23): Illustrative images for histopathological bony affection..... 62

Figure (24): Illustrative images for histopathological mucosal affection..... 63

Figure (25): Illustrative images for Mucosal biofilm..... 64

Introduction

Chronic rhinosinusitis (CRS) is a common inflammatory disorder whose underlying aetiopathogenesis has not yet been completely understood and appears to be multifactorial, Microbial biofilms and bony osteitis are gaining an increased concern as they are considered to be among the possible factors that contribute to the overall local inflammatory load in CRS (Bassiouni et al., 2012).

In spite of the maximal medical and surgical therapy, there are still 10–20 % CRS patients having persistent and recurrent inflammation. Bacterial biofilm (BBF) have been proposed as a potential pathogenic factor for CRS. BBF may be an important factor for the high resistance to antibiotics and host immune mechanisms. There is much evidence suggesting the link between bacterial biofilm and CRS, but there is little knowledge about its real contribution in the pathogenesis of CRS (Al-Mutairi and Kilty, 2011).

BBF are highly organized 3-dimensional bodies constituted of groups of bacteria encased inside a protective extracellular polysaccharide matrix, which are recalcitrant to both antibiotic therapy and host immune mechanisms (Chen et al., 2012). With the use of a variety of techniques, BBF have been consistently showed on the mucosa of patients with CRS among an ever-expanding research body, with a prevalence of 30% to 80% (Al-Mutairi and Kilty 2011), (Foreman et al.,

2011),(Foreman et al., 2012); and their existence has been correlated with worse parameters of the disease, post-surgical results, a greater prevalence of infection recurrence, and an elevated Sino-Nasal Outcome Test (SNOT)22 – score (Foreman et al., 2011),(Foreman et al., 2012), (Singhal et al., 2011), (Tan et al.,2012), (Li et al., 2012) and (Zhang et., 2015) Their existence has also been associated with increased disease severity that's in mostly refractory to the present treatment paradigms (Foreman et al., 2011).

Osteitis is the bone inflammation that is devoid of marrow space (Bhandarkar et al., 2011). In CRS, it is still uncertain whether osteitis is triggered via direct bacterial invasion, which is still not elucidated in researches, or possibly is secondary to mediators of inflammation (Bhandarkar et al., 2011) and (Georgalas 2013). The prevalence of osteitis is between 36% to 79% in patients with CRS depending on radiographic criteria, findings of single-photon emission computerized tomography (SPECT) or pathologic results (Lee et al., 2006), (Saylam et al., 2009) and (Snidvongs et al., 2013). The degree of bony osteitis was correlated with disease severity and results after medical and surgical management (Snidvongs et al., 2013) and (Bhandarkar et al., 2013). Moreover, the existence of bony osteitis is correlated with a decreased potential for a better change in certain quality-of-life outcome (QOL) values (Bhandarkar et al., 2011).