شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
@ ASUNET

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

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

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
ASUNET

بعض الوثائق الاصلية تالفة

Ain Shams University Information Network
جامعة عين شمس
شبكة المعلومات الجامعية
@ ASUNET

بالرسالة صفحات لم ترد بالاصل

A STATE OF THE ART OF MR IMAGING OF BENIGN AND MALIGNANT BREAST LESIONS

Thesis

SUBMITTED FOR PARTIAL FULFILLMENT OF
MASTER DEGREE IN RADIODIAGNOSIS

By

Osama Mostafa El-Ashrei

Under the supervision of

DR: Ahmed Faried Yousoff

Assistant professor of Radiodiagnosis

Banha Faculty of Medicine – Zagazig University

DR: Amani Fatthy El-Kharbottly

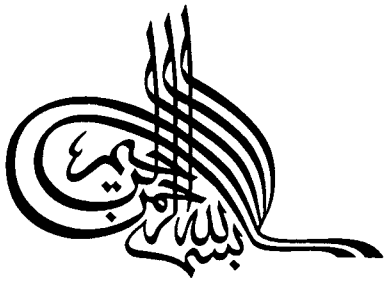
Lecturer of Radiodiagnosis

Banha Faculty of Medicine – Zagazig University

DR: Mohamed Mahmoud Mohamed

Lecturer of general surgery

Banha Faculty of Medicine – Zagazig University



قَالُوا سُبْحَانَكَ لا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة الآية ٣٢

ACKNOWLEDGEMENT

First and foremost I feel always indebted to **ALLAH**, the most kind and the most merciful.

My special thanks and deep gratitude to ***Dr. Ahmed faried Yousoff,*** Assistant professor of Radiodiagnosis Banha Faculty of Medicine, Zagazig University, for his sincere, unlimited cooperation, and help to bring this work to reality.

I would like to express my thanks and deep gratitude to ***Dr. Amani Fatthy El-Kharbottly*** lecturer of Radiodiagnosis, Banha Faculty of Medicine, Zagazig University, for her help, guidance, and deep support.

Also I want to thank ***Dr. Mohamed Mahmoud Mohamed,*** Lecturer of general surgery, Banha Faculty of Medicine, Zagazig University, for his great interest and encouragement.

Finally I would like to express my deep gratitude to every one who helped me in this work.

INDEX OF CONTENTS

	Page
I. Introduction and aim of the work	1
II. Review of literature	
1. Anatomy of the breast	3
2. Pathology of different breast lesions	8
3. MR physical principles and pulse sequences	26
4. Contrast agent	36
5. Choice of technical factors for MR imaging of the breast	38
6. Diagnostic criteria of malignant breast neoplasms and their differential diagnosis on MR imaging.	42
7. Role of contrast-enhanced MR imaging in the work-up of patients with suspected or proved malignant breast neoplasm.	50
III. Patients and methods.	57
IV. Results.	60
V. Case presentation.	67
VI. Discussion.	83
VII. Summary and Conclusion.	88
VIII. References.	91
IX. Arabic Summary.	102

LIST OF ABBREVIATIONS

CSI	: Chemical shift Imaging.
DCIS	: Ductal Carcinoma in situ.
EPI	: Echo-planar Imaging.
FAT SAT	: Frequency-Selection fat saturation.
FFE	: Fast field echo.
FISP	: Fast Imaging steady state progression.
FLASH	: fast low-angle shot.
FN	: False Negative.
FP	: False Positive.
FSE	: Fast spin echo.
Gd-DTPA	: Gadolinium diethylene triamine penta acetic acid.
GRASS	: Gradient Refocused Acquisition in the steady state.
GRE	: Gradient Rewinder.
IR	: Inversion recovery.
LCIS	: Lobular carcinoma in situ.
LIO	: Lower inter Quadrant.
LOQ	: Lower outer Quadrant.
MIP	: Maximum Intensity projection.
MLO	: Medio-lateral Oblique.
MPR	: Multiplanar Reconstruction.
MRI	: Magentic Resonance Imaging.
RARE	: Rapid acquisition with Relaxation Enhancement.
RF	: Radio-Frequency.
ROI	: Region of Interest.

SE : Spin-echo.

STIR: Short T_1 inversion recovery.

T : Tesla.

T1 : Longitudinal relaxation time.

T2 : Transverse relaxation time.

TE : Echo-time.

: Excitation time.

TN : True Negative.

TP : True Positive.

TR : Repeation time.

TSE : Turbo spin-echo.

UIQ : Upper inner Quadrant.

UOQ: Upper outer Quadrant.