

VALUE OF N.M.R IN SURGICAL DIAGNOSIS

Essay

Submitted in partial fulfilment for the
M.Sc. degree in general surgery

By

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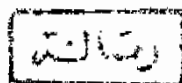
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1989



ACKNOWLEDGEMENT

"First and foremost, thanks are due to God, the beneficent and merciful."

No words of thanks or gratitude are sufficient to my Professor Doctor ADEL F. AIN SHOUKA , Professor of General Surgery, Faculty of Medicine, Ain Shams University, who inspired in me the spirit of research and serious scientific work by his fruitful advices throughout this work.

I would like to express my deepest gratitude and sincere appreciation to Doctor ABDALLAH ELSAID RAGAB, Assist. Prof. of General Surgery, Faculty of Medicine, Ain Shams University, for his wise guidance, his continuous encouragement, meticulous supervision and valuable assistance at every step in this work.

ISLAM ABD EL Hameed.



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PART I

INTRODUCTION

AIM OF THE WORK

CHAPTER I

REVIEW OF LITERATURES

CHAPTER II

PHYSICAL PRINCIPLES OF H.A.I.

INTRODUCTION

INTRODUCTION

Nuclear Magnetic Resonance (N.M.R), or Magnetic Resonance Imaging (M.R.I), is a new noninvasive method of mapping the internal structure of the body . It completely avoids the use of ionizing radiation .

M.R.I. provides an excellent anatomical display in ways they could never be seen before . It is now proposed as the imaging modality of first choice in diagnosis of a wide range of diseases . It has become one of the most significant advances in diagnostic body imaging .

M.R.I. combined the advantages of other imaging modalities, without sharing their disadvantages . One of the most important advantages of M.R.I. is that it can offer multiplanar images without reformatting .

M.R.I is far safer for the patient than other diagnostic modalities . No adverse effects have been reported from its use . Iodinated contrast medium enhancement is unnecessary . It utilizes an apparently safe interaction between magnetic fields , radiowaves and atomic nuclei . It depends not only on one single parameter , but on multiple parameters .

Although still in its development stage ,M.R.I. is cosidered the most exciting new diagnostic modality.

AIM OF THE WORK

AIM OF THE WORK

The aim of this work is to discuss the value of Magnetic Resonance Imaging (M.R.I.) in diagnosis of different surgical lesions .

Also , the physical principles of M.R.I. will be discussed.

CHAPTER I

REVIEW OF LITERATURES

- *Historical review*
- *Basic physics of M.R.I.*
- *Image choice and interpretation*
- *Disease evaluation by M.R.I.*
- *Economics of M.R.I.*
- *Distribution in the world*
- *Safety of M.R.I.*
- *M.R. image display*

REVIEW OF LITERATURES

-Historical review

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In 1971 ,**Damadian** discovered the differences in the proton parameters of normal and malignant tissues. In 1973, the principles of N.M.R. imaging were first introduced by **Mansfield and Grannell** and simultaneously by **Lauterbur (1973)** . In the same year , imaging techniques to depict the magnetic behaviour of protons were developed by **Lauterbur (1973)** disclosing the field of M.R.I. .

Image quality has improved steadily while imaging time has shown a gradual decrease , bringing M.R.I. within the reach of clinical practice. The muliplanar facility of M.R.I. was first demonstrated by **Hawkes et al. (1980)** who proceeded in the same year to report, for the first time , the demonstration of intracranial pathology by M.R.I. .

-Basic physics of M.R.I.

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The physics necessary for image interpretation in M.R.I. is more complex than for any other technique in radiology . This difficulty is compounded by the rapid and continuing evolution of the technique

(**Bydder ,1988**) .