ROLE OF RADIOLOGY AND MEDICAL IMAGING IN DIAGNOSIS OF ACOUSTIC NEUROMA

ESSAY

Submitted in partial fulfillment of Master Degree in Radiodiagnosis

By

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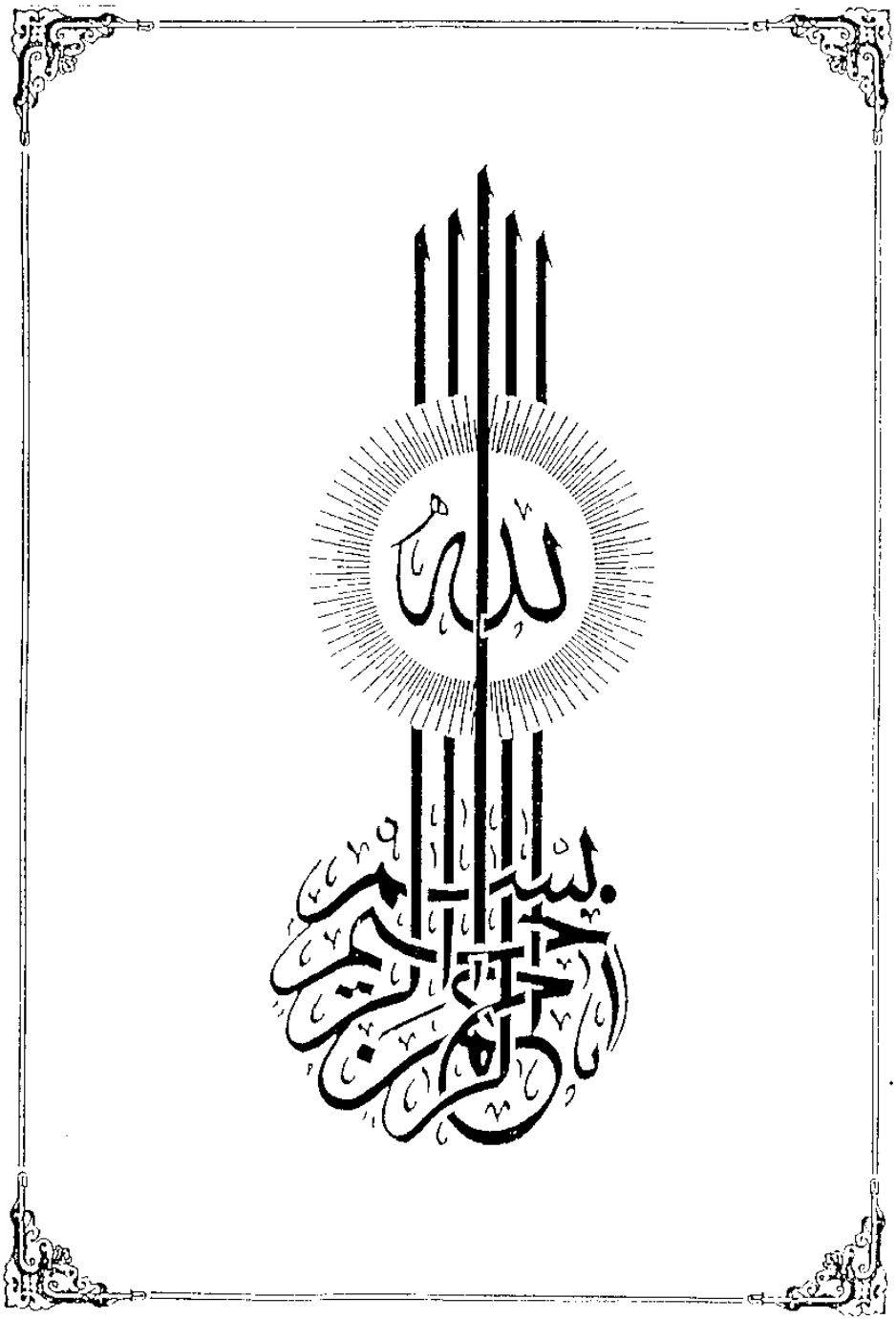
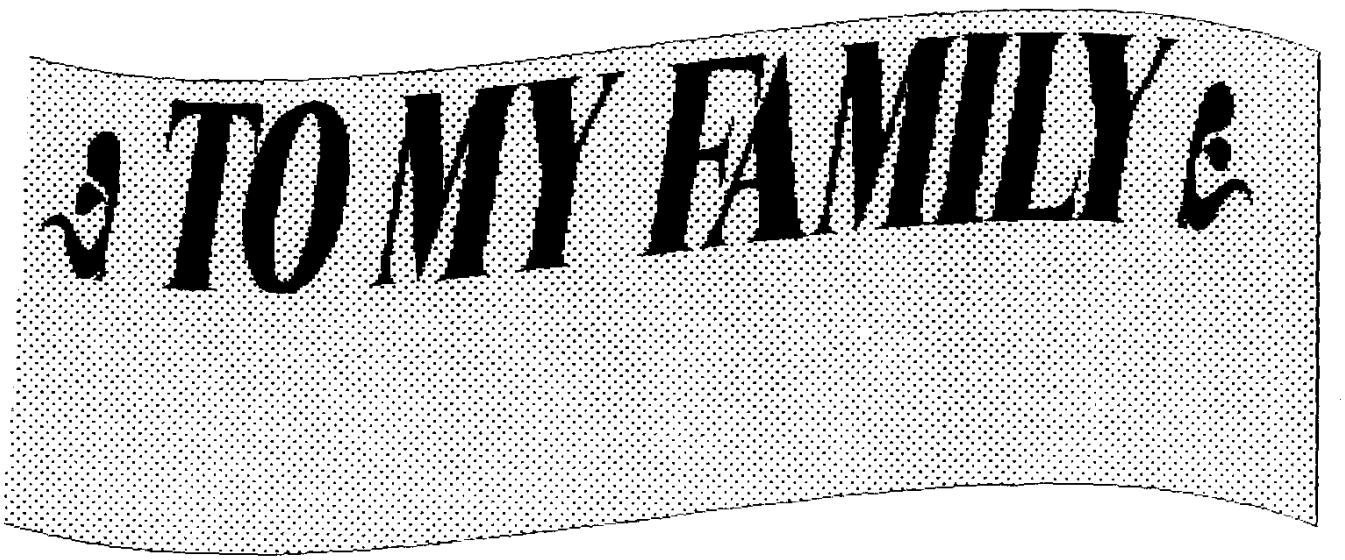


بسم الله الرحمن الرحيم

"قالوا سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم"

صدق الله العظيم

سورة البقرة - آية ٣٢



This work is dedicated to

every person who taught me,

to my beloved family and my

husband who supported me.

ACKNOWLEDGMENT

WITH GREAT PLEASURE , I WOULD LIKE HEARTLY TO THANK AND EXPRESS MY GREAT GRATITUDE TO *PROF. DR. MOHAMMED SAMY ELBEBLAWY ; PROF. OF RADIODIAGNOSIS , FACULTY OF MEDICINE , EIN SHAMS UNIVERSITY FOR HIS KIND HELP AND HIS SINCERE GUIDANCE.*

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FINALLY , DEEP THANKS TO MY HUSBAND WHO CONTRIBUTED WITH ME TO COMPLETE THIS WORK.

SAHAR KARAM

CONTENTS

ABSTRACT

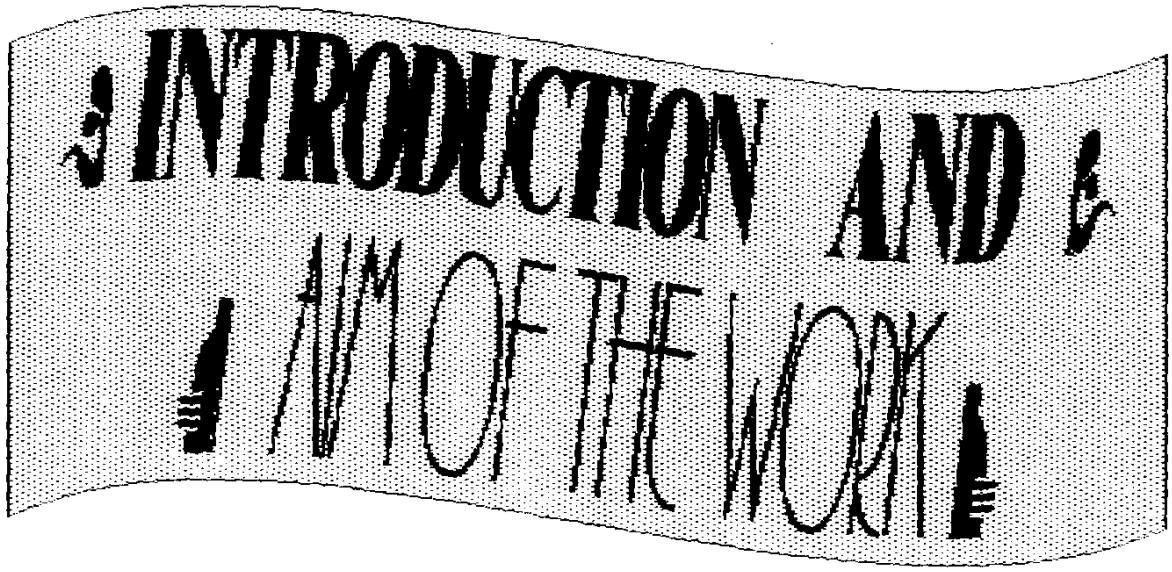
This study is designed to emphasize the role of radiology and medical imaging in diagnosis of acoustic neuroma.

At first we started by the anatomy of the vestibulocochlear nerve , followed by the pathology and clinical manifestations of acoustic neuroma. Then different radiological and medical imaging modalities with illustrative cases , comparative opinions are discussed.

Finally , summary and conclusion have been focused.

ABBREVIATION

* AICA = anterior inferior cerebellar artery.
* ANs = acoustic neuromas.
* CE = contrast enhancement.
* CN = cranial nerves.
* CPA = cerebellopontine angle.
* CPA - PM = cerebellopontine angle - petromastoid.
* CSF = cerebrospinal fluid.
* CT = computed tomography.
* Gd - DTPA = gadolinium - diethylene triamine pentaacetic acid.
* HR = high resolution.
* HRCT =. high resolution computed tomography.
* IAC = internal auditory canal.
* IAM = internal auditory meatus.
* IR = inversion recovery.
* MRI = magnetic resonance imaging.
* O2CTC = oxygen computed tomography cisternography.
* PICA = posterior inferior cerebellar artery.
* SE = spin echo.
* TR = repetition time
* TW1 = T1 weighted image.
* TW2 = T2 weighted image.
* TE = excitation time



ROLE OF RADIOLOGY AND MEDICAL IMAGING IN DIAGNOSIS OF ACOUSTIC NEUROMA.

INTRODUCTION

Acoustic neuromas are relatively common benign tumours that usually arise from the vestibular division of the eighth cranial nerve and characteristically occur in the cerebellopontine angle and internal auditory canal"I.A.C." Computed Tomography especially with contrast enhancement enabled accurate diagnosis of acoustic neuroma (Davis et al , 1977) , however false negatives may occur in small or purely intracanalicular tumours cystic , isodense and non enhancing lesions (Valavanis A , et al , 1982) .

Therefore , air or gas C T cisternography is used for detecting small tumours and is very accurate (Pinto , R.S. et al , 1982) , however , the techniques of C T cisternography are invasive , and may cause the patient significant pain and are

subjected to occasional technical failure or false positive results (Solti , B.L.G. et al , 1984).

Magnetic resonance imaging (M R I) appears to be the most sensitive , non invasive method for the examination of patients presenting with a suspicion of acoustic neuromas , especially for small tumours located in the internal auditory canal (Valvassori , G.E. et al , 1988).

AIM OF THE WORK

The aim of this work is to assess the efficacy of Radiology and other imaging modalities such as conventional radiology , angiography , myelography , CT computed tomography , enhanced C.T. cisternography with either positive contrast or air , and magnetic resonance imaging , in diagnosis of acoustic neuroma.

ANATOMY

ANATOMY OF THE VESTIBULOCOCHLEAR NERVE

The vestibulocochlear nerve appears in the groove between the pons and medulla oblongata , behind the facial nerve and in front of the inferior cerebellar peduncle. It consists of two sets of fibres , which , although differing in their principal central connections , are both concerned with the transmission of afferent impulses from internal ear to the brain.

One set of fibres forms the vestibular nerve , or nerve of equilibrium , and arises from the cells of the vestibular ganglion situated in the outer part of the internal acoustic meatus ; the other set constitutes the cochlear nerve or nerve of hearing , and takes origin from the cells of the spiral ganglion of the cochlea. Both ganglia consist of bipolar nerve cells ; from each cell a central fibre passes to the brain , and a peripheral fibre to the internal ear (fig 1) .