

# SPIRAL CT IN THE DIAGNOSIS OF PULMONARY EMBOLISM

Essay

Submitted for the partial fulfillment of  
Master degree in Radiodiagnosis

By

MOHAMED AMIN NASSEF

M.B., B.CH.

Supervised by

**PROF. DR. HODA AHMED EL DEEB**

Professor of Radiodiagnosis  
Ain Shams University

**DR. HANAN MOHAMED ISSA**

Lecturer of Radiodiagnosis  
Ain Shams University



Faculty Of Medicine  
Ain Shams University  
1998





# **To My Parents**



## **ACKNOWLEDGMENT**

*Thanks first and last to GOD as we owe him for his great care, support and guidance in every step in our life.*

*Words do fail me when I come to express my sincere indebtedness, profound gratitude and cordial appreciation to my Prof. Dr. Hoda Ahmed El Deeb Professor of Radiodiagnosis, Faculty Of Medicine, Ain Shams University, for her moral support, valuable supervision and for enabling me to fulfill this work. She is not only my Professor to whom I am very grateful, but She is also a human to whom I wish always the best of everything.*

*Special thanks are due to Dr. Hanan Mohamed Issa Lecturer of Radiodiagnosis, Faculty Of Medicine, Ain Shams University, for dedicating so much of her precious time and effort and for her kindness, honest and constant guidance to complete this work.*

*Mohamed*



## **Abstract**

- Pulmonary embolism is a serious and fatal condition however the mortality rate would be reduced greatly if the diagnosis was made promptly.
- Because the clinical diagnosis is unreliable various modalities are required for the definite diagnosis such as ; plain chest radiography, ventilation- perfusion scintigraphy and conventional angiography.
- In this context spiral CT angiography was found to be an accurate, cost-effective and safe imaging modality for the diagnosis of pulmonary embolism.





## CONTENTS

	<u>PAGE</u>
• INTRODUCTION & Aim Of The Work -----	1
• ANATOMY of THE PULMONARY ARTERIES -----	2
• PATHOLOGY of PULMONARY EMBOLISM -----	7
• DIAGNOSTIC IMAGING of PULMONARY EMBOLISM -	12
• SPIRAL CT in diagnosis of PULMONARY EMBOLISM	29
• SUMMARY & CONCLUSION -----	63
• REFERENCES -----	66
• ARABIC SUMMARY	



## **List of figures**

<b>Figure</b>	<b>page</b>
1)Anatomy of the pulmonary trunk .....	2
2)Anatomy of the right pulmonary artery .....	4
3)Anatomy of the left pulmonary artery .....	6
4-6)Pulmonary embolism by plain chest radiography .....	14,16,17
7-10)Pulmonary embolism by ventilation- perfusion scintigraphy .....	20,21,22
11-14)Pulmonary embolism by pulmonary angiography.....	24,26,27,28
15)Scan principle in spiral CT .....	32
16)CT images through the region of the proximal right interlobar artery .....	35
17)CT scan at the level of left pulmonary artery .....	37
18)CT scan at the level of the right pulmonary artery....	39
19)CT scan at the level of roots of ascending aorta .....	41
20-26)Pulmonary embolism by spiral CT .....	44-52
29-32)Two dimentional multiplanar reformations .....	54-57



## **INTRODUCTION AND AIM OF WORK**

Diagnosing pulmonary embolism remains an important challenge in modern medicine. Because the clinical diagnosis of pulmonary embolism is unreliable, imaging modalities are required to establish the definite diagnosis (*Haellerich and Wigton, 1986*).

These modalities include chest X-ray, ventilation-perfusion scintigraphy, conventional angiography. Recently spiral CT angiography was found to be of high accuracy in detecting and excluding pulmonary embolism (*Quinn et al., 1991*).

*The aim of this study* is to illustrate the role of spiral CT angiography of pulmonary arteries in the diagnosis of pulmonary embolism.

