



# **The Role of Non Contrast MR Imaging in diagnosis of Pulmonary Embolism**

**Thesis**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ اَعْمَلُوا فَسَيَرَى اللَّهُ  
عَمَلَكُمْ وَرَسُولَهُ وَالْمُؤْمِنُونَ

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## List of Abbreviations

<b>AA</b>	: Ascending Aorta
<b>ba</b>	: Bronchial Arteries
<b>BB</b>	: Black Blood
<b>BMI</b>	: Body Mass Index
<b>BNP</b>	: Brain Natriuretic Peptide
<b>b-SSFP</b>	: Balanced Steady-State Free Precession
<b>C</b>	: Confluence
<b>CTA</b>	: CT Pulmonary Angiography
<b>DA</b>	: Descending Aorta
<b>DVT</b>	: Deep Vein Thrombosis
<b>ER</b>	: Emergency Room
<b>ESC</b>	: European Society of Cardiology
<b>FN</b>	: False Negative
<b>FOV</b>	: Field of View
<b>FP</b>	: False Positive
<b>FSE</b>	: Fast Spin Echo
<b>GE</b>	: Gradient Echo
<b>HCV+ve</b>	: Hepatitis C Virus positive
<b>ICBT</b>	: Intercosto-bronchial Trunk
<b>ICU</b>	: Intensive Care Unit
<b>IR</b>	: Inversion Recovery
<b>iv</b>	: Intrapulmonary Veins

<b>LA</b>	: left Atrium
<b>LMB</b>	: Left Main Branch
<b>LPA</b>	: left Pulmonary Artery
<b>LV</b>	: left ventricular
<b>MOPETT</b>	: Moderate Pulmonary Embolism Treated with Thrombolysis
<b>MPA</b>	: Main Pulmonary Trunk
<b>MR-PA</b>	: Magnetic Resonance-pulmonary Angiography
<b>NT-proBNP</b>	: N-terminal prohormone BNP
<b>OCP</b>	: Oral Contraceptive Pills
<b>PE</b>	: Pulmonary Embolism
<b>PESI</b>	: Pulmonary Embolism Severity Index
<b>PFO</b>	: Patent Foramen Ovale
<b>RMB</b>	: Right Main Branch
<b>RPA</b>	: Right Pulmonary Artery
<b>SD</b>	: Standard Deviation
<b>SSFP</b>	: Steady-state Free Precession
<b>SVC</b>	: Superior Vena Cava
<b>TE</b>	: Echo Time
<b>TI</b>	: Inversion Time
<b>TN</b>	: True Negative
<b>TOF MRA</b>	: Time-of Flight MR Angiography
<b>TP</b>	: True Positive

## ☞ List of Abbreviations ☜

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<b>TR</b>	: Repetition Time
<b>UFH</b>	: Unfractionated Heparin
<b>VTE</b>	: Venous Thrombo-Embolic
<b>WB</b>	: White Blood

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## Introduction

Pulmonary embolism (PE) is a serious condition responsible for significant morbidity and mortality. PE is currently the third leading cause of cardiovascular death worldwide, so it requires prompt diagnosis and treatment to prevent potentially deadly consequences (*Mudge et al., 2013*).

Pulmonary embolism occurs when a blood clot—usually from the leg—travels to the lung and blocks the pulmonary artery or one of its branches (*Schlieter et al., 2012*).

The diagnosis of acute PE is considered a clinical dilemma due to wide spectrum of multiple nonspecific signs and symptoms (*Goldhaber, 2001, a*). The D-dimer results are of bad positive laboratory test being positive in other situations rather than PE such as cancer and inflammation (*Lee and Ginsberg, 1998*).

CT pulmonary angiography (CTPA) is highly sensitive and specific for the diagnosis of PE and has become the imaging method of choice in patients suspected of having PE. The multislice CT offered high spatial and temporal resolution imaging in a short time scan. CTPA has the ability to assess the pulmonary tree down to the fifth