



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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The Time Course of Lung Changes on Chest CT during Recovery Coronavirus (COVID-19) Pneumonia

Thesis

*Submitted for Partial Fulfillment of
Master Degree in Radiology*

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2021

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبَدَانِكَ لَا نَعْلَمُ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgments

*First and foremost, I feel always indebted to
Allah the Most Beneficent and Merciful.*

*I wish to express my deepest thanks,
gratitude and appreciation to Prof. Dr.
Mohamed Abdelaziz Ali, Professor of
Radiology, Faculty of Medicine, Ain Shams
University, for his meticulous supervision,
kind guidance, valuable instructions and
generous help.*

*Special thanks are due to Dr. Nehal Sayed
Mohamed Zedan, Lecturer of Radiology,
Faculty of Medicine, Ain Shams University,
for his sincere efforts, fruitful encouragement.*

*I would like to express my hearty thanks
to all my family for their support till this work
was completed.*

Muhammad Gamal Abd El atty Elsayed

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List of Abbreviations

Abb.	Full term
2D	Two-dimensional
3D	Three-dimensional
AFOP	Acute Fibrinous and Organizing Pneumonia
ARDS	Acute Respiratory Distress Syndrome
B/A	Bronchoarterial
BI	Bronchus intermedius
CDC	Control and Prevention Center
CT	Computed tomography
FOV	Field of view
GGO	Ground glass opacity
HU	Hounsfield units
kV	Kilovolt
LMB.....	Left main bronchus
mA	Milliampere
mAs.....	Milliampere seconds
MDCT	Multidetector helical computed tomography
MD-HRCT	Multidetector helical HRCT
mGy	Milligray
MinIP	Minimum-intensity projection
MIP	Maximum-intensity projection
mSv.....	Millisievert
NSIP	Nonspecific interstitial pneumonia
RMB.....	Right main bronchus
ROI	Region of interest
T/D	Bronchial wall thickness/diameter

INTRODUCTION

At the end of 2019, 27 cases of pneumonia of unknown origin were identified in the city of Wuhan, China. The causative agent of this disease was identified from nasopharyngeal swab samples by the Centers for Disease Control and Prevention (CDC), on January 7, 2020; it was called severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2). The disease was named COVID-19 by the World Health Organization (*Jin et al., 2020*).

At the moment, the diagnosis is based on clinical findings, the patient's epidemiological history, findings on chest computed tomography (CT), and reverse transcriptase polymerase chain reaction (RT-PCR), the last being the “gold standard” (*Tahamtan et al., 2020*).

In the current COVID-19 pandemic, radiology plays a fundamental role in patient management. Chest CT is a non-invasive radiological examination that involves the use of X-rays at different angles around the patient's chest to produce cross sectional images (*Hope et al., 2020*).

As COVID-19 spreads across the world, there is increasing interest in the role of chest CT in screening, diagnosis, and management of patients with suspected or confirmed COVID-19 infection. The American College of Radiology recommends that chest CT should be used with

discretion and reserved for hospitalized and symptomatic patients with specific clinical indications for CT. Likewise; it indicates that it should not be used as a first line diagnostic test (*Yang et al., 2020*).

Chest CT is used to assess the severity of the lung affected by COVID-19. However, in some situations such as a shortage of RT-PCR tests in emergency situations, it can be considered as a diagnostic option. This is because it provides, at initial stages, a higher sensitivity to molecular tests also due to the speed with which the images are obtained, and thus reduce the false negative rate. With this benefit, the appropriate isolation measures can be taken as well as applying the appropriate management (*Lu et al., 2020*).

The purpose of this study is detecting the change in chest CT findings associated with COVID-19 pneumonia from initial diagnosis until patient recovery with the aim of proper recognition of the radiological changes during the course of the disease & determining the proper interval for CT repetition.