دور الفحص بالتصوير بالاشعة المقطعية المتعددة المقاطع فى تشخيص الاسباب التلقائية للبصق الرئوى المدمم

رسالة توطئة للحصول على درجة الماجيستير فى الاشعة التشخيصية

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content

List of abbreviations

2D	Two-Dimensional
AEC	Automatic exposure control
CAD	Computer-aided diagnosis
COPD	Chronic obstructive pulmonary disease
GE	General electric
HC	Hydatid cyst
MDCT	Multi-Detector Computed Tomography
HRCT:	High resolution computed tomography
HIV	Human immunodeficiency
HU	House unit
MinIP	Minimum-Intensity Projections

MIP	Maximum intensity projections
mm	Millimeter
MPR	Multi-planar reconstruction
PAVM	Pulmonary Arteriovenous Malformations
mAs	Milli-ampere.second
KV	Kilo-Volt
kW	Kilo-Watt
Kvp	Kilovolt Potential
SFOV	Scan field of view
SPN	Solitary pulmonary nodule
TB	Tuberculosis
VD	Volume doubling time
RPA	Right pulmonary artery
RML	Right middle lobe

The Main Development in Computed Tomography in Thoracic imaging have been the introduction of HRCT spiral, volumetric CT and more recently, Multislice CT (MSCT) the introduction of each technique has brought different opportunities undoubtly the most exciting development in CT technology has been the Multislice CT. MSCT permit shorter acquisition time, greater coverage and image resolution ***(ZA Aziz, etal 2004)***

Bronchopulmonary segments:

The segmental bronchi divide into smaller and smaller divisions until after 6–20 divisions they become bronchioles and no longer contain cartilage in their walls. The bronchioles divide and the last of the purely conducting airways are known as the terminal bronchioles, beyond which lie the alveoli. The walls of the segmental bronchi are invisible on the chest radiograph unless seen end-on, when they may cause ring shadow**.**

Each lung is divided into lobes surrounded by pleura.
There are two lobes on the left: the upper and lower,

separated by the major (oblique) fissure; and three on the right: the upper, middle and lower lobes separated by the major (oblique) and minor (horizontal) fissures. The fissures are frequently, incomplete particularly medially, containing localized defects which form an alveolar pathway for collateral air drift and the spread of disease ***(Padley and MacDonald, 2008)***.

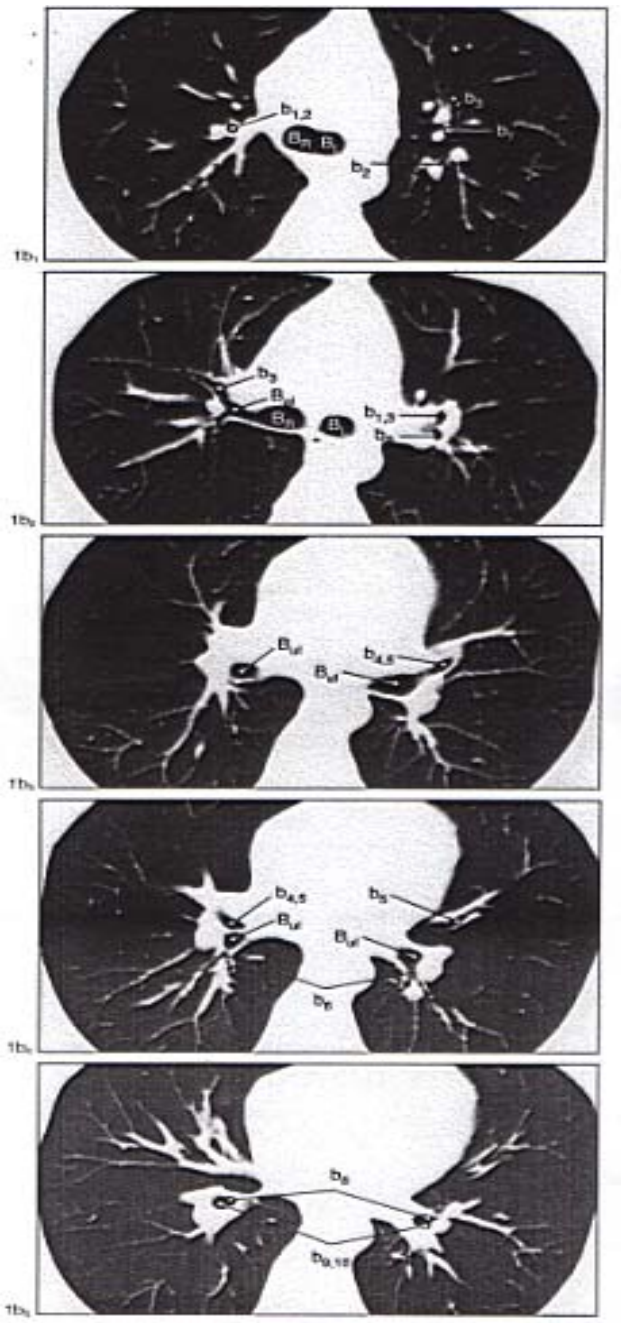

Fig (1): Showing: Normal CT anatomy of the bronchial tree ***(Quoted from Wegener, 1992).***

Segmental Anatomy of the Lung

Each lobe is comprised of several smaller units referred to as pulmonary segments. Each segment can be named numerically, using an "S", and the same number of the corresponding bronchus that supplies it ***(Thompson, 2004)***.

Right lung segmental anatomy:

Right Upper Lobe:

The RUL is comprised of three segments: apical, posterior and anterior. The apical (S1) segment is shaped like a truncated cone with its broadest base located superiorly filling the copula of the lung this segment thus extends over the pulmonary apex but doesn't extend inferiorly to the interlobar (minor) fissure. The posterior (S2) segment extends from the right hilum, posteriorly and inferiorly and forms the posterior half of the interlobar surface relating to the right major fissure. The anterior (S3) segment which is like (S2) extends from the right hilar area is oriented anteriorly and somewhat superiorly. The anterior surface of S3 extends to the chest

wall ventrally, while the broadest inferior surface borders the minor fissure which separates S3 from the right middle lobe ***(Thompson, 2004)***.

Right Middle Lobe:

The RML has two pulmonary segments which are situated side by side; the more lateral (S4) segment approximates the size of its adjacent neighbor, (S5) medial segment. (S5) abuts the right heart border medially while (S4) extends to and comprises a portion of the lateral border of the right lung. Superiorly, both segments border the right minor fissure, and like wise, both abut the major fissure along their inferior margins. Both (S4, S5) touch the diaphragmatic surface at their anterio-inferior edges. Anteriorly, both segments are adjacent to the anterior ribs ends of the 5^{th}, 6^{th} and 7^{th} ribs ***(Thompson, 2004)***.

Right Lower Lobe:

The RLL is comprised of five pulmonary segments: the superior (S6) segment is situated immediately inferior to the posterior segment of the right upper lobe (S2) from

which it is separated by the right major fissure. S6 is bordered by the major fissure anteriorly and comprises a sizable portion of the posterior margin of the right lower lobe superiorly. It is this segment that is surprisingly occupies a sizable area behind the anterior (S3) segment of the RUL. The posterior basal segment (S10) as its name implies occupies the posterior most and inferior most portion of the RLL. As such, it can be best remembered as the pulmonary segment which occupies most of the posterior costophrenic gutter. S10 characteristically tends to be the largest segment of the RLL. Immediately anterior to S10 is the medial basal (S7) segment which typically is the smallest pulmonary segment of the RLL. Along its superior margin, S7 forms a portion of the major fissure medially. Inferior to S7 is the anterior basal (S8) segment, which tends to be rather large in size. This segment along with S6 comprises a large portion of the major fissure surface, laterally. S8 resides in a predominantly lateral location having a large peripheral surface. The lateral basal (S9) segment located between S8, S10 ***(Thompson, 2004)***.