ROLE OF CT IN OBSCURED LUNG LESIONS HIDDEN IN CONVENTIONAL RADIOLOGY

ESSAY

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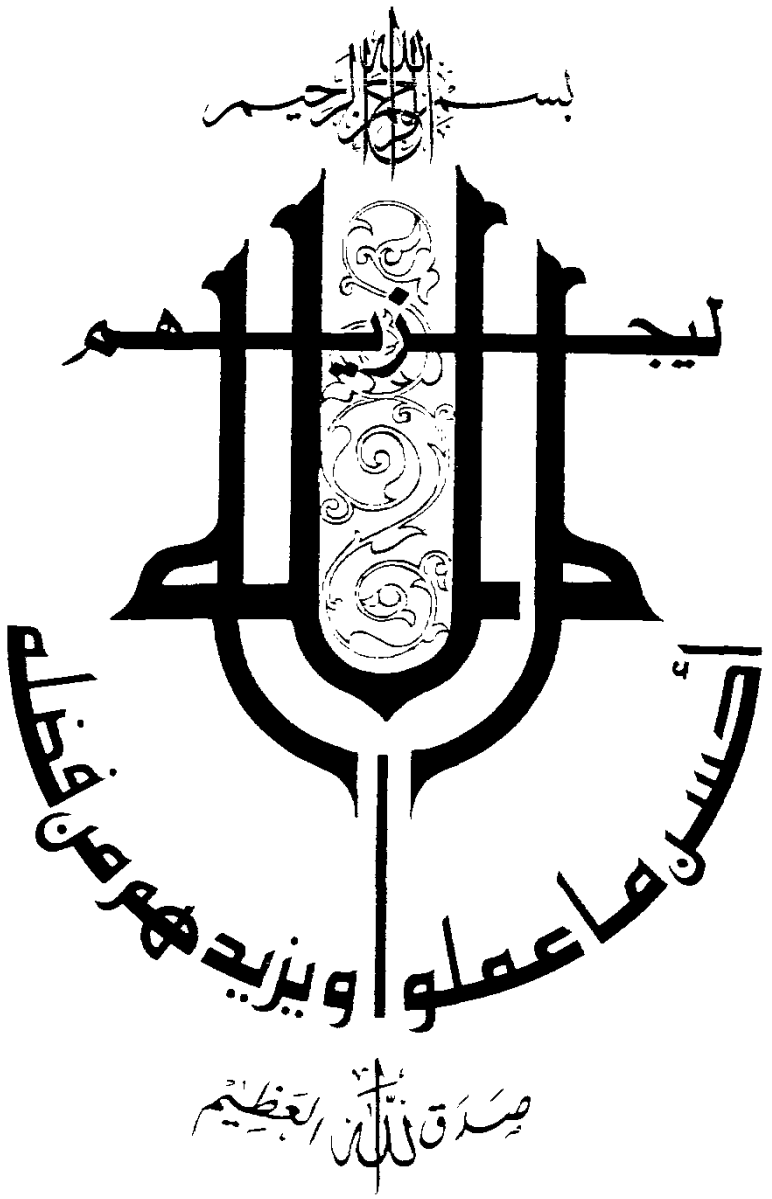

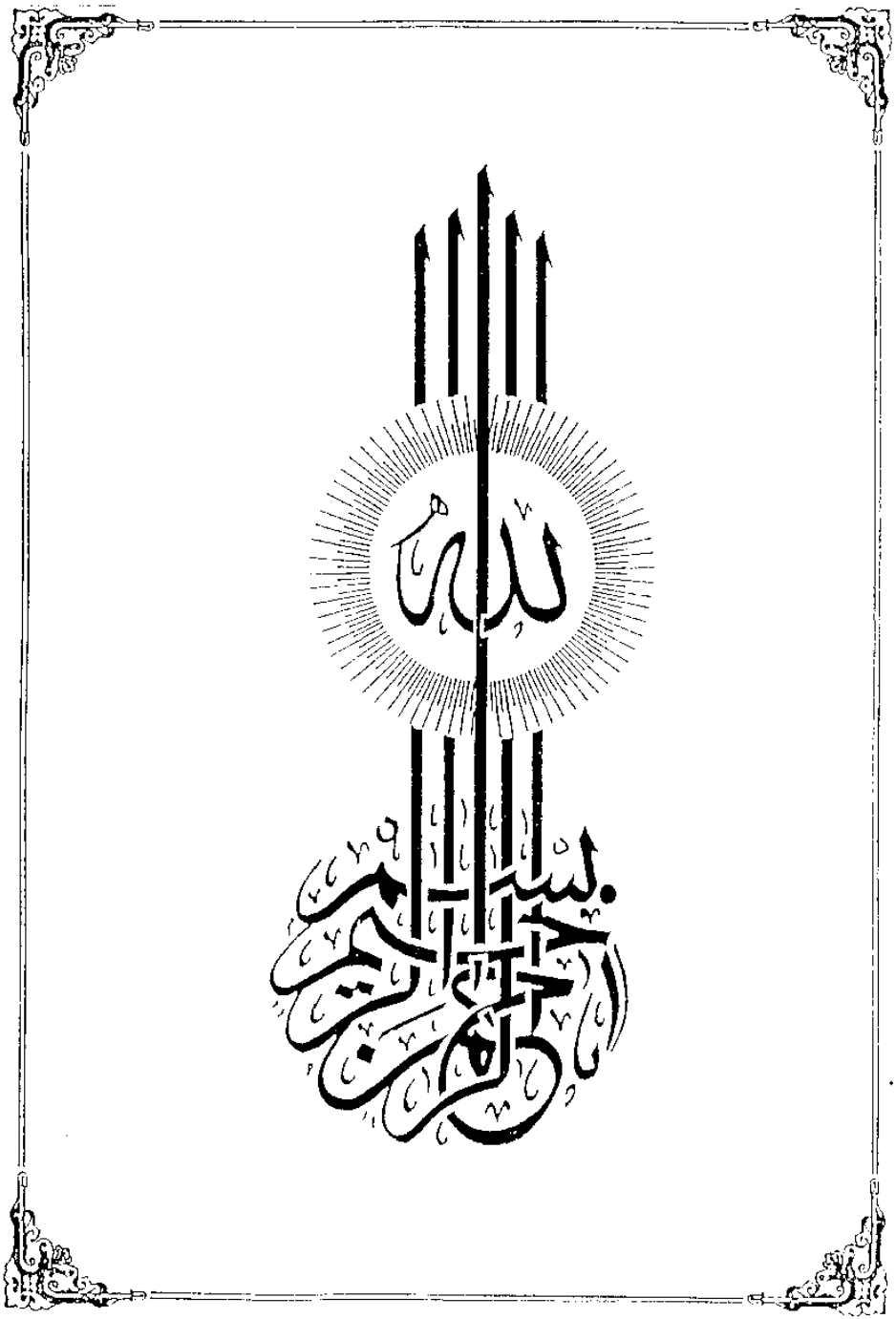

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INTRODUCTION
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The development of computed tomography (CT) in the early 1970s was a milestone in the field of diagnostic radiology. It was described as being the most important advance in radiology after the discovery of the Roentgen rays. Its evolution from the 1st generation equipment till the latest 4th and even 5th generation equipment was remarkable. Incorporating scan times less than one second, and software capabilities which reproduce three dimensional reconstructions of the body image, scanogram imaging, densitometric studies, and magnification facilities are only a few of the many features of the recently developed units.

Computed tomography has already revolutionized the neuroradiologic diagnostic approach to diseases of the central nervous system, and its impact on the study of diseases of the abdomen, retroperitoneum, and pelvis has been similary great. The indications for its use in these areas are already well defind. Although the chest radiograph remains the primary technique for pulmonary imaging, computed tomography can often contribute useful information, and in selected instances, offers unique information not available by other methods. Computed tomography has specific advantages over conventicnal radiography are its superior

ability to characterize tissues by density and its cross-sectional image format, these make CT particularly useful in detecting, locating, and characterizing pulmonary lesions which are present in the hidden areas of the lung such as the subpleural zone, apices, paramediastinal areas, costophrenic sulci, and juxtadiaphragmatic spaces. It is ideal for detecting pleural abnormalities and for displaying underlying parenchymal disease in patients with complex pleuroparenchymal shadows on conventional films, and the detection of diffuse diseases involving the lung parenchyma before they are visible on conventional roentgenograms.

The aim of this study is to emphasize the role of computed tomography in diagnosis some obscure pulmonary lesions using conventional radiographic techniques either plain chest radiography or tomography cuts as a preliminary study.

NORMAL CT ANATOMIC PRINCIPLES OF THE LUNGS

NORMAL CT ANATOMY OF THE LUNGS

The proximal bronchi and pulmonary vessels are well defind by CT. Understanding their normal anatomy helps in identifying bronchial abnormalities and in locating pulmonary lesions by segment.

The following is a description of the CT anatomy of the proximal bronchi and pulmonary vessels.

Right Lung :

- Apical segmental bronchus.
- Right upper lobe bronchi.
- Bronchus intermedius.
- Middle lobe bronchus.
- Right lower lobe basal bronchi.

Apical segmental bronchus :

The apical segmental bronchus (**Fig. 1, Diag.1**) is seen in cross section lateral to lower trachea or right main bronchus and is usually flanked on its medial side by the apical segmental pulmonary artery and on its lateral side by the posterior tributary of the superior pulmonary vein *[Moss et al., 1983]*.

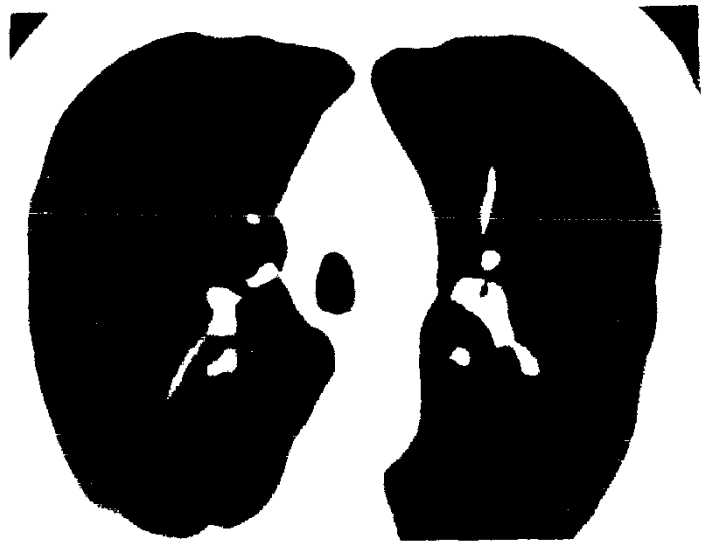
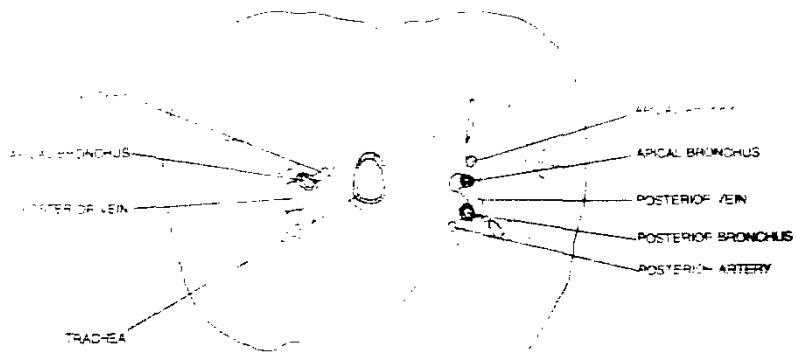


Fig. (1) CT scan



Diag. (1) Line drawing

Fig. (1). *Diag. (1) Apical posterior bronchus*
(right lung) and apical posterior segmental bronchus
(left lung) *(After Moss, 1983).*

Right upper lobe bronchus :

The right upper lobe bronchus (**Fig.2, Diag.2**) originates more cephalic than does the left upper lobe bronchus. The anterior and posterior segmental bronchi of the right upper lobe are usually visible on CT scan because they bifurcate in the axial plane. At the lateral aspect of this bifurcation lies the posterior branch of the superior pulmonary vein. Anterior to the right upper lobe bronchus is the pulmonary artery to the right upper lobe, the truncus anterior *[Naidich et al., 1980]*.

Bronchus intermedius :

The bronchus intermedius (**Fig. 3, Diag. 3**), (**Fig. 4, Diag.4**) is about 3 cm. long *[Naidich et al., 1980]*, extending between the origins of the right upper lobe and right middle lobe bronchi. The posterior wall of the bronchus intermedius is thin, and it is outlined posteriorly by lung. Tumor, inflammation, or adenopathy can increase the apparent wall thickness. The interlobar branch of the right pulmonary artery borders the bronchus intermedius anterolaterlly. The right superior pulmonary vein lies at the lateral aspect of the right pulmonary artery.

Fig. (2) CT scan

Diag. (2) Line drawing

Fig. (2), Diag. (2). Right upper lobe bronchus, and apical-posterior segment bronchus (left lung). *[After Moss, 1983].*

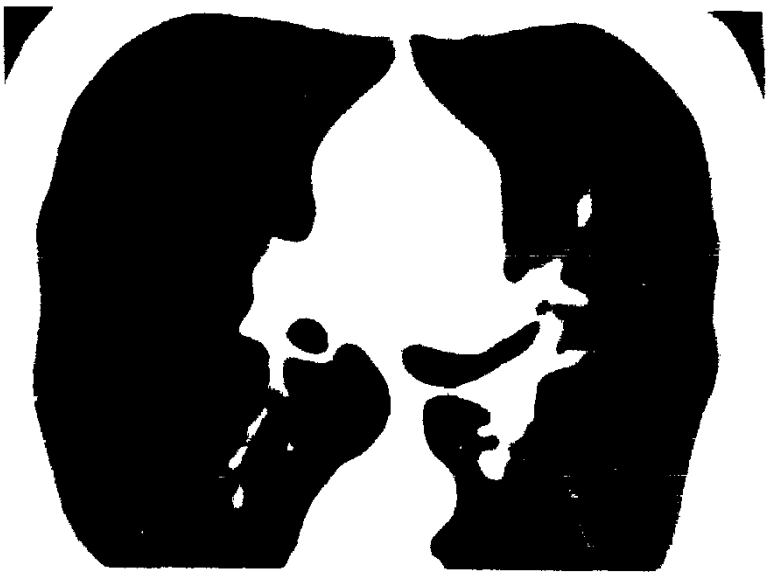
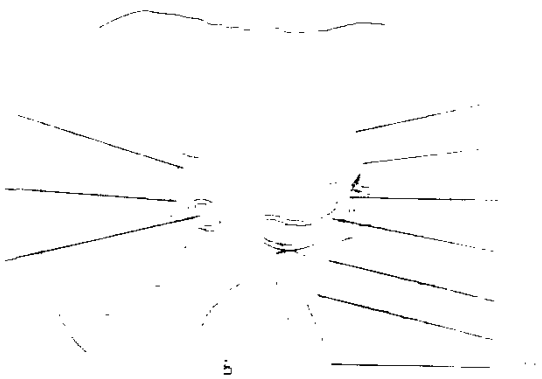


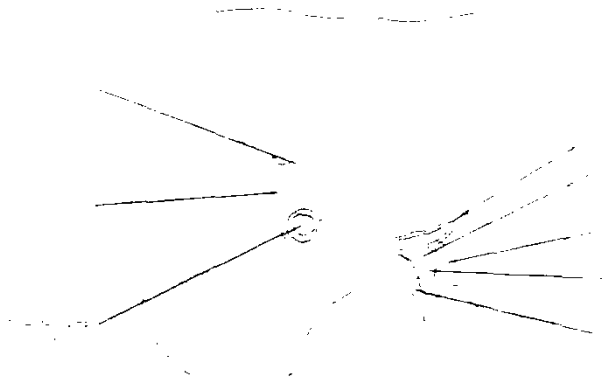
Fig. (3) CT scan



Diag. (3) Line drawing

Fig. (3), Diag. (3). Br[illegible] and left upper lobe bronchus. *[After Moss, 1983].*

Fig. (4) CT scan



Diag. (4) Line drawing

Fig. (4), Diag.(4). Bronchus intermedius and lingular bronchus. *[After Moss, 1983].*