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C.7. Guided Chest Biopsy

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Degree of RADIO-DIAGNOSIS

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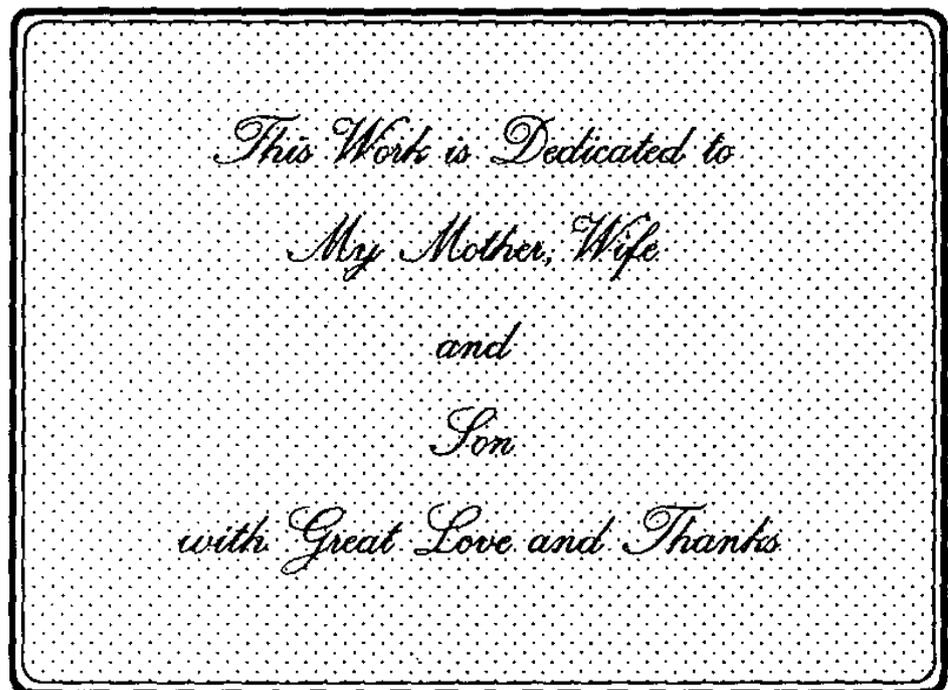
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





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CONTENTS

	<i>Page</i>
I. Introduction and Aim of the Work	1
II. C.T. Anatomy of the Chest	2
III. Pathology of Selected Chest Lesions	22
IV. Material and Methods	48
V. Results	56
VI. Illustrative Cases	73
VII. Discussion	103
VIII. Summary And Conclusion	119
IX. References	122
X. Arabic Summary	

LIST OF FIGURES

	Page
Figure 1: Division of bronchial tree	3-5
Figure 2: Diagram showing the relation of pulmonary arteries and veins to the bronchial tree.	7
Figure 3: Pleural fissures at computed tomography	10-11
Figure 4: Anatomy of Mediastinum on contrast enhanced computed tomography.	13-15
Figure 5: American Thoracic society Lymph node mapping scheme	20
Figure 6: Types of aspirating needles	54
Figure 7: Types of cutting needles	54
Figure 8: Case No 1	74
Figure 9: Case No 2	76
Figure 10: Case No 3	78
Figure 11: Case No 4	80
Figure 12: Case No 5	82
Figure 13: Case No 6	84

LIST OF TABLES

	Page
Table 1: Distribution of cases According To age group.	57
Table 2: Distribution of cases According to patient's sex	58
Table 3: Distribution of cases according to site of biopsy	59
Table 4: Distribution of cases according to Pathological diagnosis	60
Table 5: Results According to Type of needle used for biopsy	61
Table 6: Distribution of cases According to Previous bronchoscopy	62
Table 7: Distribution of cases According to The approach to the biopsied lesion	63
Table 8: Distribution of cases according to type of needles used for biopsy	64
Table 9: Distribution of cases According to No of trials made for biopsy	65
Table 10: Relation between way of approach and no of trials	66

ABSTRACT

The aim of this work is devoted to assess the value and accuracy of transthoracic C.T. guided biopsy in different chest lesions. Meanwhile the best practicable technique for C.T. guidance would be identified; seeking an optimum efficient diagnosis and treatment.

This study was conducted on 75 patients referred to the radiodiagnosis department from various departments, chest hospital, and outpatients clinics.

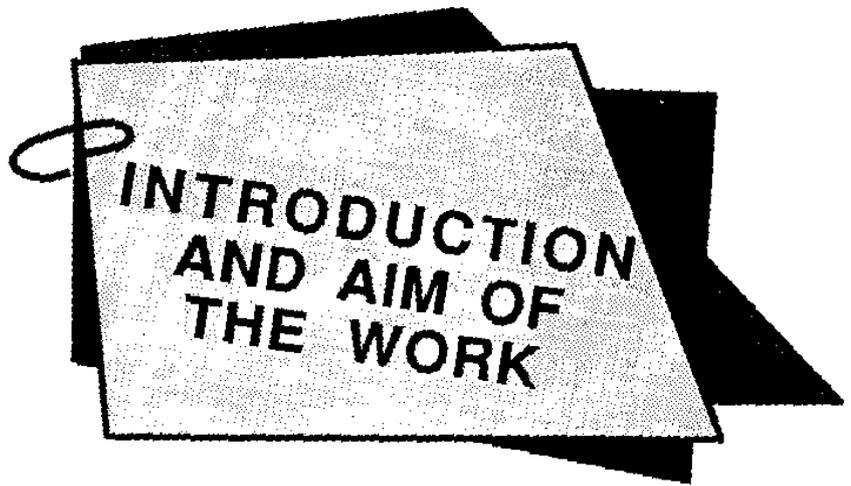
Two modalities of biopsy were used in this; aspiration and true cut needle biopsy.

The age of the patient ranges from 4 to 80 years old. Male patients constitute the larger percentage of all cases (60%).

Our study included 75 patients having pleural, pulmonary, mediastinal or chest wall lesions. 28 patients (34.4%) has performed bronchoscopic biopsy prior to C.T. guided needle biopsy. Bronchoscopic biopsy was negative in 25 patients. Those patients gave positive results employing CT guided percutaneous needle biopsy technique.

Our study showed high accuracy (98.7%) of the CT guided percutaneous cutting needle biopsy and 100% employing the CT guided percutaneous Aspiration needle biopsy.

The cytopathologic results in 63 patients (84%) was matched with the initial CT diagnosis, and in 12 patients (16%) was unmatched.



**INTRODUCTION
AND AIM OF
THE WORK**

The primary step in the evaluation of patient suspected of having a focal lesion is through review of the diagnostic biopsy material. (*Tepler et al., 1900*).

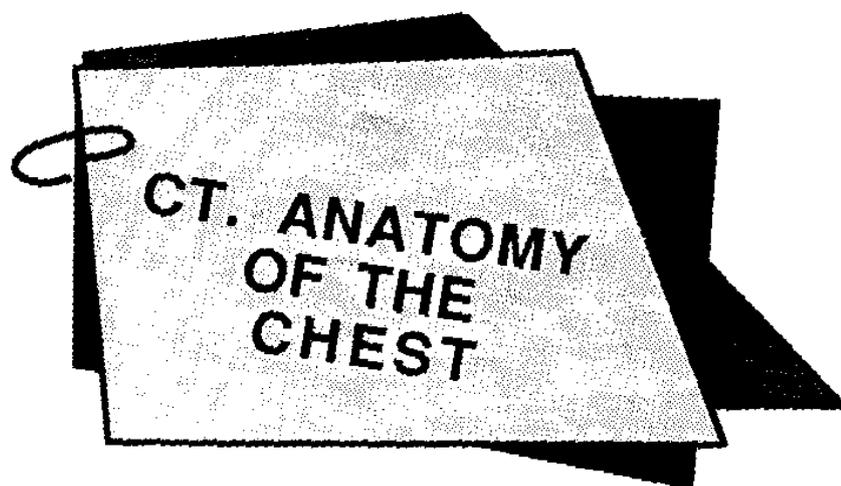
Several techniques are available for obtaining a sample of lung or mediastinal tissue for histologic, cytologic or bacteriologic examination. The most common methods include an open lung or thoracoscopic biopsy, a transbronchial bronchoscopic biopsy, and a percutaneous needle biopsy (*Armstrong et al., 1995*).

Despite recent advances in endoscopic techniques, small peripheral pulmonary nodules may not be amenable to thoracoscopic localization and biopsy (*Plunkett et al., 1992*).

In the past several years, improved imaging modalities and biopsy techniques have made it possible to obtain tissue samples from most lung lesions, including very small nodules measuring less than 1cm in diameter. During the same period, cytopathologists have developed remarkable accuracy in their interpretation of cytological preparations and small tissue fragments, making it possible to use smaller and safer needles without sacrificing diagnostic accuracy (*Westcott, 1988*).

Several authors have demonstrated that carefully performed transthoracic needle biopsy can provide extremely high accuracy (90%-98% sensitivity) for the diagnosis of cancer (*Khori et al., 1985*).

The aim of this work is devoted to assess the value and accuracy of transthoracic C.T. guided biopsy in different chest lesions. Meanwhile the best practicable technique for C.T. guidance would be identified; seeking an optimum efficient diagnosis and treatment.



**CT. ANATOMY
OF THE
CHEST**

I. LUNGS AND AIRWAYS:

Central Airways

The trachea is a straight tube that, in children and young adults, passes downward and backward in the midline; with unfolding and ectasia of the aorta, the trachea deviates to the right as it descends into the chest. The trachea enters the thorax 1 to 3 cm. above the level of the suprasternal notch; the intrathoracic portion is 6 to 9 cm in length (*Gamsu and Webb, 1983*).

The mean transverse diameter is 15.2mm (SD 1.4) for women and 18.2mm (SD 1.2) for men. The mean cross sectional area is 194 mm² (SD 35) for women, and 272mm² (SD 33) in men. The normal cross sectional area on forced expiration is considerably less than on full inspiration (*Vock et al., 1984*).

The trachea divides into the two main stem bronchi at the carina. In children the angles are symmetric, but in adults the right main stem bronchus has a steeper angle than the left. The range of angles is wide, and alterations in angle can be diagnosed only by right-left comparisons, not by absolute measurement. The left main bronchus extends up to twice as far as the right main bronchus before giving off its upper lobe division. The lobar and segmental branching pattern is shown in figure 1.

There are many variations of the segmental and subsegmental branches. The central bronchi down to segmental level can be routinely identified with standard 10mm sections. (*Armstrong et al., 1995*).

PULMONARY HILA:

Understanding the appearance of the normal hila requires an application of the anatomy of the major bronchi (Figure 1.) and hilar blood vessels (Figure 2) because it is these structures



Figure 1:

Division of bronchial tree shown by bronchography A, Right bronchial tree, AP, view, B, Right bronchial tree, right posterior oblique view, C, Right bronchial tree, lateral view, D, left bronchial tree, Ap view, E, left bronchial tree, left posterior oblique view, F, Left bronchial tree, lateral view.

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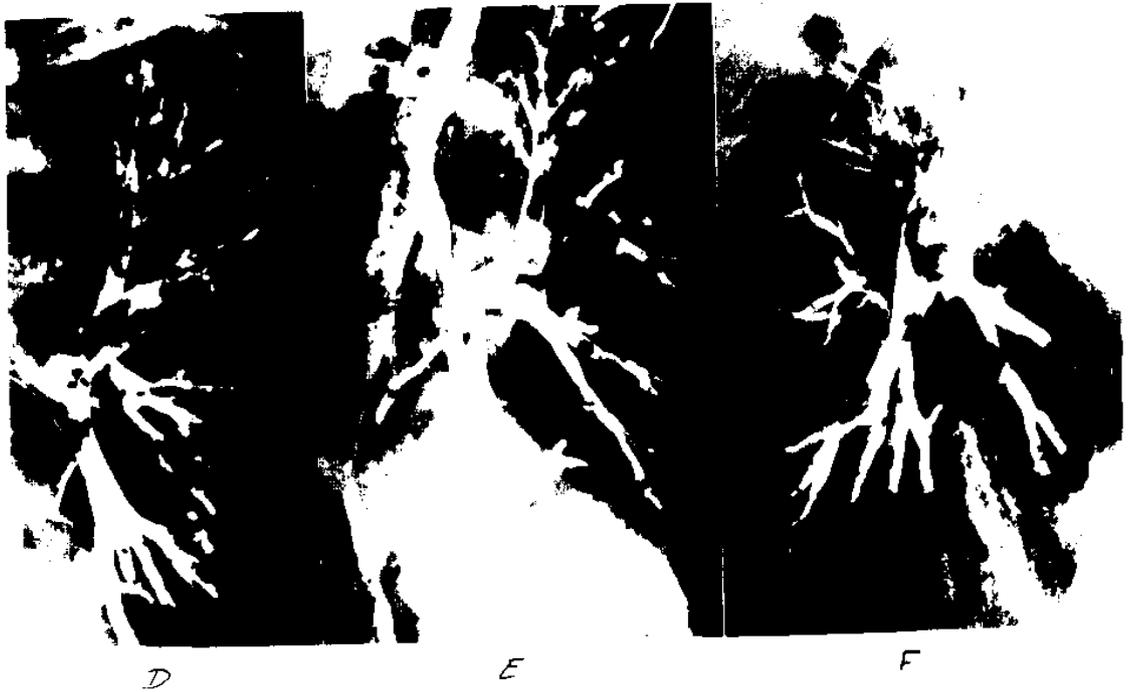


figure 1:

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