

TEMEL YRBT PATERNLERİ: Olgu Örnekleri ile

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Ege Üniversitesi Tıp Fakültesi Radyoloji AD, İzmir

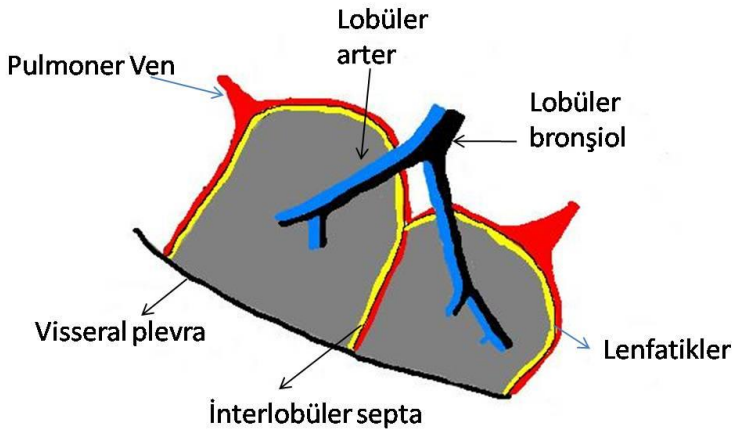
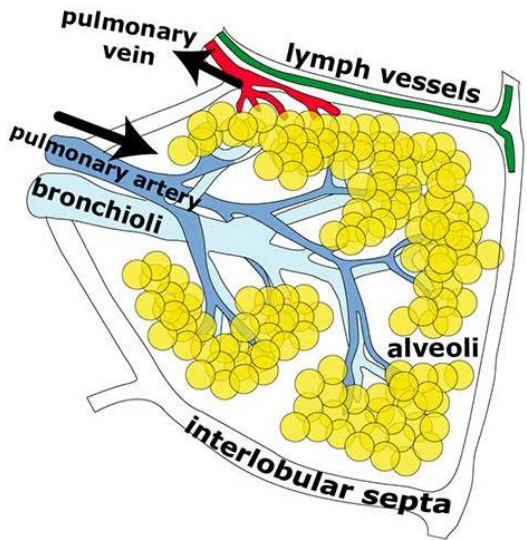
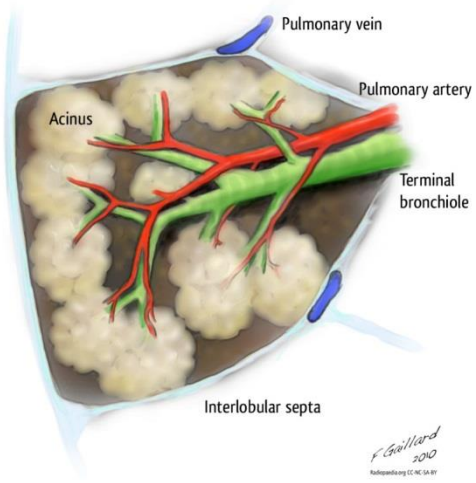
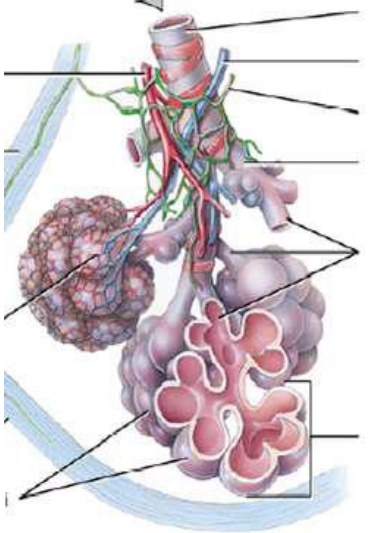
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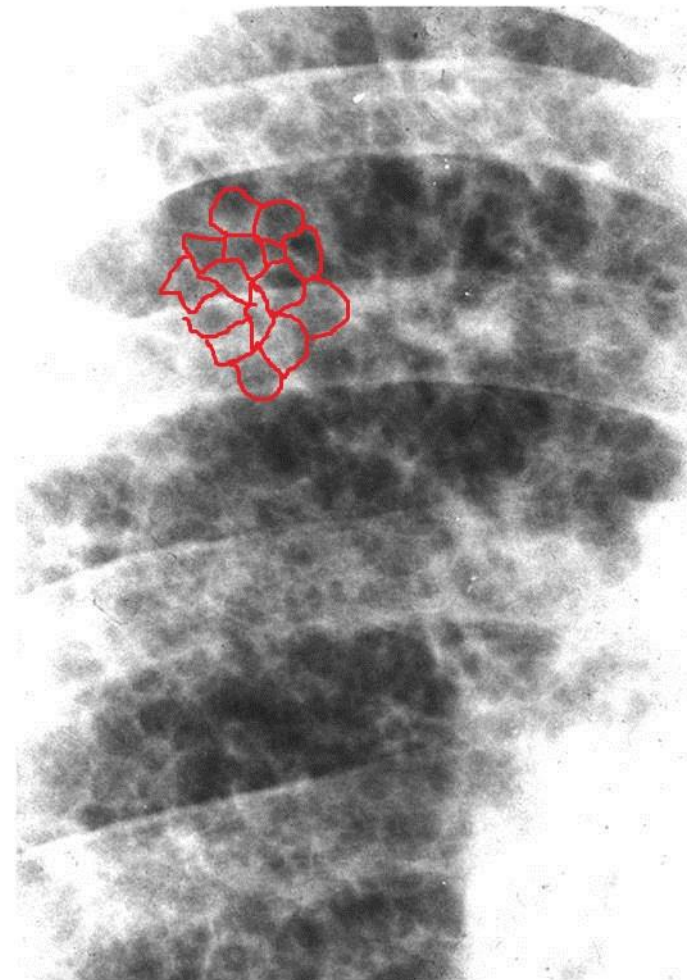
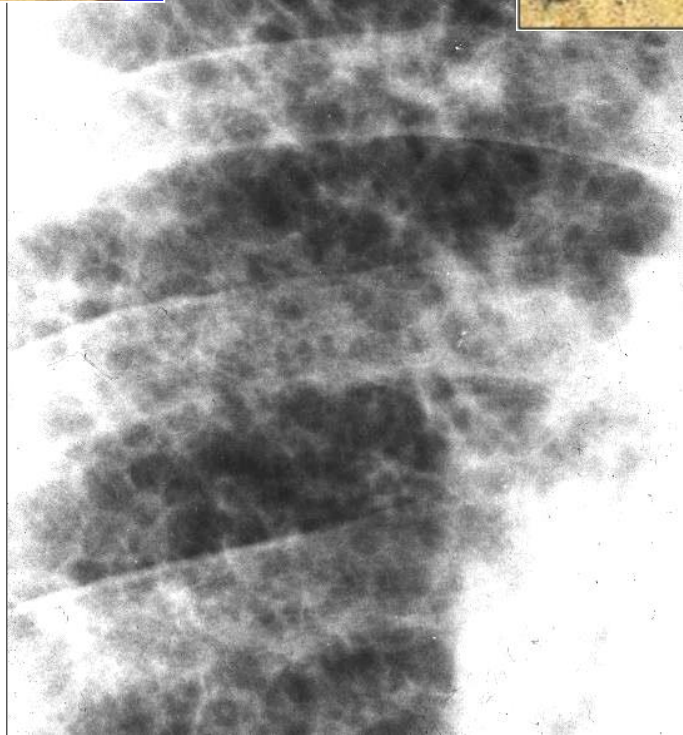
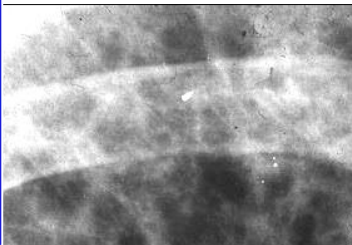
- YRBT çekim endikasyonları
- Normal akciğer anatomisini hatırlatma
- Hastalıkları BT görünümüne göre gruplama
- Olgular

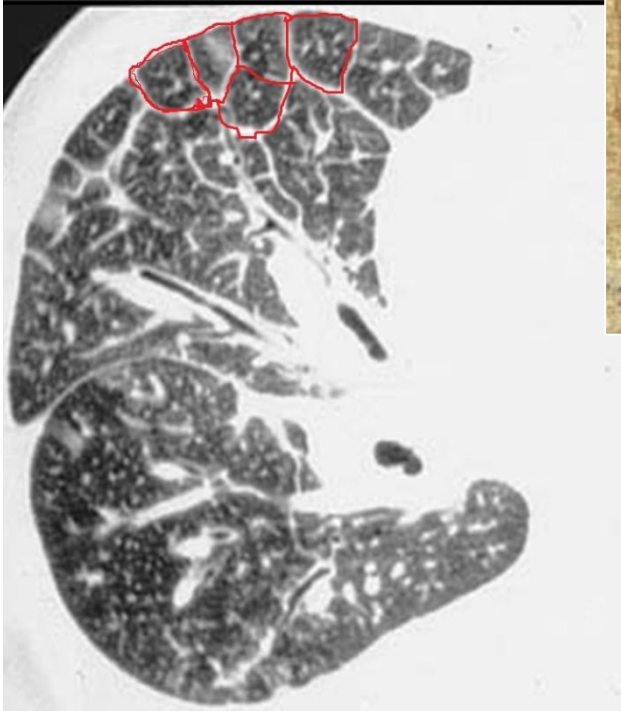
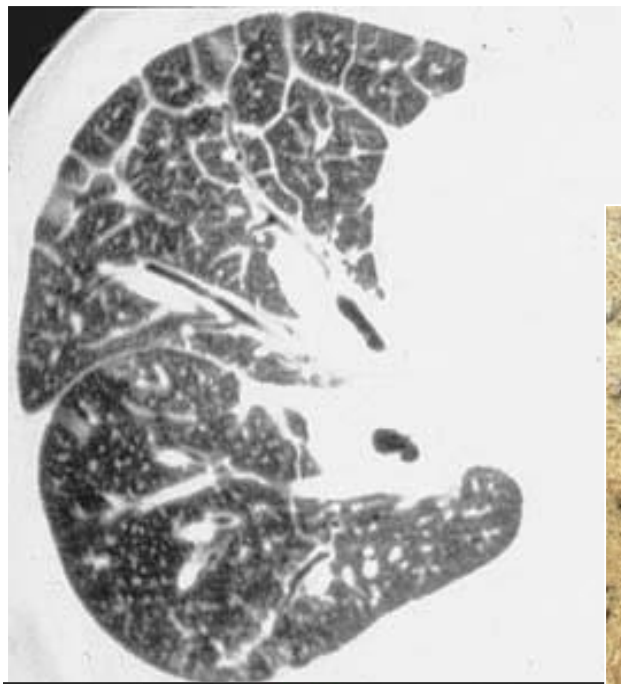
YRBT ENDİKASYONLARI

- İnterstisyel akciğer hastalıkları (idiopatik veya sekonder)
- Bronşektazi-küçük hava yolu hastalığı
- Bağ dokusu hastalıkları akciğer tutulumu
- Viral ve fungal pnömoniler
- Akciğer grafisindeki diffuz dağılımlı değişiklikler (nodül, retikülasyon vb)
- Kistik akciğer hastalıkları

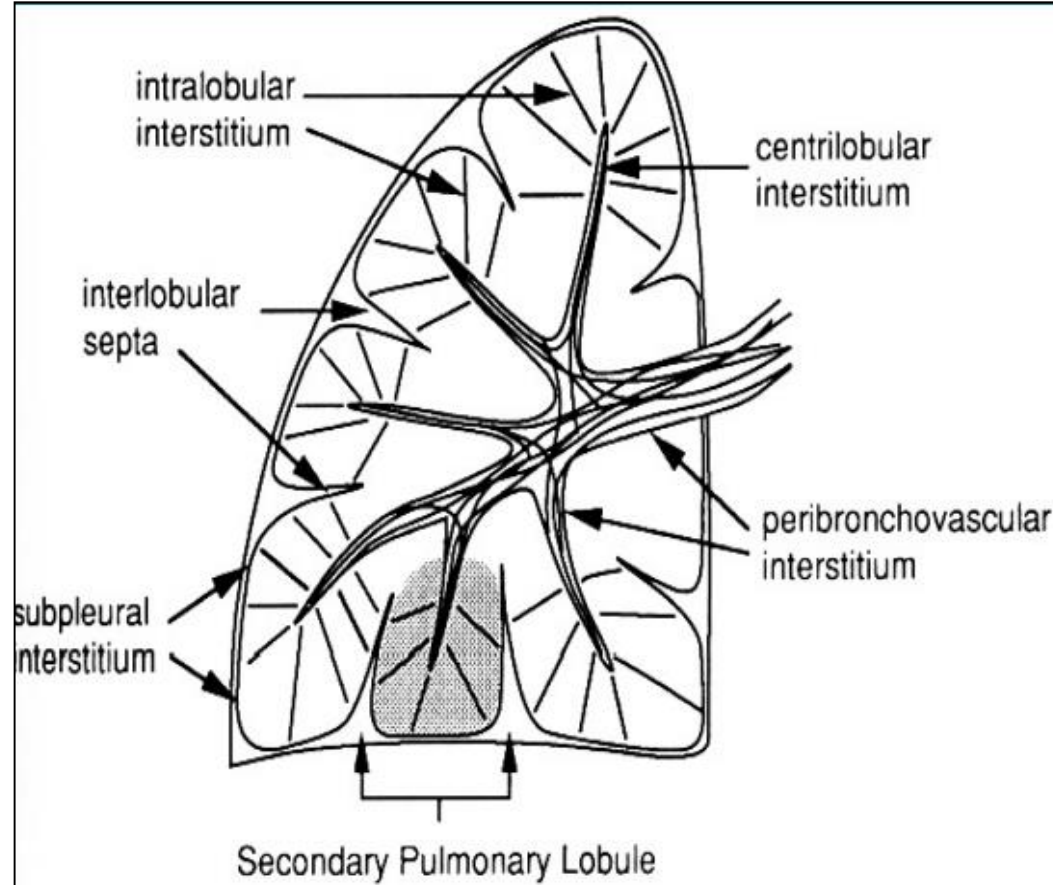
NORMAL ANATOMİ



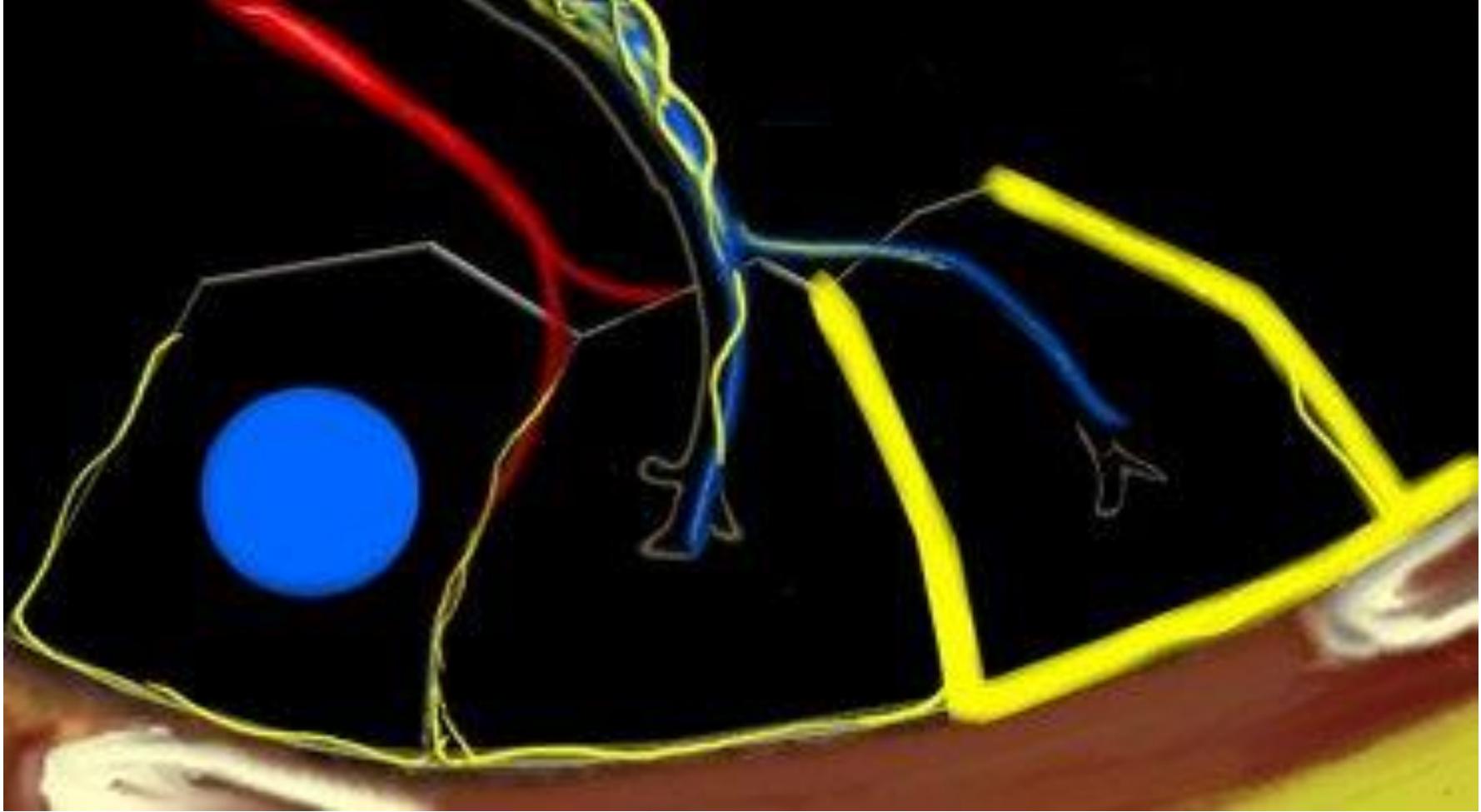




İntertisyum



- Peribronkovasküler (aksiyal)
- Subplevral (periferik)
- İntralobuler (alveoler)



- **SANTRAL LENFATİK AĞ**=> Lobülün merkezinde peribronkovasküler yerleşimli
PERİFERAL LENFATİK AĞ=> Interlobuler septa ve subplevral yerleşimli

YRBT ' Yİ YORUMLAMAK İÇİN:

Dominant patern? Dansite: Yüksek veya düşük dansiteli



Sekonder lobüldeki dağılımı? Yerleşim: Sentrlobüler, perilenfatik, dağınık



Akciğerdeki dağılımı? Lokalizasyon: Üst zonlar, alt zonlar, santral veya periferel

Ek bulgular var mı? Plevral effüzyon, LAP, traksiyon bronşektazisi

DANSİTE VE AKCİĞER

- Akciğerin dansitesi havadan daha yüksektir (içinde kan ve doku içermesi nedeniyle)
- Akciğerin normal dansitesi kişiden kişiye değişmekle birlikte **-500 ila -900 HU** arasında değişir
- Lezyonlar da DANSİTE ARTIŞI yapan, DANSİTE AZALTAN ve her ikisini de barındıran (MİKST) olmak üzere üç grupta toplanabilir.

DANSİTE ARTIŞI (parankimal)

- Buzlu cam ve konsolidasyon
- Nodül ve kitleler
- Atelektazi
- Vasküler lezyonlar
- Retiküler ve retikülonodüler görünüm yapan lezyonlar
- Yüksek dansiteli lezyonlar (kalsifikasyon, iyod birikimi vb)
- Hiler, mediastinal veya göğüs duvarı lezyonlarının akciğere uzanımı.....

DANSİTE AZALMASI

- Dansite azalması olması için:

- *Havanın aşırı artışı

- veya

- *Yumuşak dokuların azalması (damar çapı, kan akımı, doku kaybı vb) gereklidir.

AKCİĞER DANCİTESİNİ AZALTAN LEZYONLAR

- Balpeteđi akciđer
- Akciđer kistleri
- Amfizem, bül
- Pnömatosel
- Kaviter nodül
- Bronşektazi
- Mozaik perfüzyon
- Havayolu hastalıđına bađlı hava hapsi

↑O₂, ↑Ph
↑V/Q=3:1

1/3 üst yarı

PCP, Tbc, LHH, Sarkoidozis, Amfizem...

2/3 alt yarı

↓O₂
N pH
↓V/Q=0.6:1

Pulmoner ödem, İPF, PAP, BOOP,
yuvarlak atelektazi ...

Medülla

2/3 iç kısım

Lenf akımı ↓

Perfüzyon ↑

Sarkoid

Silikoz

PCP

P.Ödem

KF, ABPA

Korteks

1/3 dış kısım

Lenf akımı ↑

E. pnömoni

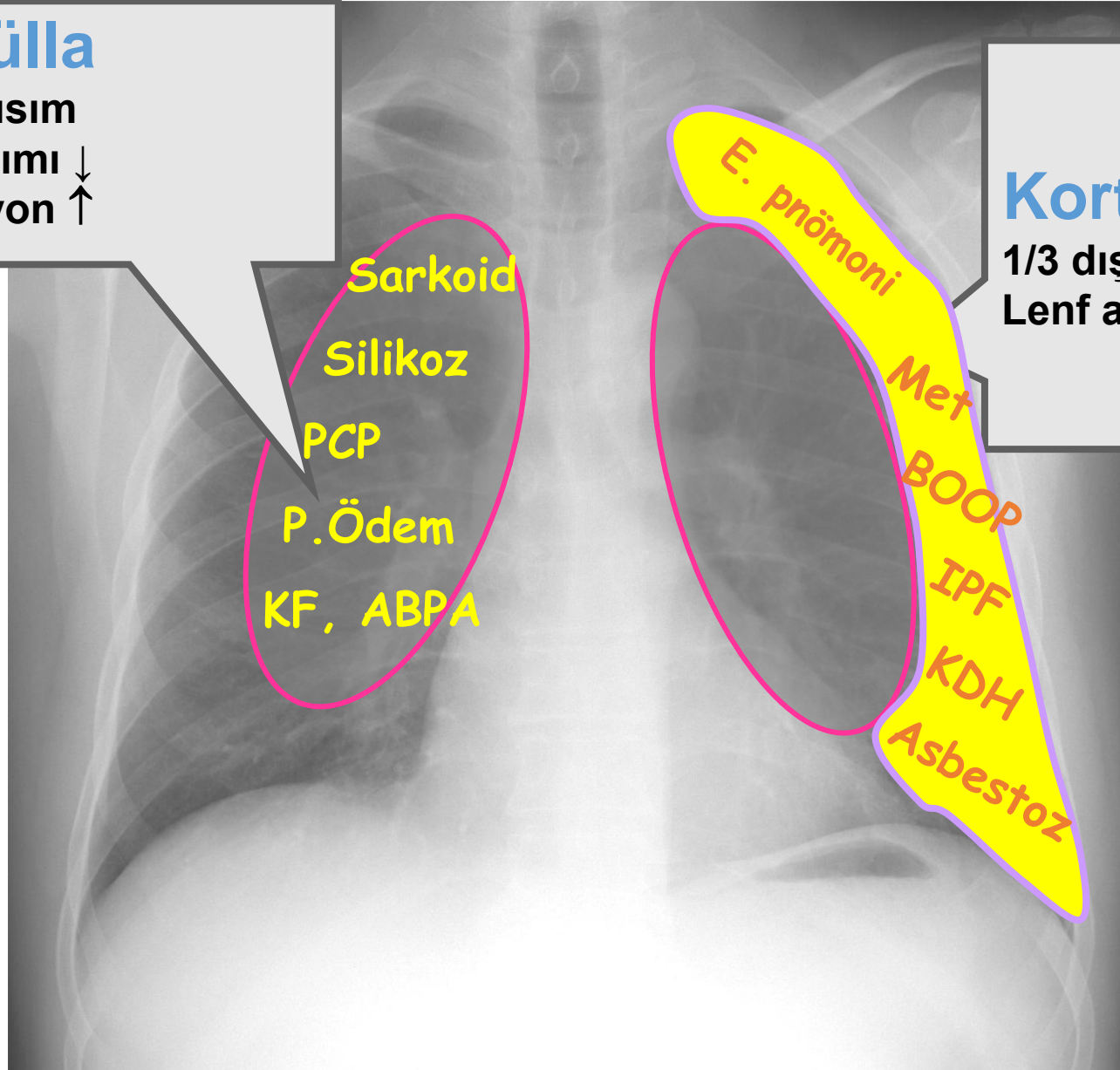
Met

BOOP

IPF

KDH

Asbestoz





Chest CT Signs in Pulmonary Disease A Pictorial Review

Shine Raju, MD; Subha Ghosh, MD; and Atul C. Mehta, MD, FCCP

Comparison of the chest CT scans of the most important imaging modalities available to a pulmonologist. The advent of high-resolution CT scanning of the chest has led to its increasing use. Although chest radiographs are still useful as an initial test, their utility is limited in the diagnosis of lung diseases that depend on higher resolution images such as interstitial lung diseases and pulmonary vascular diseases. Several metaphoric chest CT scan signs have been described linking abnormal imaging patterns to lung diseases. Some of these are specific to a disease, whereas others help narrow the differential diagnosis. Recognizing these imaging patterns and CT scan signs are thus vitally important. In the present article, we describe a comprehensive list of the commonly encountered metaphoric chest CT scan signs and their clinical relevance.

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KEY WORDS: CAT scan; chest imaging; CT scan; pulmonary; radiology; review; thoracic

CT imaging of the chest plays a vital role in the diagnosis of various lung diseases. Although pulmonary diseases can vary in clinical presentation, the associated imaging patterns can be grouped into a few distinct patterns. Various metaphoric signs have been described to identify and simplify these patterns. Some of these signs, which have been well described in the imaging literature, are pathognomonic for a disease, whereas others can help narrow the list of differential diagnoses. These signs also help to create a unique association between an imaging pattern and the underlying disease process.

Understanding these imaging findings, and their subsequent pattern recognition, is thus of vital importance to a pulmonologist. The

present review is a pictorial essay of the important chest CT scan signs and the associated pulmonary diseases. Some of these signs have been described in chest radiographs as well as in CT imaging. We have included these signs in this review, having recognized an increasing trend of CT imaging being used as the initial imaging modality.

General Considerations: The Secondary Pulmonary Lobule

It is important to review the basic structure of a secondary pulmonary lobule (SPL) and its radiologic appearance on a high-resolution CT (HRCT) scan image before we discuss the various CT scan signs. The SPL is a fundamental unit at the

ABBREVIATIONS: GGO = ground glass opacity; HRCT = high resolution CT; PJP = *Pneumocystis jirovecii* pneumonia; SPL = secondary pulmonary lobule

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Radiographic Signs and Patterns in Interstitial Lung Disease

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Introduction

Thoracic computed tomography (CT), specifically high-resolution CTs (HRCTs), plays an essential role in diagnosing diffuse pulmonary lung disease. Although diffuse lung diseases often present with nonspecific radiographic findings, there are a small number of radiographic signs and patterns that are more specific and can be used to narrow the differential diagnosis.

Honeycombing

Honeycombing is a term used to describe the presence of

distinguished IPF from cellular nonspecific interstitial pneumonia (NSIP) and fibrotic NSIP were the extent of honeycombing (odds ratio, 5.16 and 2.10, respectively).⁵

Honeycombing can sometimes constitute more than 70% of the fibrotic portions of the lungs in ILDs and this can be referred to as “exuberant honeycomb sign” (Fig. 1b and c). It is associated more commonly with connective tissue diseases (CTD) UIP rather than IPF UIP.⁶ Honeycombing can be present in other conditions such as NSIP and chronic hypersensitivity pneumonitis (HP). However, ground glass opacities dominate in NSIP and honeycombing, if present, is usually minimal. Similarly, HP can also demonstrate honeycombing, but it is usually less extensive than in ILDs. mosaic



Radiologic Signs in Thoracic Imaging: Case-Based Review and Self-Assessment Module

Mark S. Parker¹, Marvin H. Chasen², Narinder Paul³

ABSTRACT

Objective

Chest imaging remains one of the most challenging specialties of diagnostic radiology. The successful interpretation of thoracic imaging studies requires the recognition and understanding of the radiologic signs that are characteristic of many complex disease processes.

Conclusion

The educational objectives for this case-based self-assessment module are for the participant to exercise, self-assess, and improve his or her understanding of important thoracic radiologic signs that are useful in establishing the diagnosis of particular diseases of the chest.

INTRODUCTION

This self-assessment module on several radiologic signs used in thoracic imaging to assist radiologists in establishing a particular diagnosis of pathologic processes affecting the chest has a self-assessment component and an educational component. The self-assessment component consists of six previously unpublished case-based studies with accompanying clinical histories and radiologic images. These cases have been selected to illustrate specific radiologic imaging signs. A series of multiple-choice questions follows each case, with solutions and a discussion of that particular radiologic sign and its cause. The educational component consists of suggested readings or references that accompany each case that the participant should review. To claim CME and SAM credit, each participant must log on to the ARRS Website (www.rrs.org) and enter his or her responses to the questions online.

EDUCATIONAL OBJECTIVES

By completing this educational activity, the participant will: A. Exercise, self assess, and improve his or her understanding of selected radiologic signs useful in establishing a particular diagnosis of pathologic processes affecting the chest.

B. Exercise, self assess, and improve his or her understanding of the underlying cause for these particular imaging signs.

REQUIRED ACTIVITY
This interactive case scenarios presented in this article.

RECOMMENDED READING

1. Woodring JH, Reed JC. Radiographic manifestations of lobar atelectasis. *J Thorac Imaging* 1996; 11:109-144
2. Catalano O. The incomplete border sign. *Radiology* 2002; 225:129-130
3. Chung M, Edinburgh K, Webb E, McCovin M, Webb W. Mixed infiltrative and obstructive disease on high-resolution CT: differential diagnosis and functional correlates in a consecutive series. *J Thorac Imaging* 2001; 16:69-75
4. Whitten CR, Khan S, Muncke GJ, Grubnic S. A diagnostic approach to mediastinal abnormalities. *Radiographics* 2007; 27:657-671
5. Ferguson EC, Krishnamurthy R, Oldham SA. Classic imaging signs of congenital cardiovascular abnormalities. *Radiographics* 2007; 27:1323-1334
6. Marshall GB, Farnquist BA, MacGregor JH, Burrows PW. Signs in thoracic imaging. *J Thorac Imaging* 2006; 21:76-89

INSTRUCTIONS

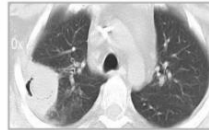
1. Complete the educational and self-assessment components included in this issue.
2. Visit www.rrs.org.
3. Order the online SAM as directed. (The SAM must be ordered to be accessed even though the activity is free to ARRS members.)
4. The SAM can be accessed at www.rrs.org under the Lifelong Learning link.
5. Answer the questions online to obtain SAM credit.

BT'de işaretler

TABLE 3] Tabular Summary of Common CT Signs on Pulmonary Imaging

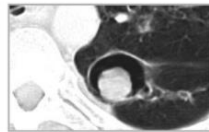
Air crescent sign

- Crescentic or circumferential rim of radiolucent airspace within a parenchymal consolidation or nodular opacity
- DDx: Invasive aspergillosis, bronchogenic Ca



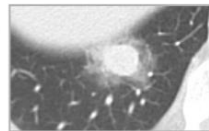
Monod sign

- Air surrounding a fungal ball in a preexisting pulmonary cavity.
- DDx: Aspergilloma



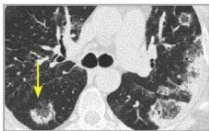
Halo sign

- SPN or mass surrounded by a circumferential GGO
- DDx: invasive pulm aspergillosis, pulm mucormycosis, GPA, amyloidosis, sarcoidosis, mets to the lung



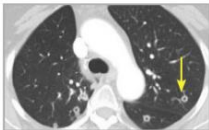
Atoll sign (reverse-halo sign)

- Central GGO surrounded by a crescentic or circumferential denser consolidation
- DDx: COP, IFI, PJP, LG, GPA, lipid pna, sarcoidosis, paracoccidioidomycosis



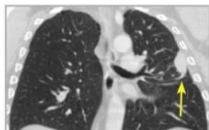
Cheerio sign (open bronchus sign)

- Pulmonary nodule with a central lucency
- DDx: Pulm adeno Ca, PLCH, primary and metastatic lung malignancy, rheumatoid nodules, GPA



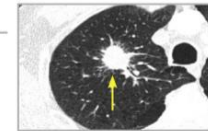
Comet tail sign

- Curvilinear pleural based opacity directed towards the ipsilateral hilum
- DDx: Rounded atelectasis



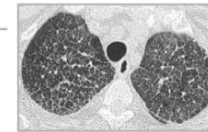
Corona radiata (sunburst sign)

- SPN or mass, with spiculated and irregular margins
- DDx: Bronchogenic Ca



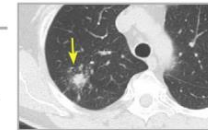
Crazy paving sign

- Thickened interlobular septa in a background of diffuse GGO's.
- DDx: PAP, pulm edema, lymphangitic spread of malignancy, pulm mucinous adeno Ca, sarcoidosis, lipid pna, pulm hge, ARDS, PJP



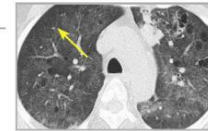
Galaxy sign

- Coalescent granuloma with a central dense mass and tiny peripheral satellite nodules
- DDx: Sarcoidosis, progressive massive fibrosis, active pulm TB.



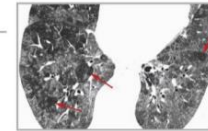
Mosaic attenuation

- Variable attenuation seen on a chest CT in a lobular or multilobar distribution.
- DDx: BO, CTEPH, PJP, CEP, HP, COP



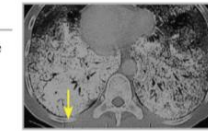
Head cheese sign

- Juxtaposition of distinct radiographic areas of low, normal and high attenuation
- DDx: sub-acute HP, sarcoidosis, RB, Mycoplasma pna



Sand storm sign

- Diffusely dense pulmonary micronodular calcifications. Note the black pleural line sign (arrow)
- DDx: PAM



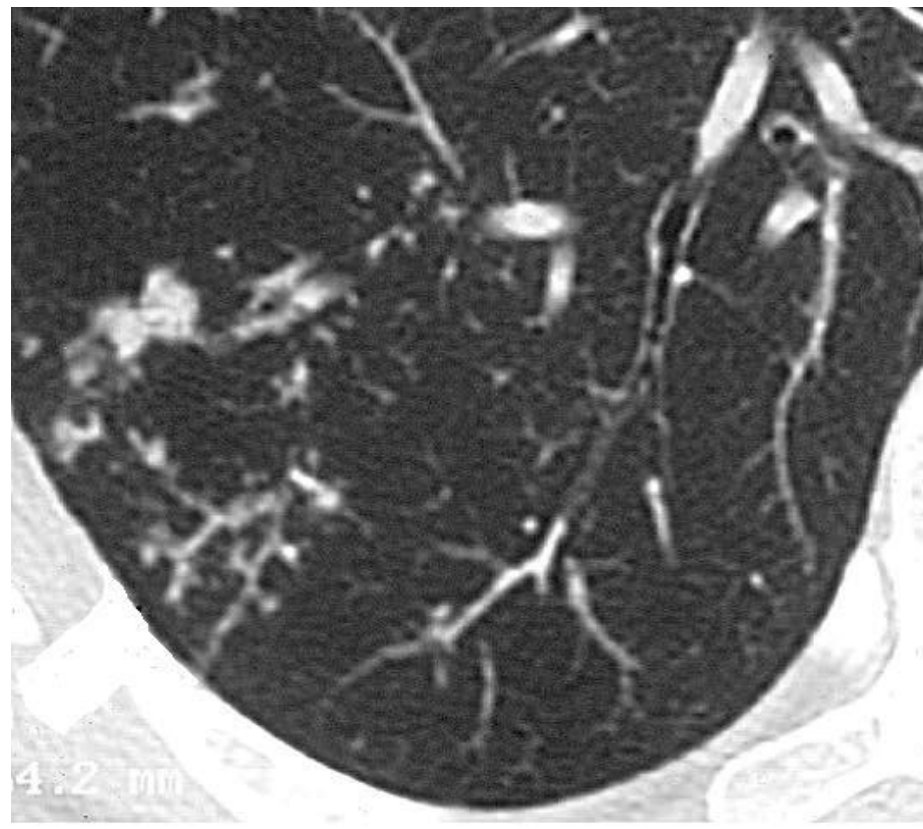
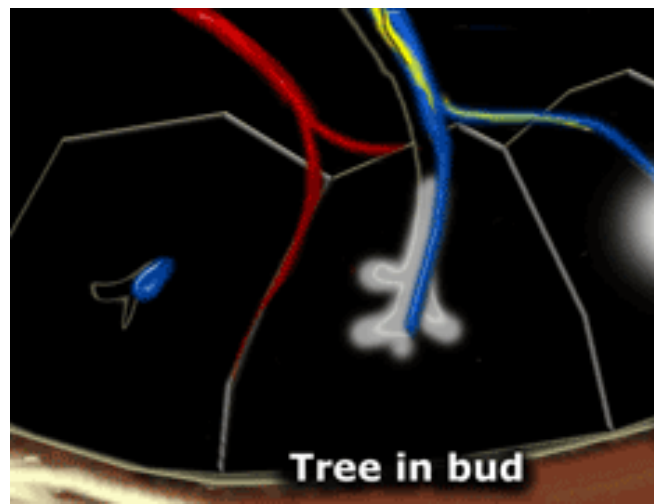
TERS HALO İŞARETİ



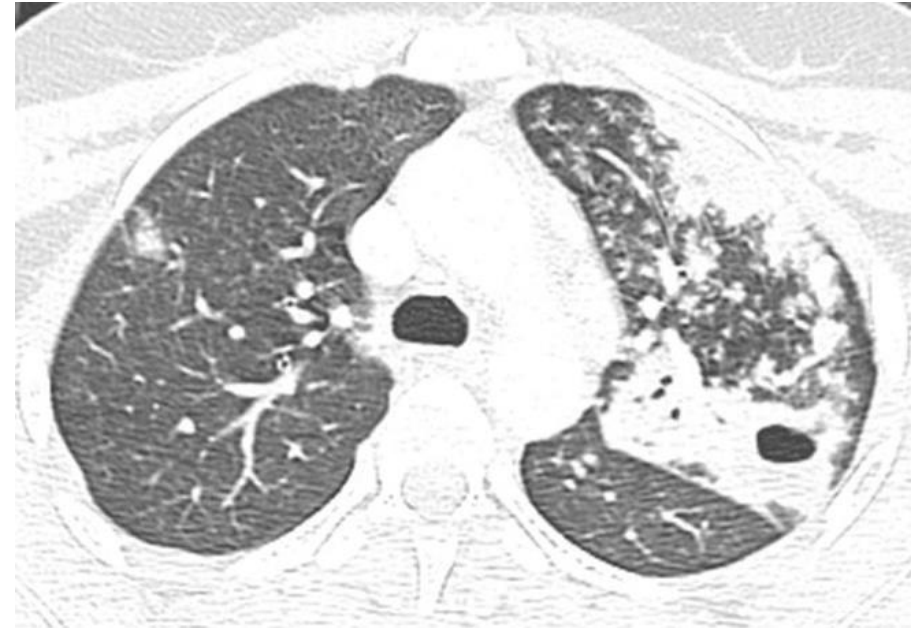
Organize Pnömoni



Aktif Tüberküloz enfeksiyonu



TOMURCUKLANAN AĞAÇ
GÖRÜNÜMÜ (Tree in bud)



Tomurcuklanan Ađaç
görünümü

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Fleischner Society: Glossary of Terms for Thoracic Imaging¹

Members of the Fleischner Society compiled a glossary of terms for thoracic imaging that replaces previous glossaries published in 1984 and 1996 for thoracic radiography and computed tomography (CT), respectively. The need to update the previous versions came from the recognition that new words have emerged, others have become obsolete, and the meaning of some terms has changed. Brief descriptions of some diseases are included, and pictorial examples (chest radiographs and CT scans) are provided for the majority of terms.

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Figure 24: Transverse CT scan shows several nodules exhibiting the halo sign (arrows).

halo sign

CT scans.—The halo sign is a CT finding of ground-glass opacity surrounding a nodule or mass (Fig 24). It was first described as a sign of hemorrhage around foci of invasive aspergillosis (61). The halo sign is nonspecific and may also be caused by hemorrhage associated with other types of nodules (62) or by local pulmonary infiltration by neoplasm (eg, adenocarcinoma). (See also *reversed halo sign*.)

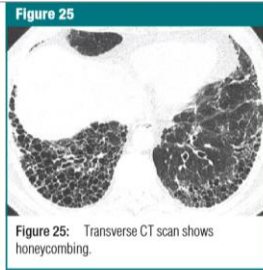


Figure 25: Transverse CT scan shows honeycombing.

honeycombing

Pathology.—Honeycombing represents destroyed and fibrotic lung tissue containing numerous cystic airspaces with thick fibrous walls, representing the late stage of various lung diseases, with complete loss of acinar architecture. The cysts range in size from a few millimeters to several centimeters in diameter, have variable wall thickness, and are lined by metaplastic bronchiolar epithelium (51).

Radiographs and CT scans.—On chest radiographs, honeycombing appears as closely approximated ring shadows, typically 3–10 mm in diameter with walls 1–3 mm in thickness, that resemble a honeycomb; the finding implies end-stage lung disease. On CT scans, the appearance is of clustered

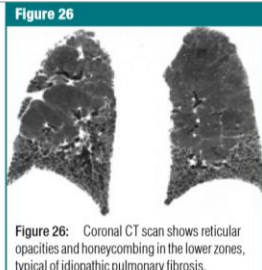


Figure 26: Coronal CT scan shows reticular opacities and honeycombing in the lower zones, typical of idiopathic pulmonary fibrosis.

idiopathic pulmonary fibrosis

Pathology.—Idiopathic pulmonary fibrosis is a specific form of chronic fibrosing interstitial pneumonia of unknown cause and is characterized by a histologic pattern of usual interstitial pneumonia (5,64).

Radiographs and CT scans.—The typical imaging findings are reticular opacities and honeycombing, with a predominantly peripheral and basal distribution (Fig 26). Ground-glass opacity, if present, is less extensive than reticular and honeycombing patterns. The typical radiologic findings (65,66) are also encountered in usual interstitial pneumonia secondary to specific causes, such as asbestos-induced pulmonary fibrosis (asbestosis), and the diagnosis is

bullae is of little clinical importance, the use of this term by radiologists is discouraged.



Figure 11: Transverse CT scan shows varicose bronchiectasis.

bronchiectasis

Pathology.—Bronchiectasis is irreversible localized or diffuse bronchial dilatation, usually resulting from chronic infection, proximal airway obstruction, or congenital bronchial abnormality (26). (See also *traction bronchiectasis*.)

Radiographs and CT scans.—Morphologic criteria on thin-section CT scans include bronchial dilatation with respect to the accompanying pulmonary artery (signet ring sign), lack of tapering of bronchi, and identification of bronchi

Radiographs and CT scans.—Bronchioles are not identifiable in healthy individuals, because the bronchiolar walls are too thin (4). In inflammatory small-airways disease, however, thickened or plugged bronchioles may be seen as a nodular pattern on a chest radiograph or as a tree-in-bud pattern on CT scans.

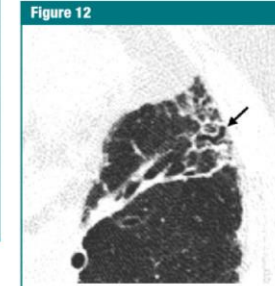


Figure 12: Transverse CT scan shows bronchiolectasis within fibrotic lung (arrow).

bronchiolectasis

Pathology.—Bronchiolectasis is defined as dilatation of bronchioles. It is caused by inflammatory airways disease (potentially reversible) or, more frequently, fibrosis.

CT scans.—When dilated bronchioles are filled with exudate and are thick

ability of centrilobular structures due to thickening or infiltration of the adjacent interstitium, or (d) abnormal areas of low attenuation caused by centrilobular emphysema (4). (See also *lobular core structures*.)

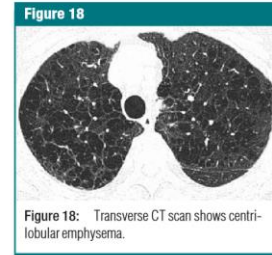


Figure 18: Transverse CT scan shows centrilobular emphysema.

centrilobular emphysema

Pathology.—Centrilobular emphysema is characterized by destroyed centrilobular alveolar walls and enlargement of respiratory bronchioles and associated alveoli (42,43). This is the commonest form of emphysema in cigarette smokers.

CT scans.—CT findings are centrilobular areas of decreased attenuation, usually without visible walls, of nonuniform distribution and predominantly located in upper lung zones (44) (Fig 18). The term *centriacinar emphysema* is synonymous. (See also *emphysema*.)

consolidation

Pathology.—Consolidation refers to an exudate or other product of disease that replaces alveolar air, rendering the lung solid (as in infective pneumonia).

Radiographs and CT scans.—Consolidation appears as a homogeneous increase in pulmonary parenchymal attenuation that obscures the margins of vessels and airway walls (45) (Fig 19). An air bronchogram may be present. The attenuation characteristics of consolidated lung are only rarely helpful in differential diagnosis (eg, decreased attenuation in lipid pneumonia [46] and increased in amiodarone toxicity [47]).

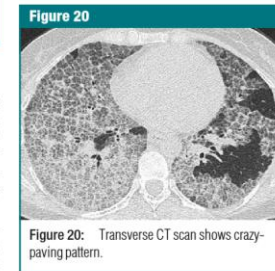


Figure 20: Transverse CT scan shows crazy-paving pattern.

crazy-paving pattern

CT scans.—This pattern appears as

scans. (See also *small-airways disease, tree-in-bud pattern*.)



Figure 13: Coronal CT scan shows bronchocele (arrow).

bronchocele

Pathology.—A bronchocele is bronchial dilatation due to retained secretions (mucoid impaction) usually caused by proximal obstruction, either congenital (eg, bronchial atresia) or acquired (eg, obstructing cancer) (34).

Radiographs and CT scans.—A bronchocele is a tubular or branching Y- or V-shaped structure that may resemble a gloved finger (Fig 13). The CT attenuation of the mucus is generally that of soft tissue but may be modified



Figure 21: Coronal CT scan shows a cyst.

cyst

Pathology.—A cyst is any round circumscribed space that is surrounded by an epithelial or fibrous wall of variable thickness (51).

Radiographs and CT scans.—A cyst appears as a round parenchymal lucency or low-attenuating area with a well-defined interface with normal lung. Cysts have variable wall thickness but are usually thin-walled (<2 mm) and occur without associated pulmonary emphysema (Fig 21). Cysts in the lung usually contain air but occasionally contain fluid or solid material. The term is often used to describe enlarged thin-

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Computed tomography of the chest



Dr Yuranga Weerakkody and Dr Aditya Shetty et al.

Computed tomography (CT) of the chest is a cross-sectional evaluation of the heart, airways, lungs, mediastinum, and associated bones and soft tissues.

Two key methods of image acquisition include:

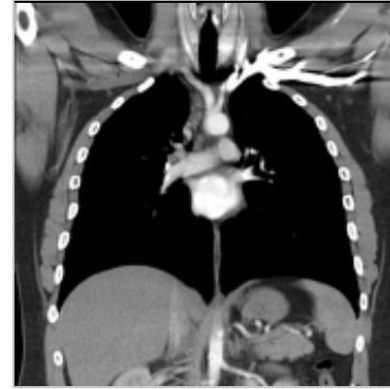
- standard CT with 5 mm slice thickness for mediastinum and gross evaluation of lungs
- [high-resolution CT \(HRCT\)](#) with thin sections (slice thickness of 0.625 to 1.25 mm) for evaluation of the secondary lobule of the lungs

General indications

Emergencies

- chest trauma: evaluation of [contusions](#), [rib fractures](#) and [pneumothorax](#)
- aortic pathologies: [dissection](#), [transection](#)
- [pulmonary embolism](#)
- post-thoracic surgery complications: [mediastinal hematomas](#), [complex pleural collections](#)

Cases and figures



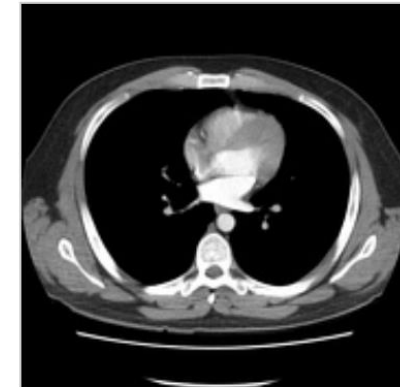
Case 1: normal CT chest



Case 1: normal CT chest

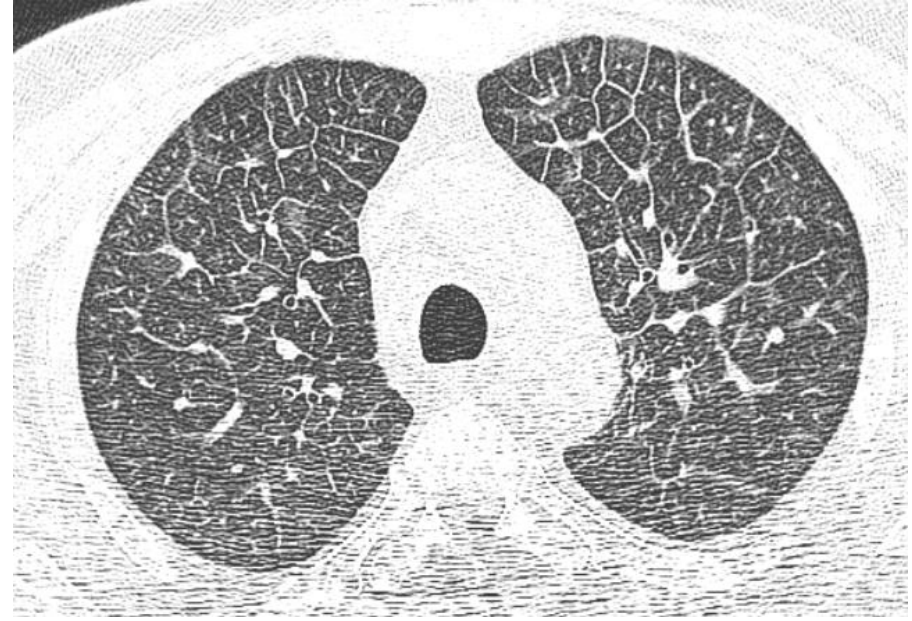
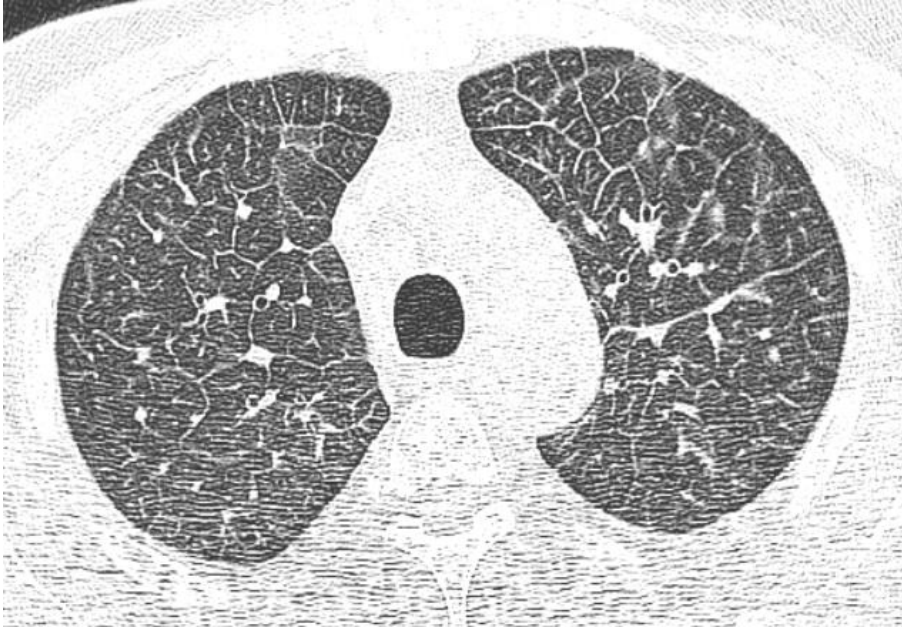


Case 1: normal CT chest



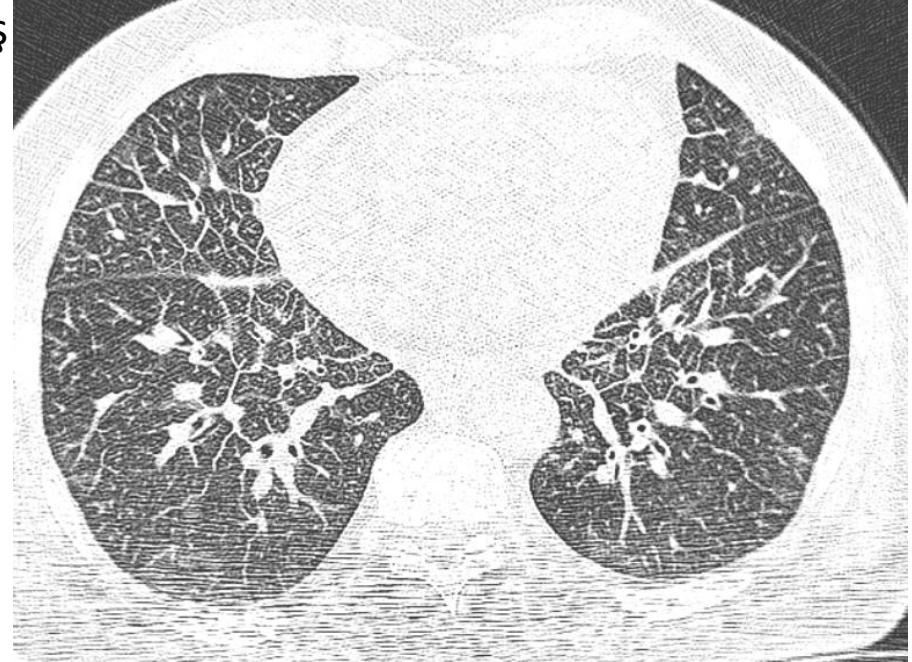
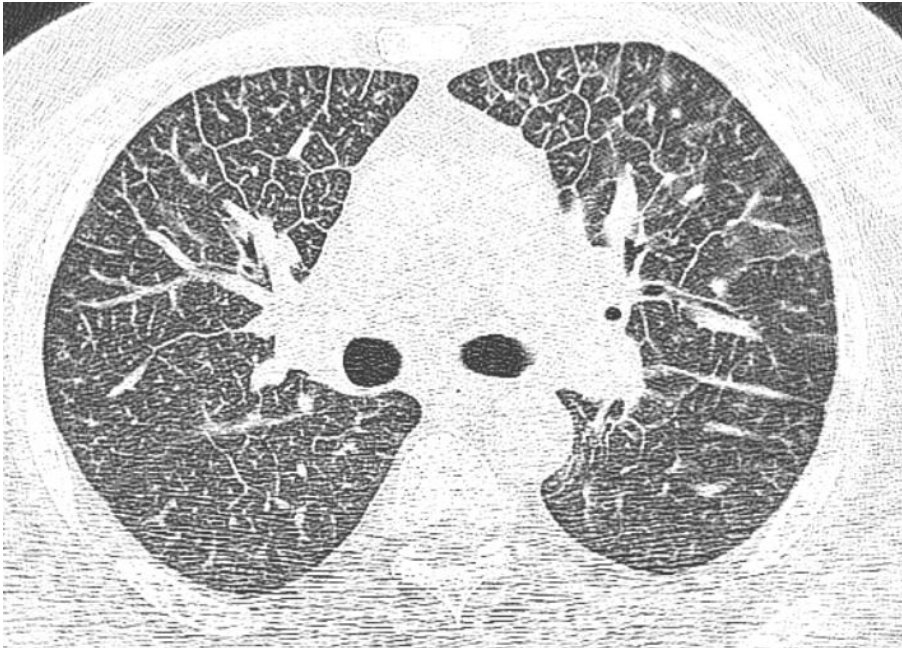
Case 1: normal CT chest





58 yaşında erkek
Dispne

Son 1 aydır artmış





Im: 1/339
Se: 2

A

9/30/1961 M

Yüksek rezolusyonlu akciğer BT

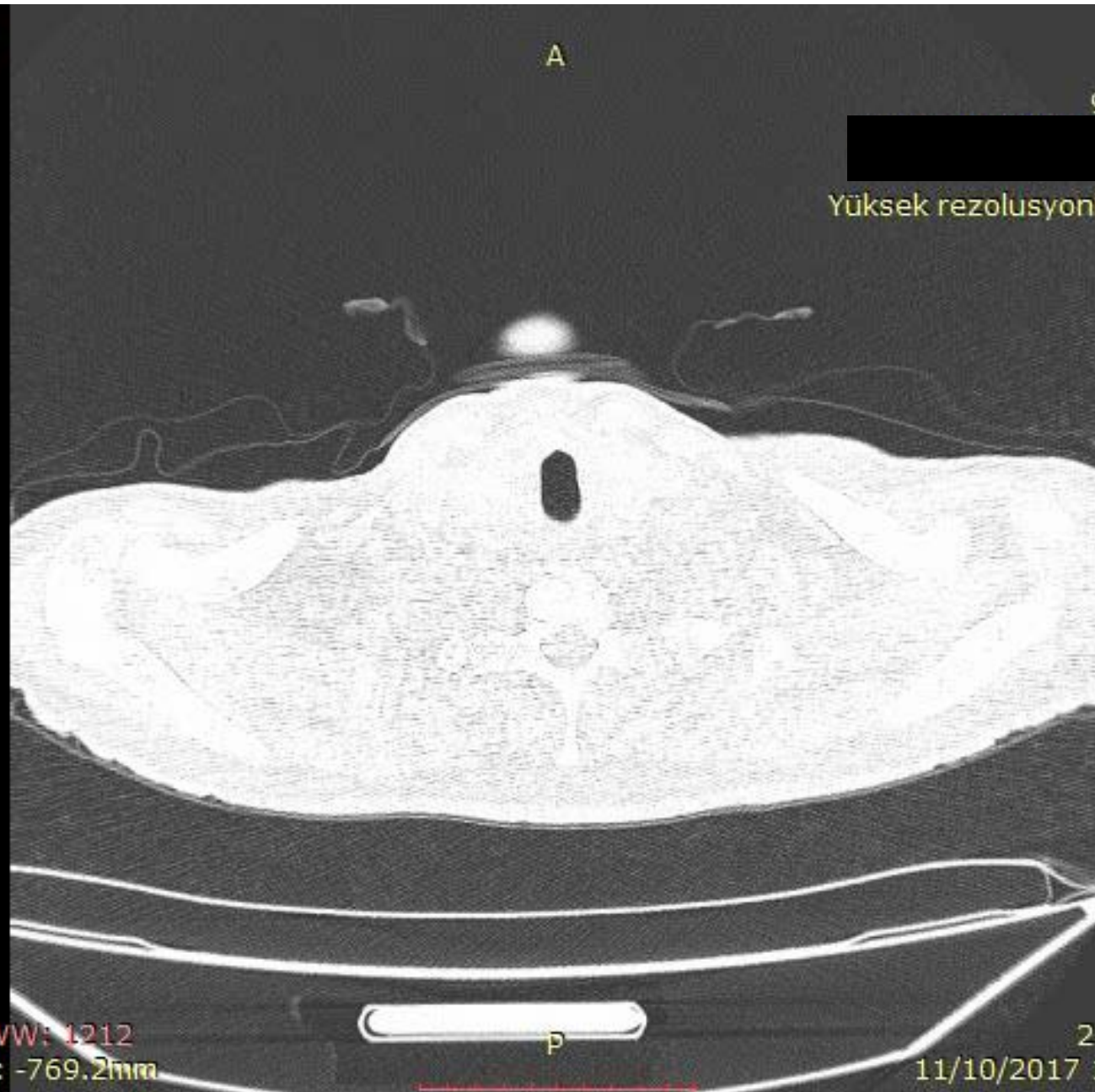
R

L

WL: -692 WW: 1212
T: 2.0mm L: -769.2mm

P

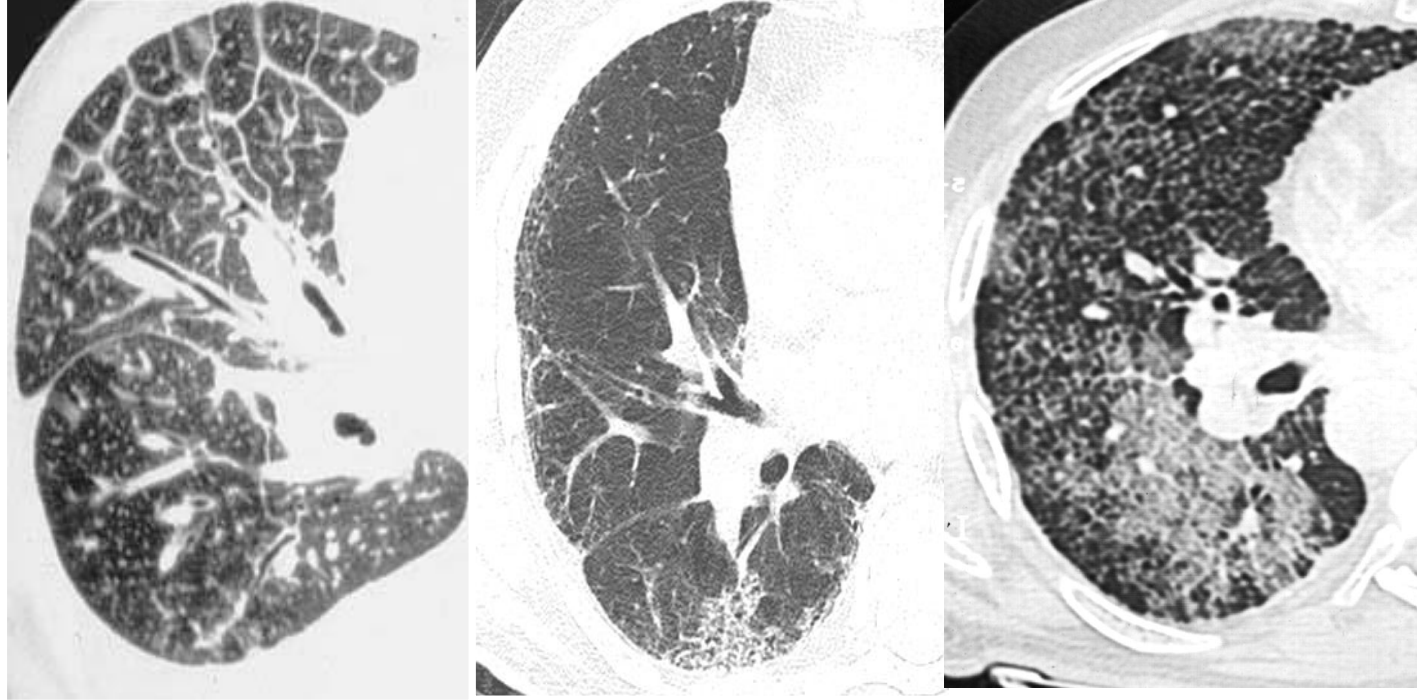
277mA 120kV
11/10/2017 11:54:11 AM



Septal ve peribronkovasküler kalınlaşma nedenleri:

- Pulmoner ödem
- Lenfanjitik metastaz
- Sarkoidozis
- Lenfoma
- Buzlu camla birlikte bağ dokusu vb seconder nedenlerle
- Konjenital lenfanjiektazi
- Kaposi sarkomu
- İPF vb...

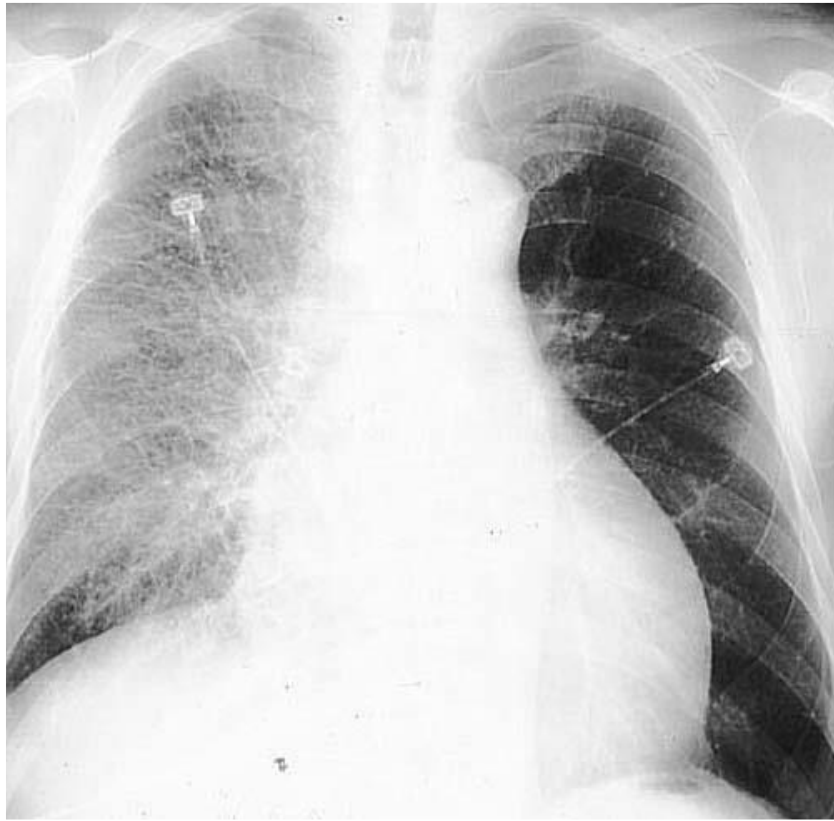
Septal kalınlaşma



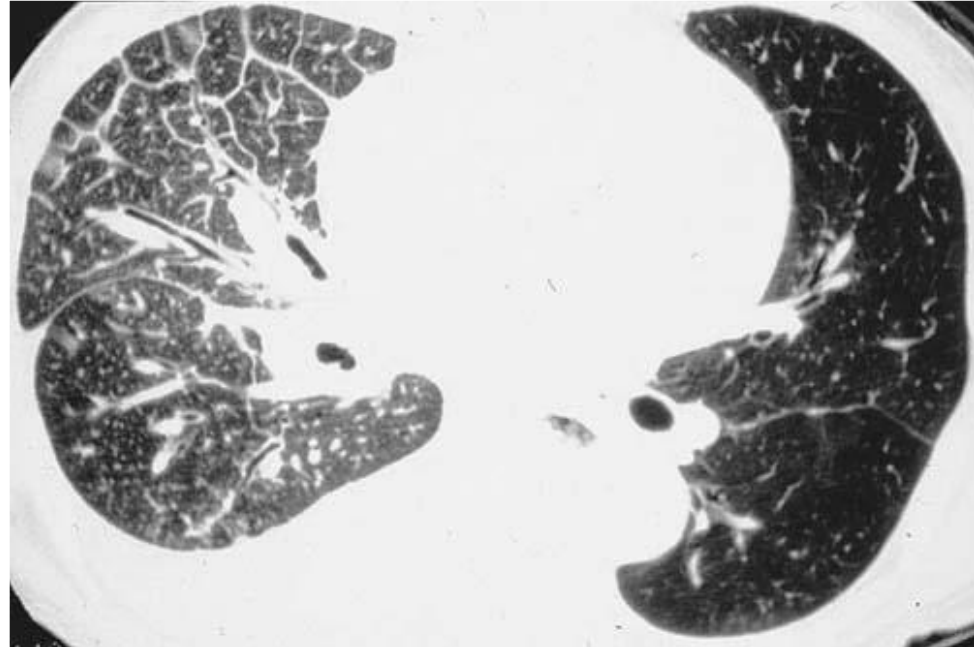
İnterlobüler
Septal kalınlaşma

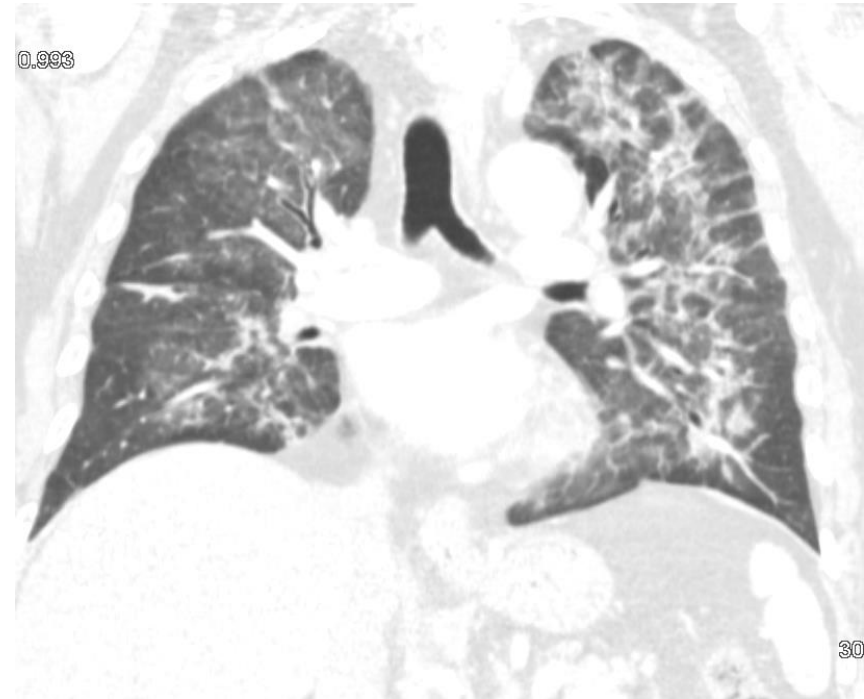
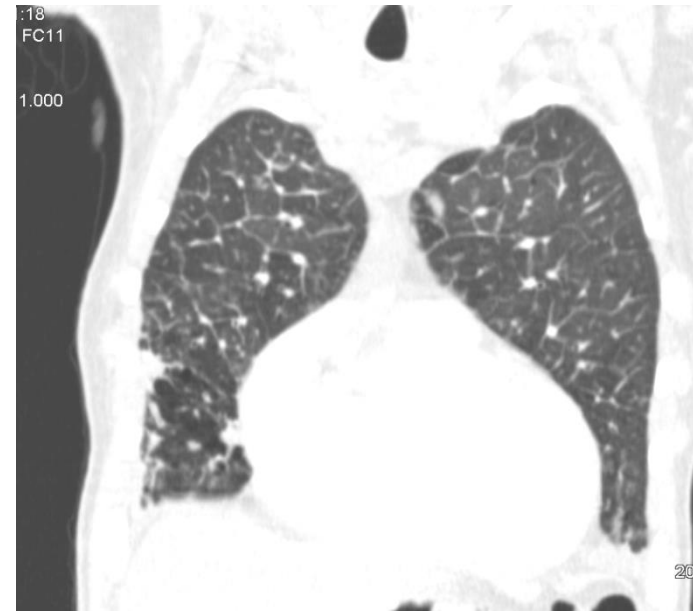
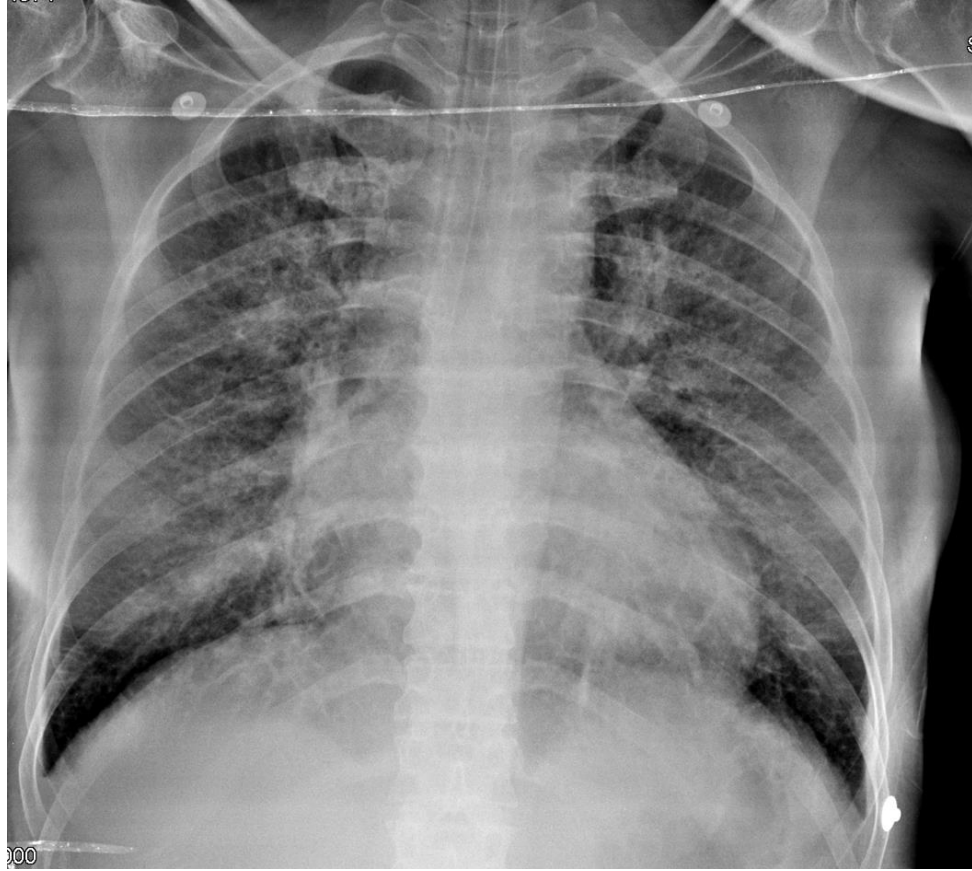
İntralobüler septal
kalınlaşma.

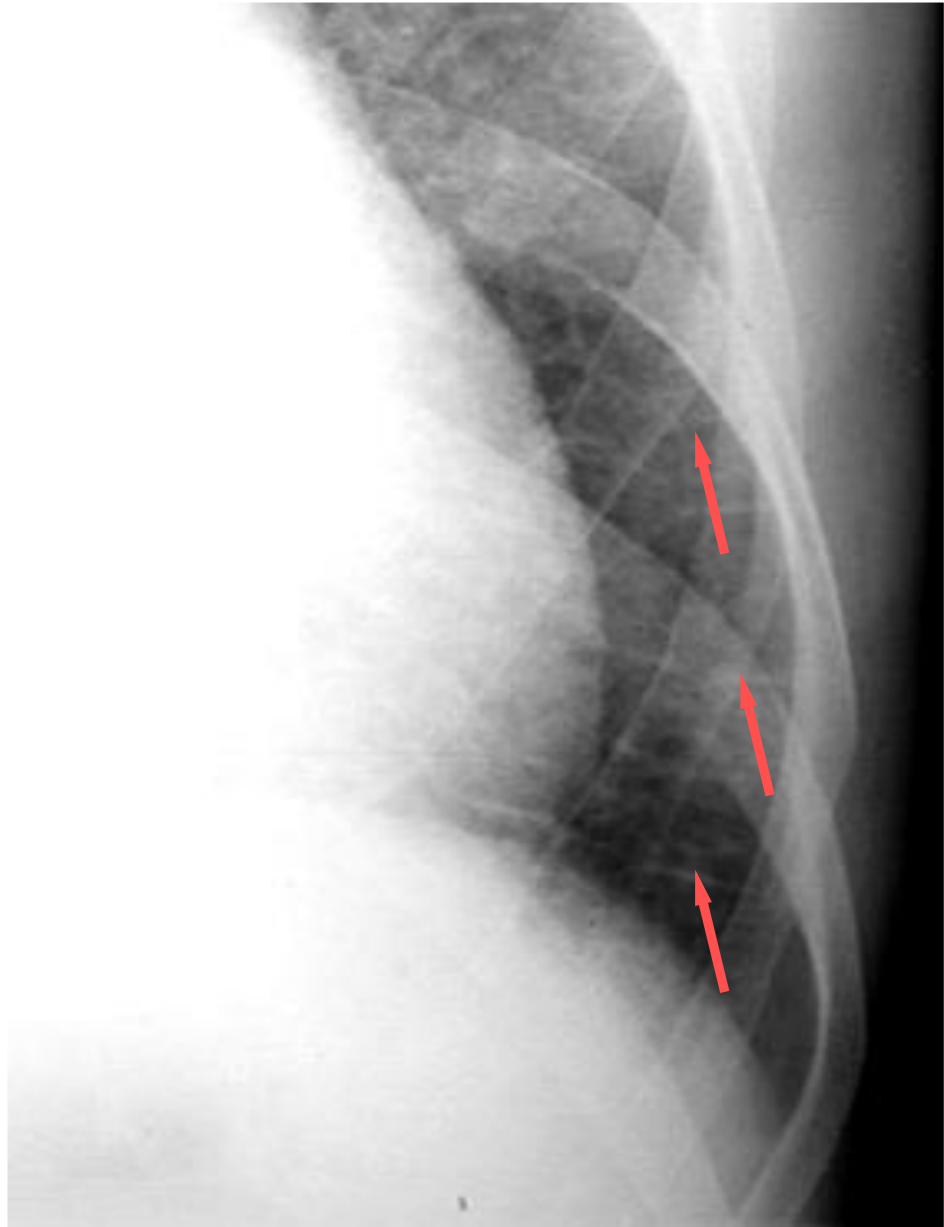
İnter ve intralobüler
septal kalınlaşma



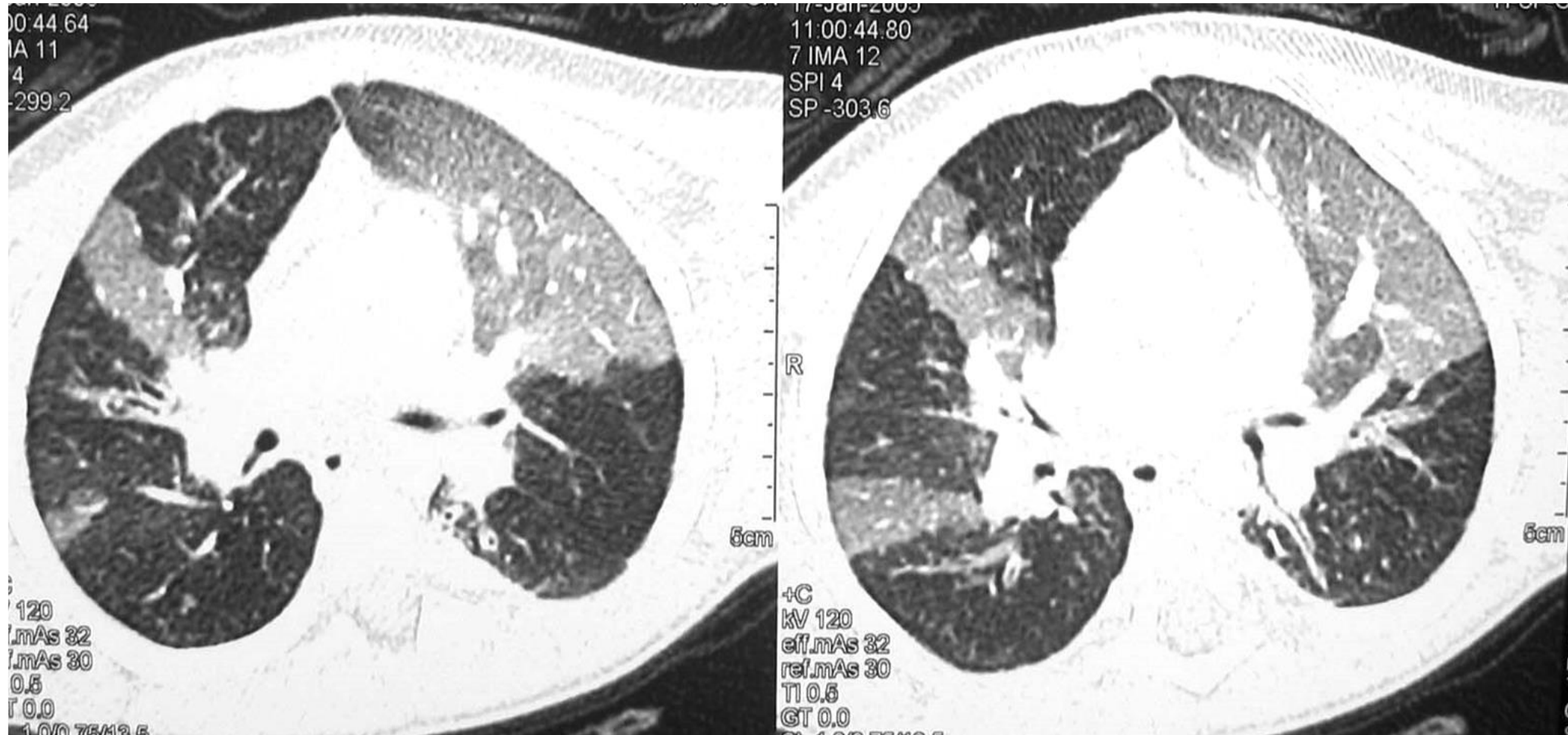
Lenfanjitik metastaz

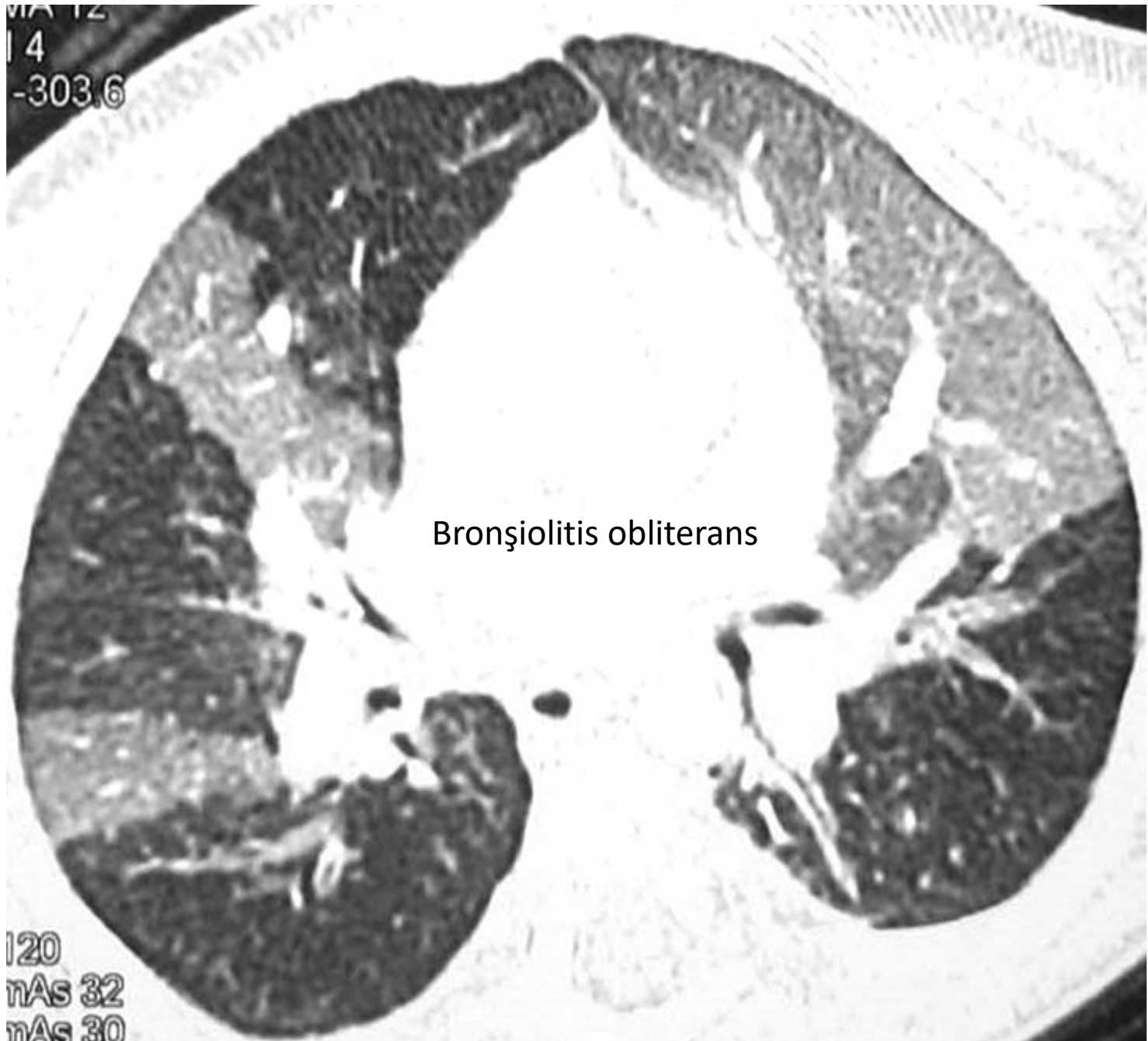




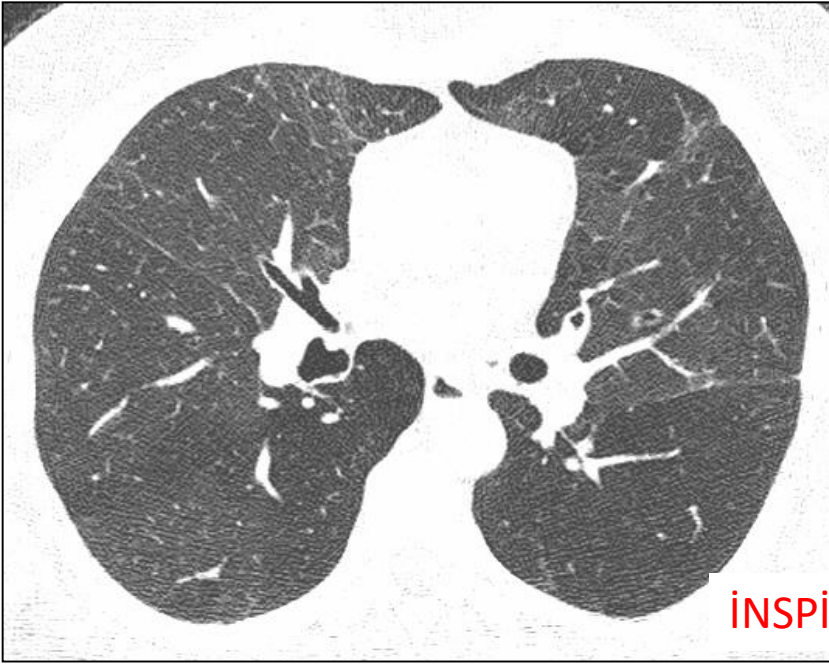


28 yaşında erkek, asemptomatik





Bronşiolitis obliterans



İNSPİRİYUM



EKSPİRİYUM



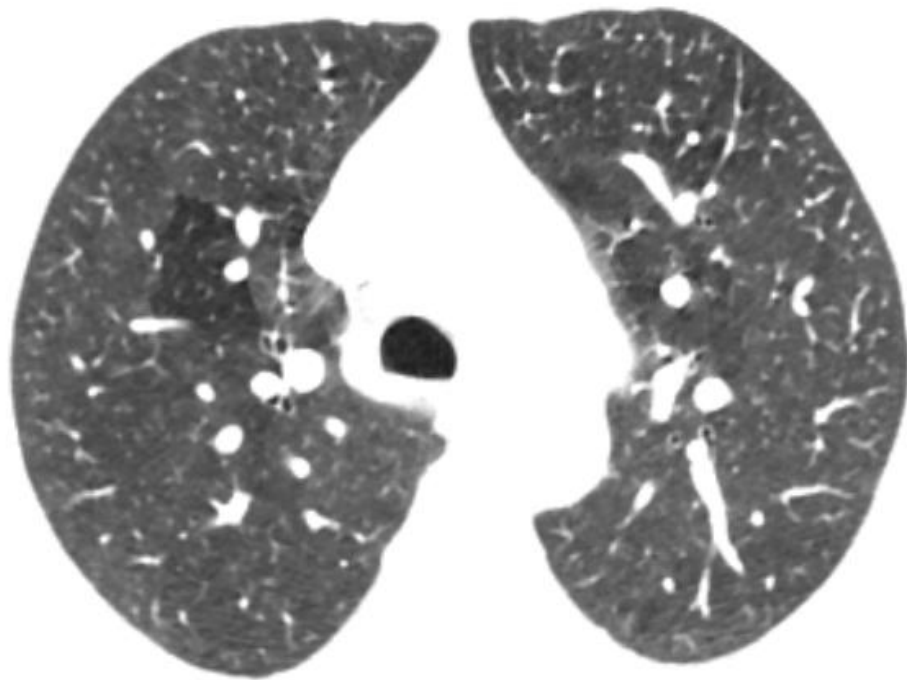
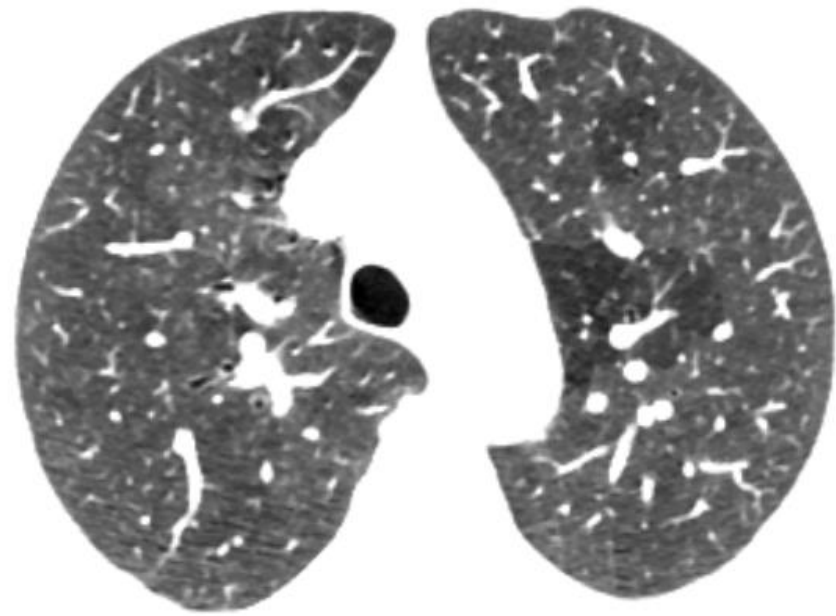
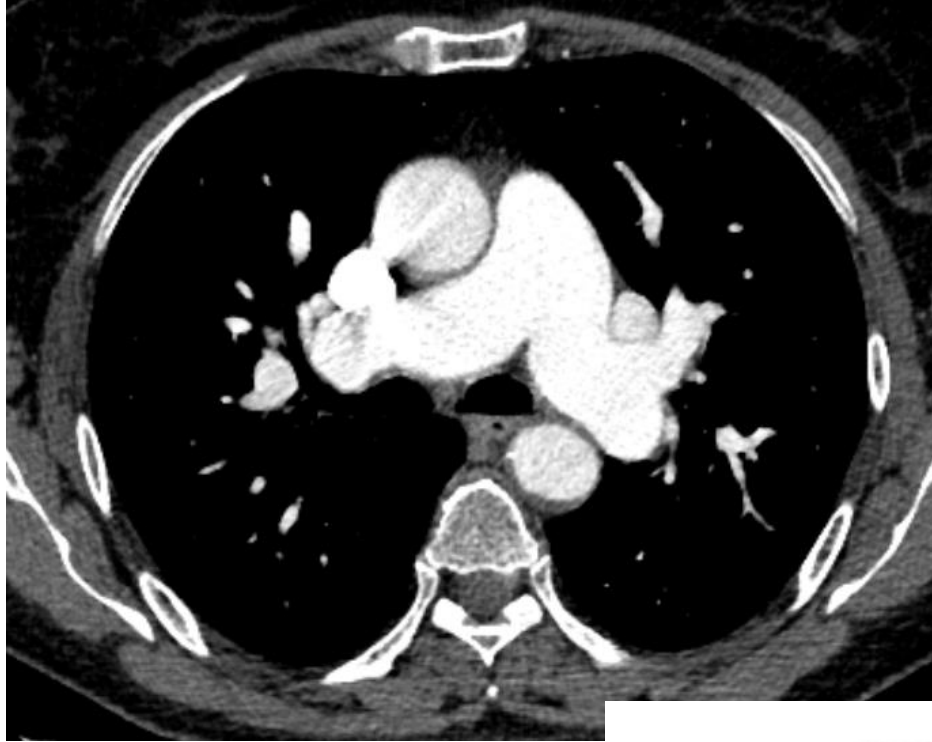
MOZAIK PERFÜZYON

HAVA YOLU HASTALIKLARI

- Bronşiolitis obliterans
- Sarkoidozis
- Hipersensitiv. Pnomönisi
- AIDS
- LHH ve LAM
- Bronşioler spazm

VASKÜLER HASTALIKLAR

- Kronik pulmoner emboli
- Pulmoner hipertansiyon
(idiopatik veya kardiyojenik/
pulmoner nedenle)





42Y E, Kuru öksürük



CRAZY PAVING (KALDIRIM TAŞI) GÖRÜNÜMÜ

- Kronik Eozinofilik Pnömoni
- Bakteriyel pnömoni
- Akut interstisyel pnömoni
- Pulmoner ödem
- Alveoler sarkoidozis
- Radyasyon pnömonisi
- Pulmoner veno-okluziv hastalık

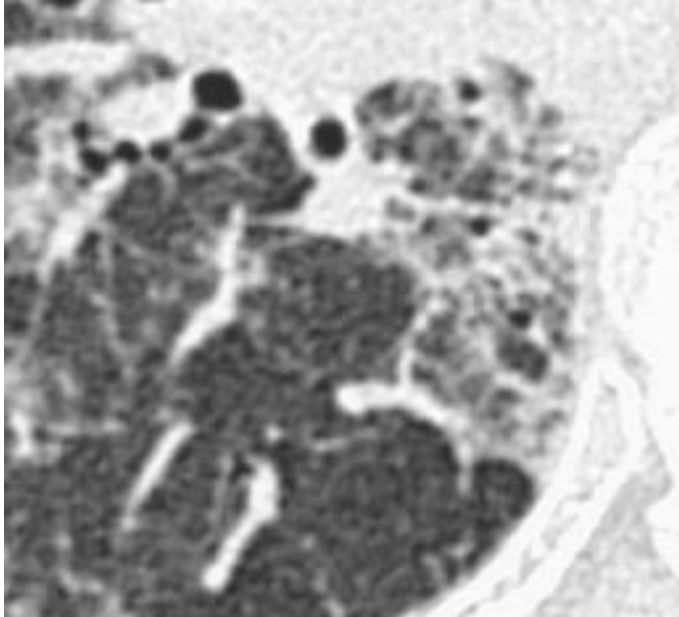
CRAZY PAVING (KALDIRIM TAŞI) GÖRÜNÜMÜ

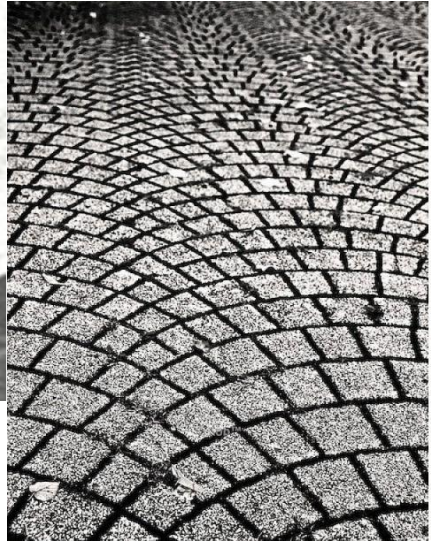
INFECTION	Pneumocystis carinii pneumonia (PCP)
NEOPLASM	Mucinous Bronchioloalveolar Carcinoma (BAC)
IDIOPATHIC	Pulmonary Alveolar Proteinosis (PAP) Sarcoidosis Nonspecific Interstitial Pneumonia (NSIP) Organizing Pneumonia (OP)
INHALATION	Lipoid Pneumonia
SANGUINEOUS	Adult respiratory distress syndrome (ARDS) Pulmonary Hemorrhage Syndromes

ALVEOLER PROTEINOZIS

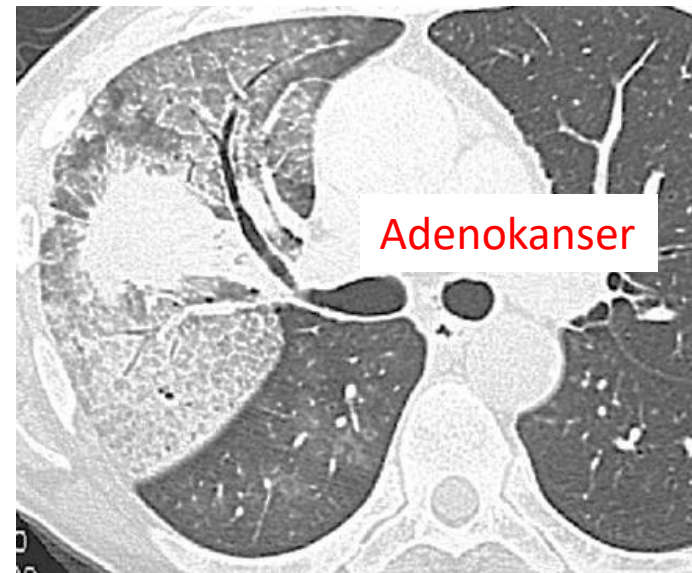
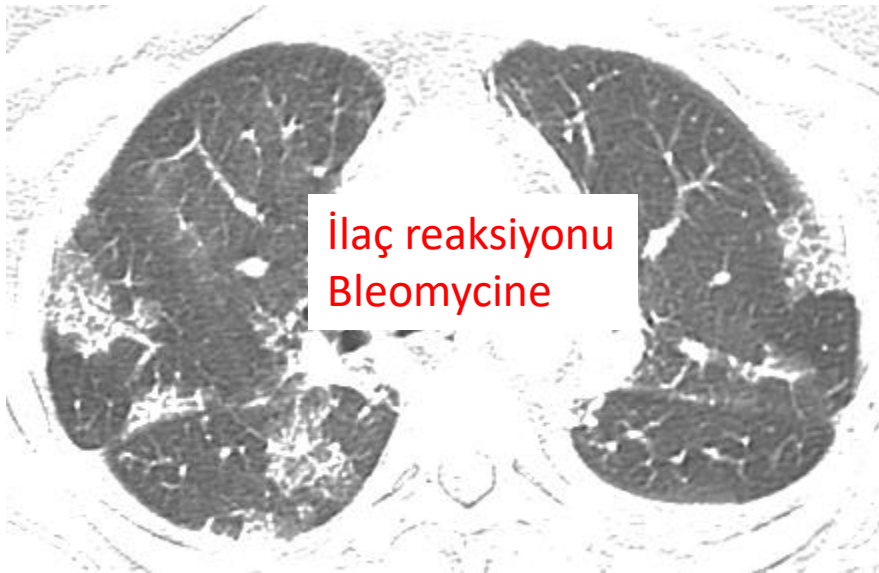
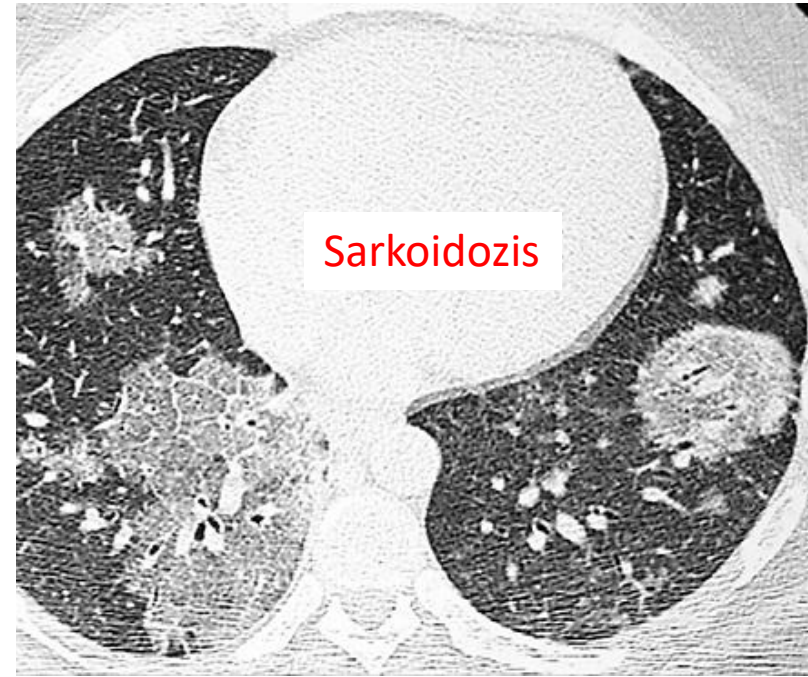
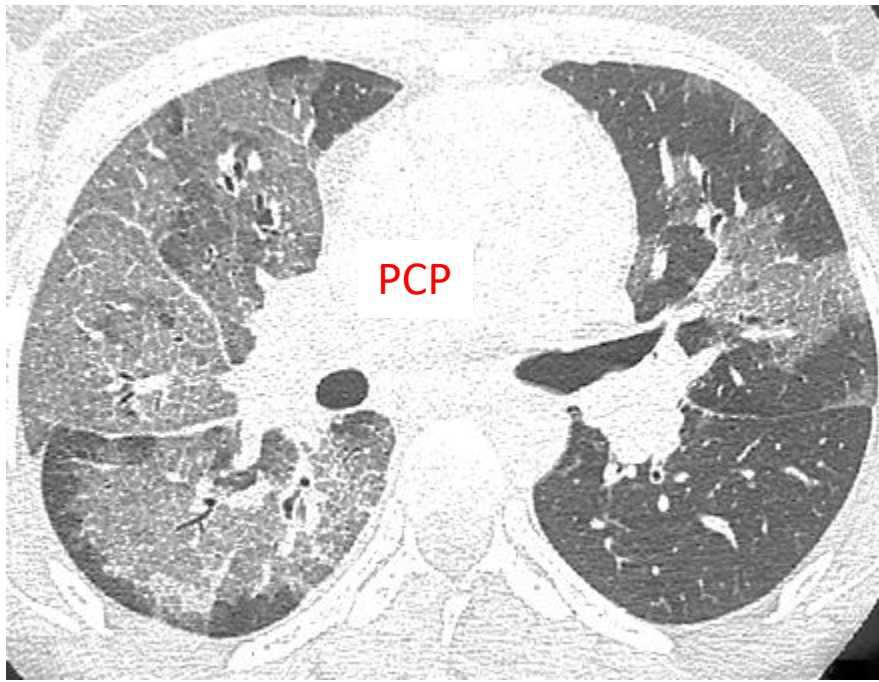
İNTRALOBÜLER SEPTAL KALINLAŞMA

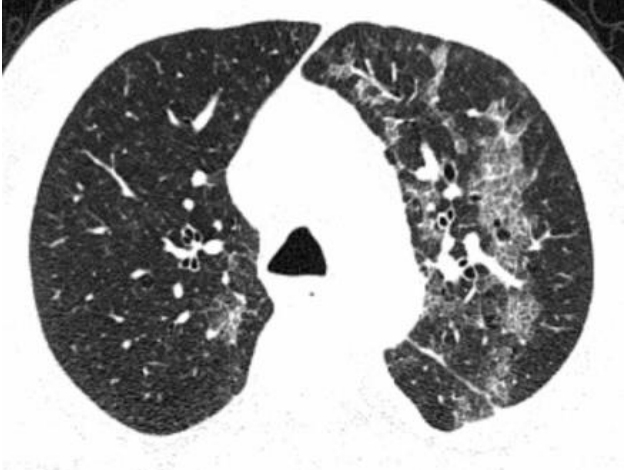
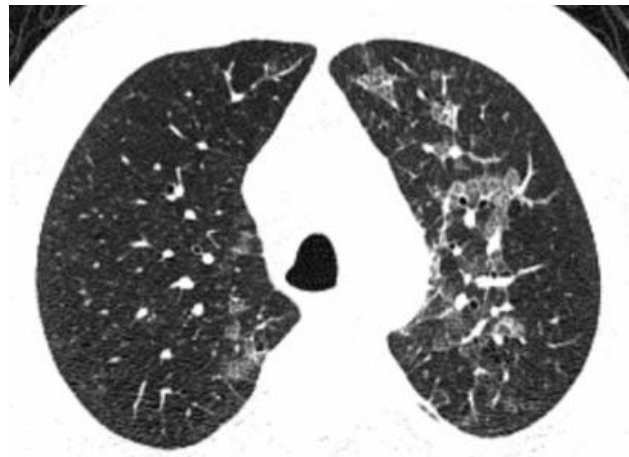
- Sekonder pulmoner lobül içinde çok ince ağsı çizgiler görülür.



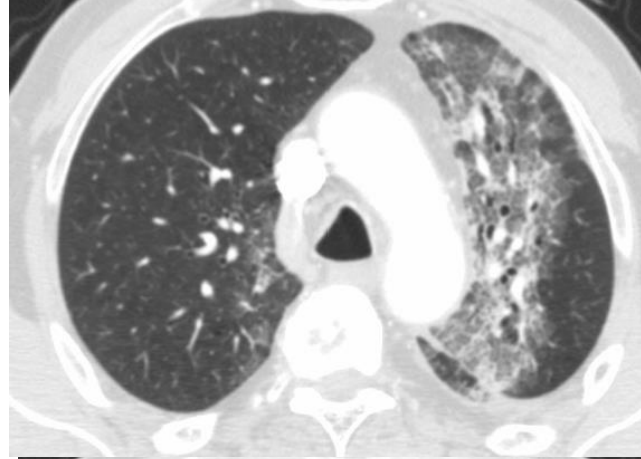
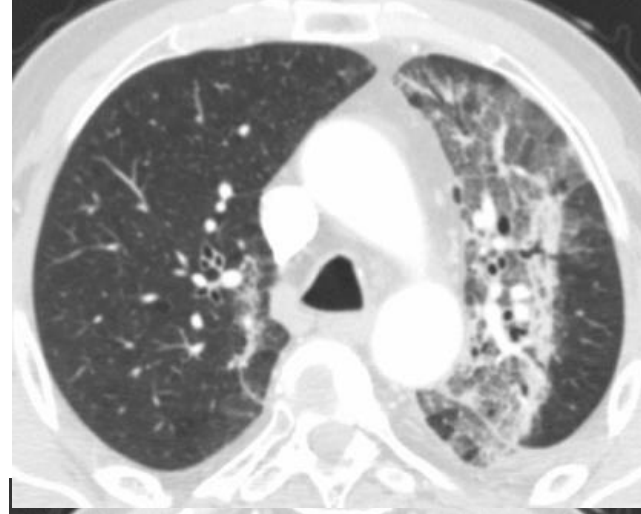


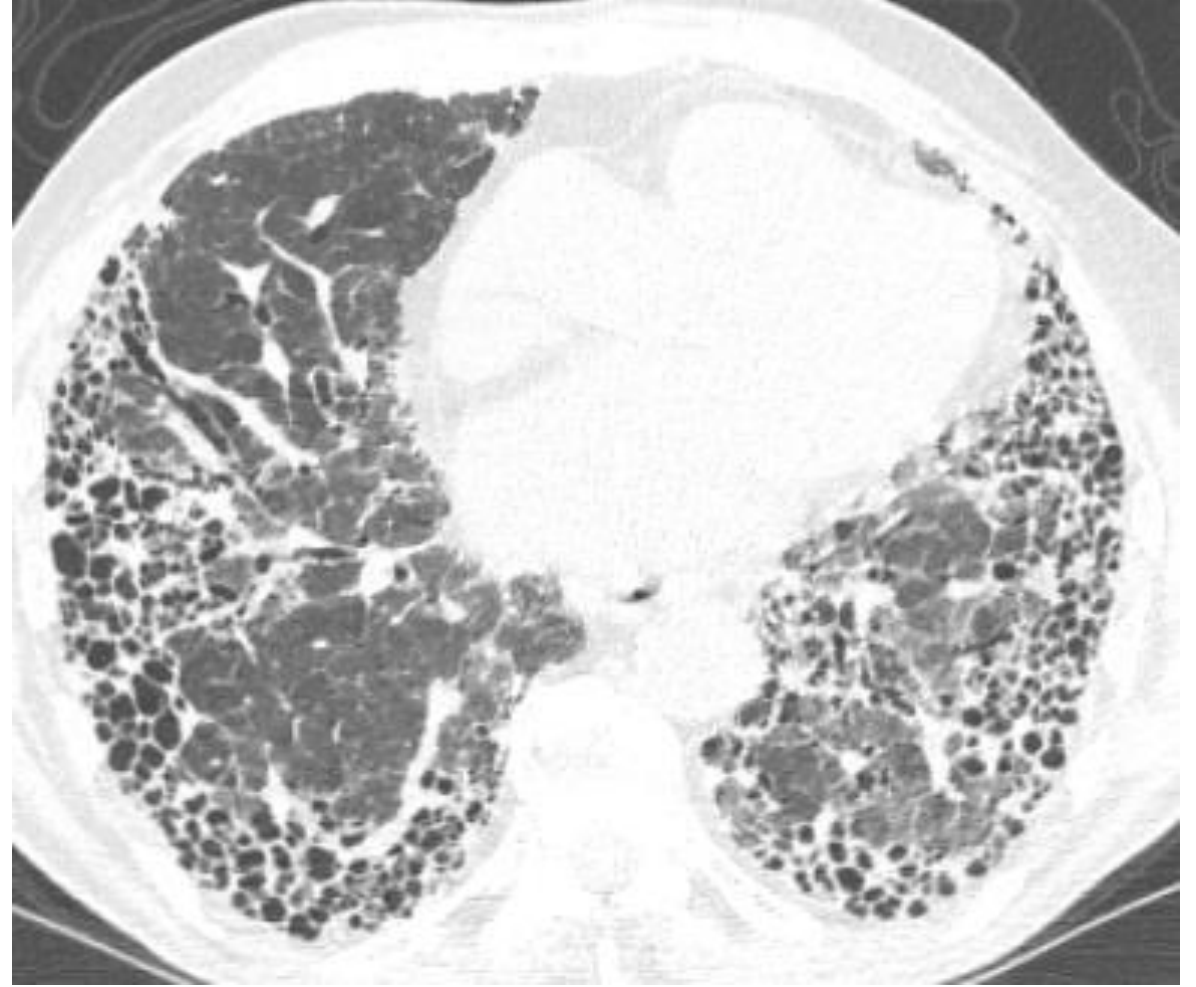




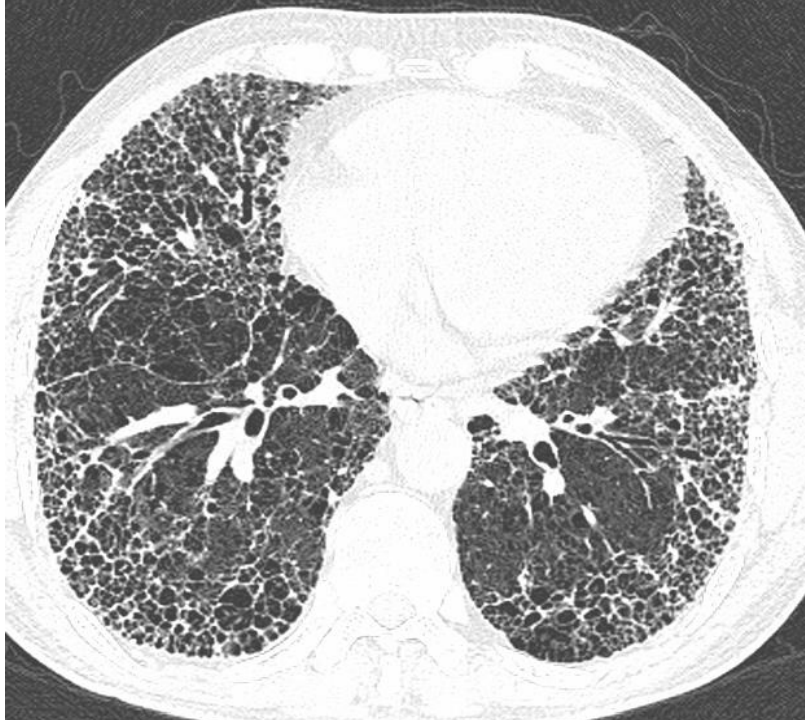
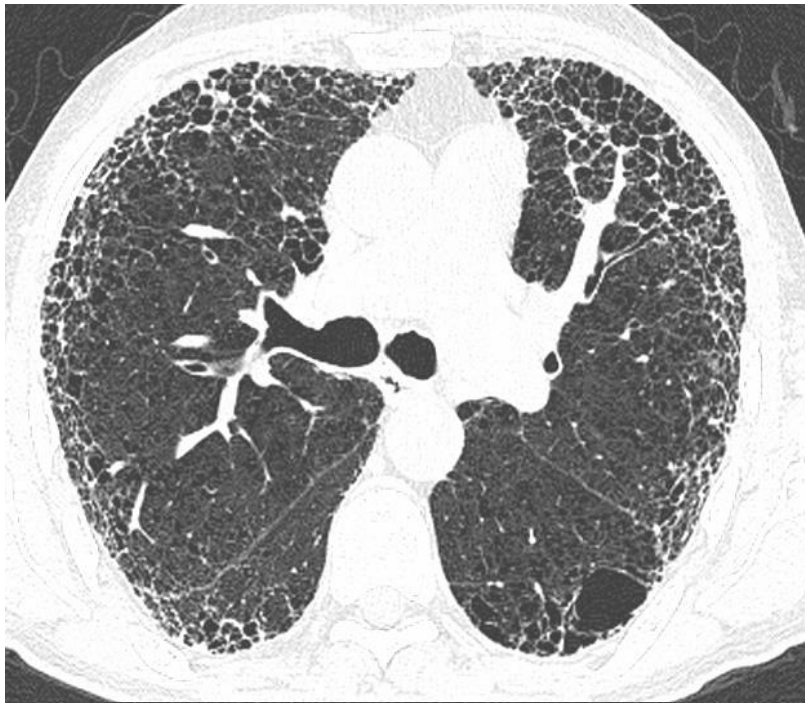


RT pnömoni
ve fibrozisi



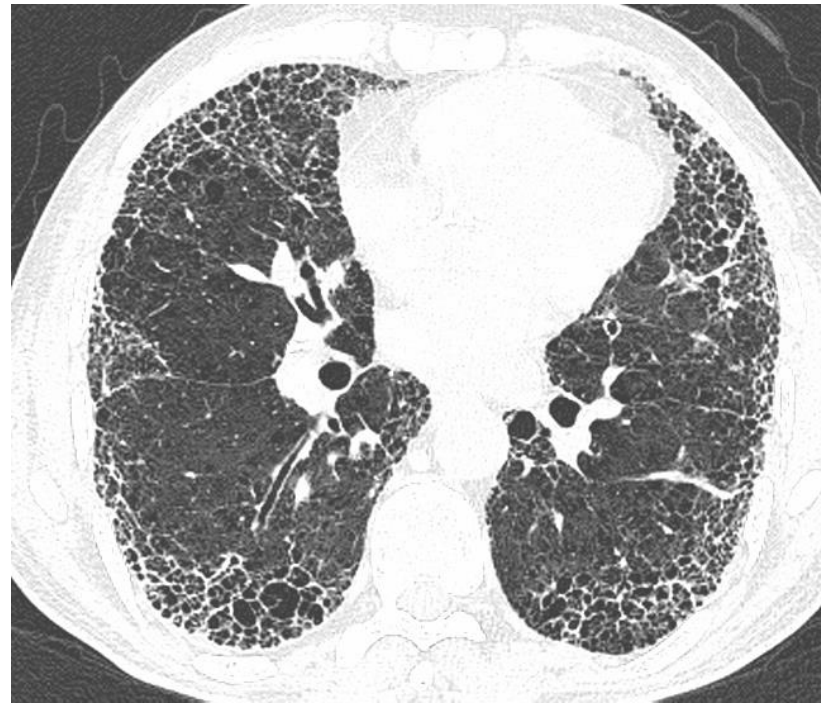


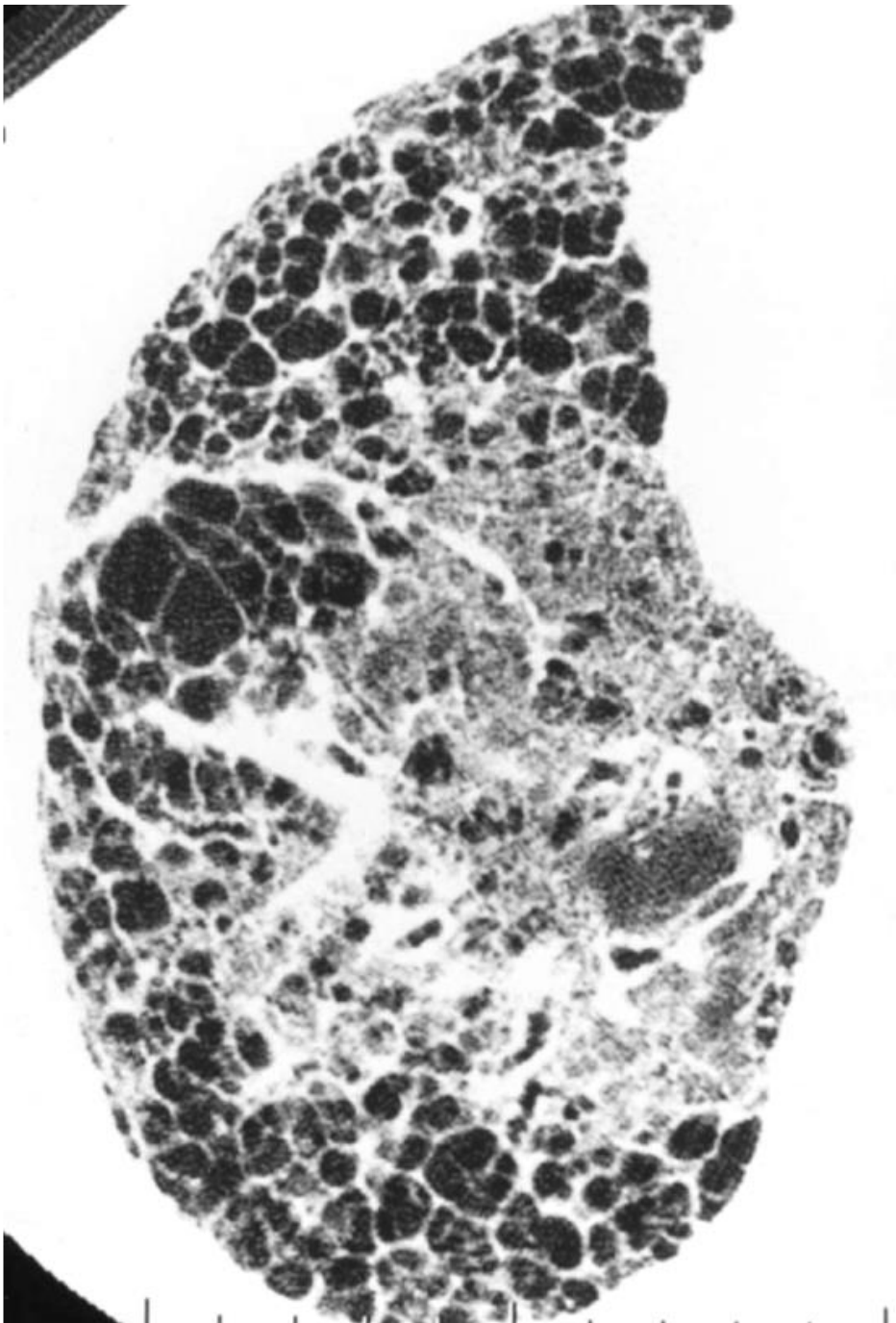
TİPİK BALPETEĞİ PATERN



Balpeteği
Subplevral
Bazal

UIP



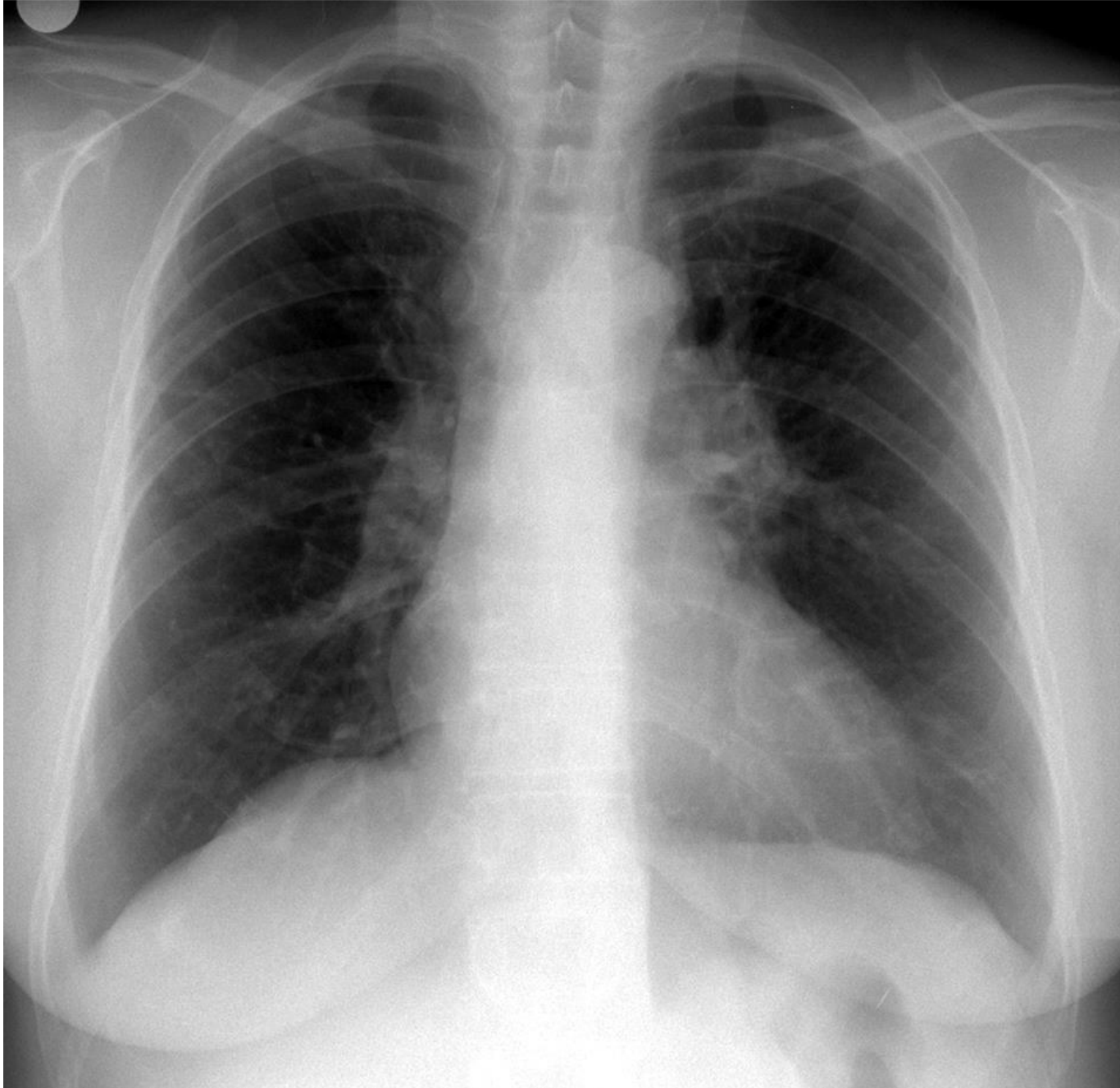


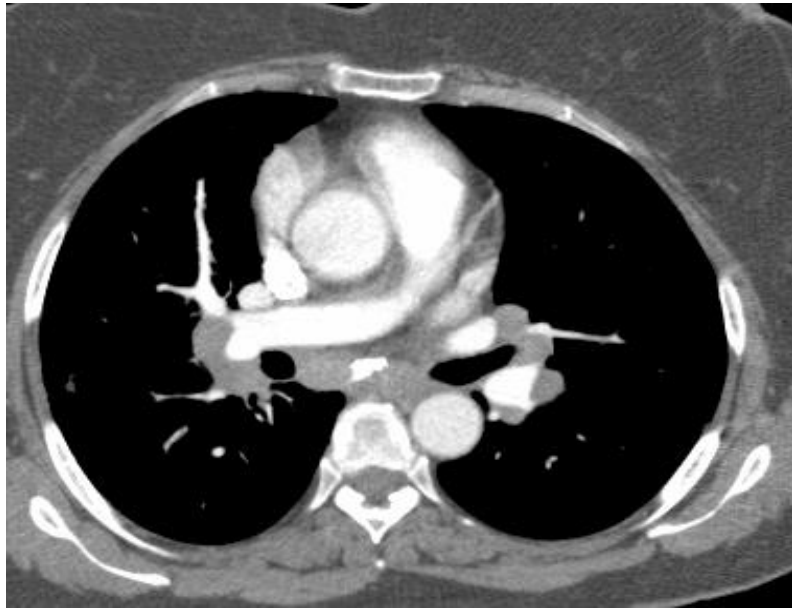
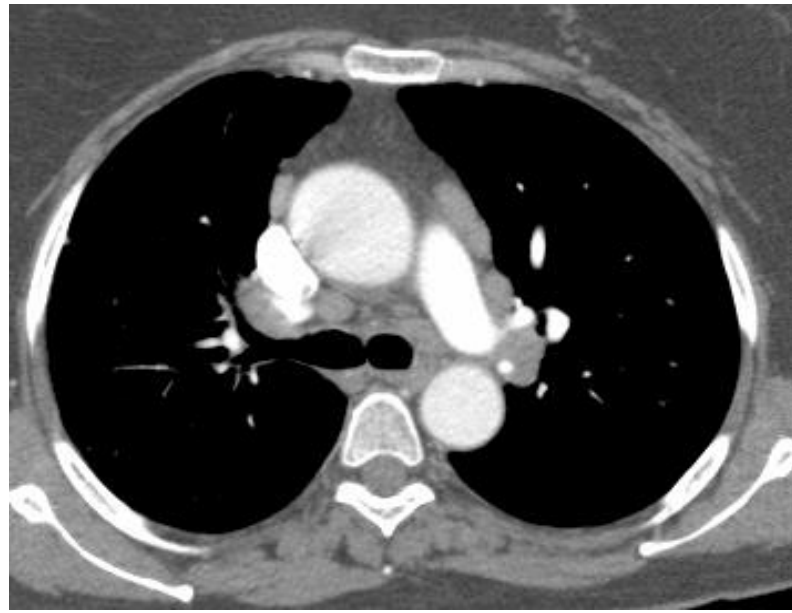
Ancak bu patern hastaların
ancak % 30'unda görülmekte

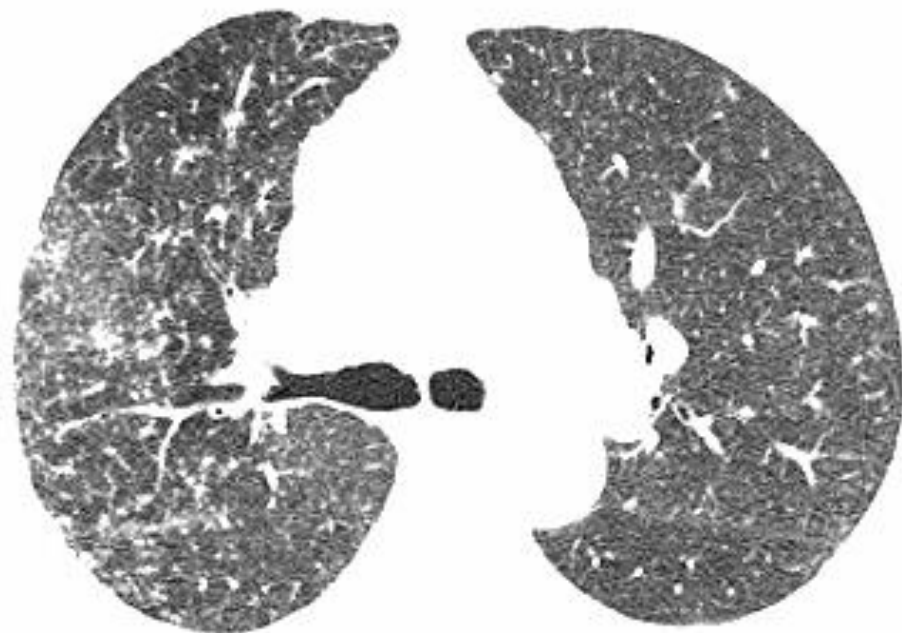
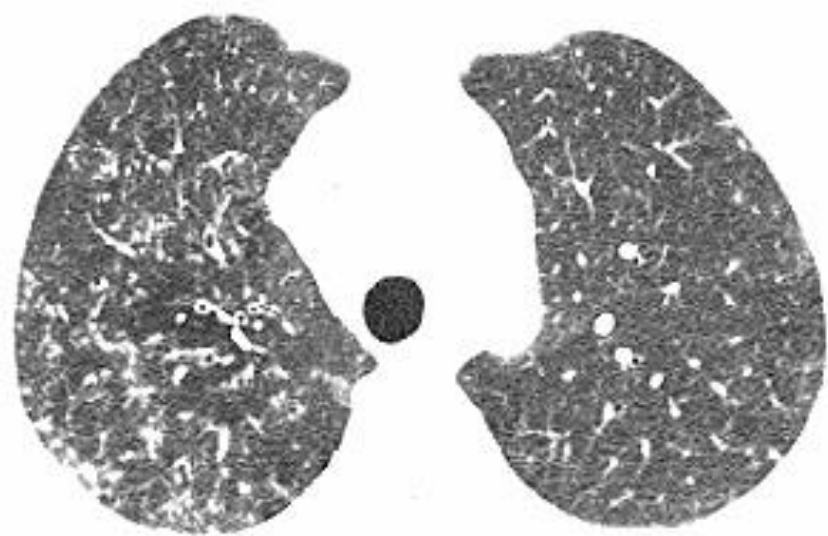
UIP (olađan interstisyel pnömoni)

- Patolojik olarak UIP tanısı konmuş ise hasta:
 - **IPF**
 - **Kronik Hipersensitivite Pnömonisi**
 - **Bađ dokusu hastalıkları /IPAF**
 - **Sarkoidozis**
 - **Pnömokonyoz**
 - **İlaç toksisitesi**
 - **Asbestozis**
 - **Ailesel IPF**
 - **Hermansky-Pudlak sendromu**
 - **Aspirasyon pnömonisi**olabilir.

40 yaşında kadın hasta
Yakınmaları
-Öksürük
-Nefes darlığı







Neler olabilir?

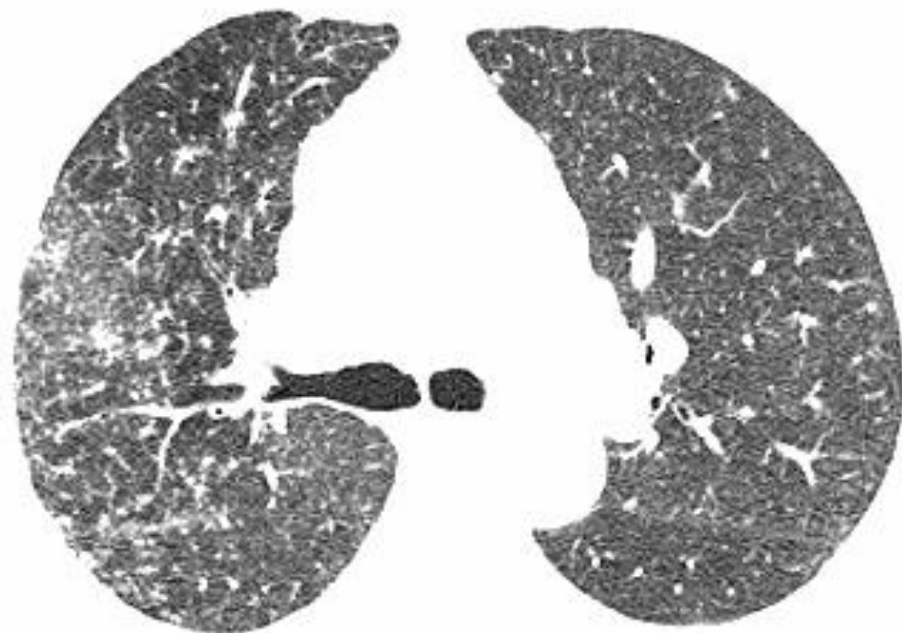
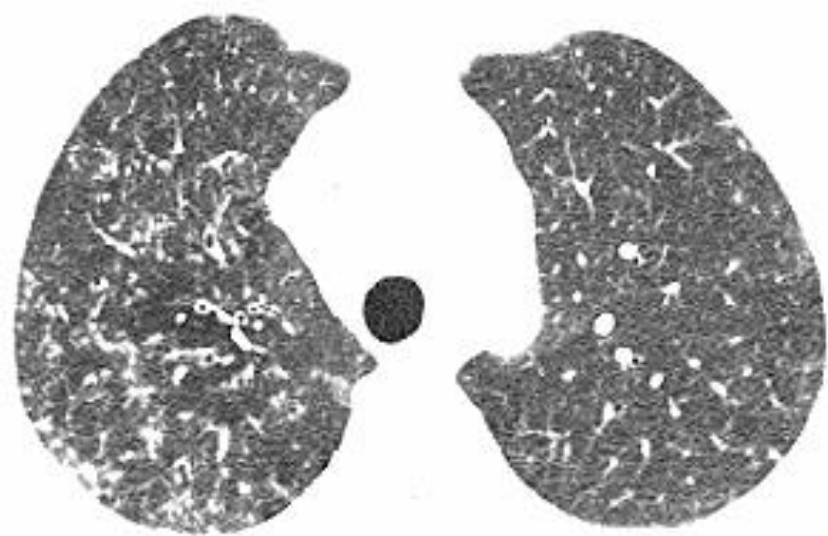
- Sarkoidozis
- Lenfoma
- Viral pnömoni
- Metastaz
- LHH
- Kronik eozinofilik pnömoni

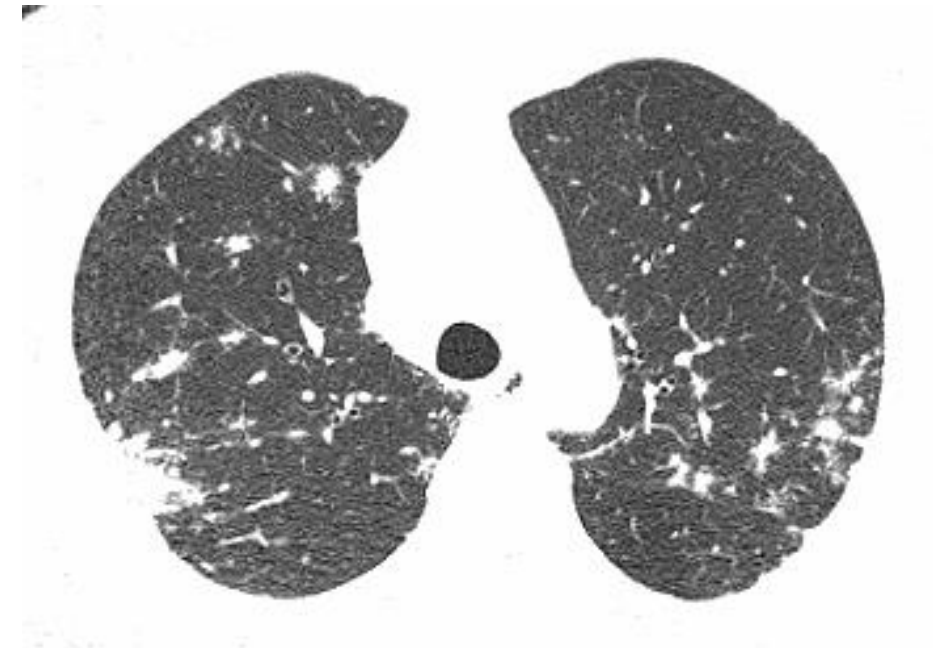
Neler olabilir?

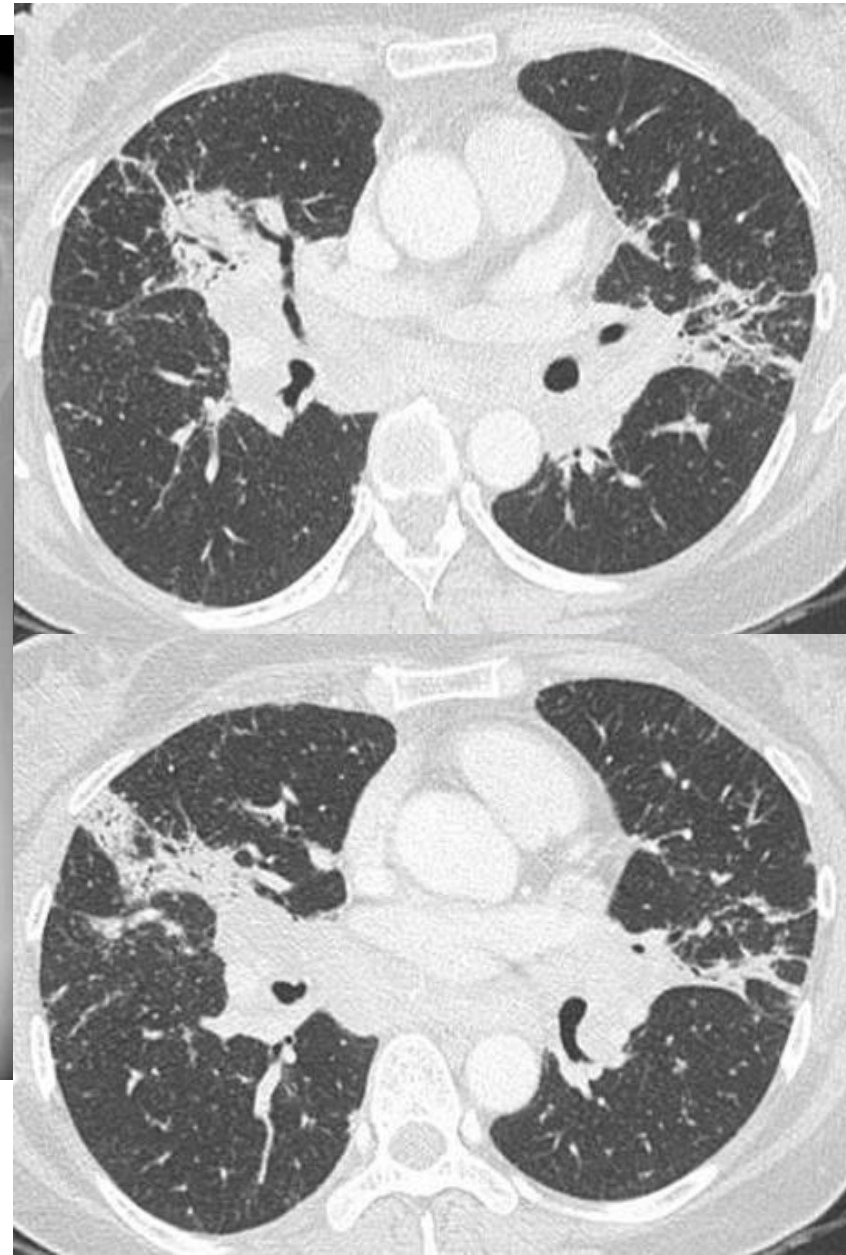
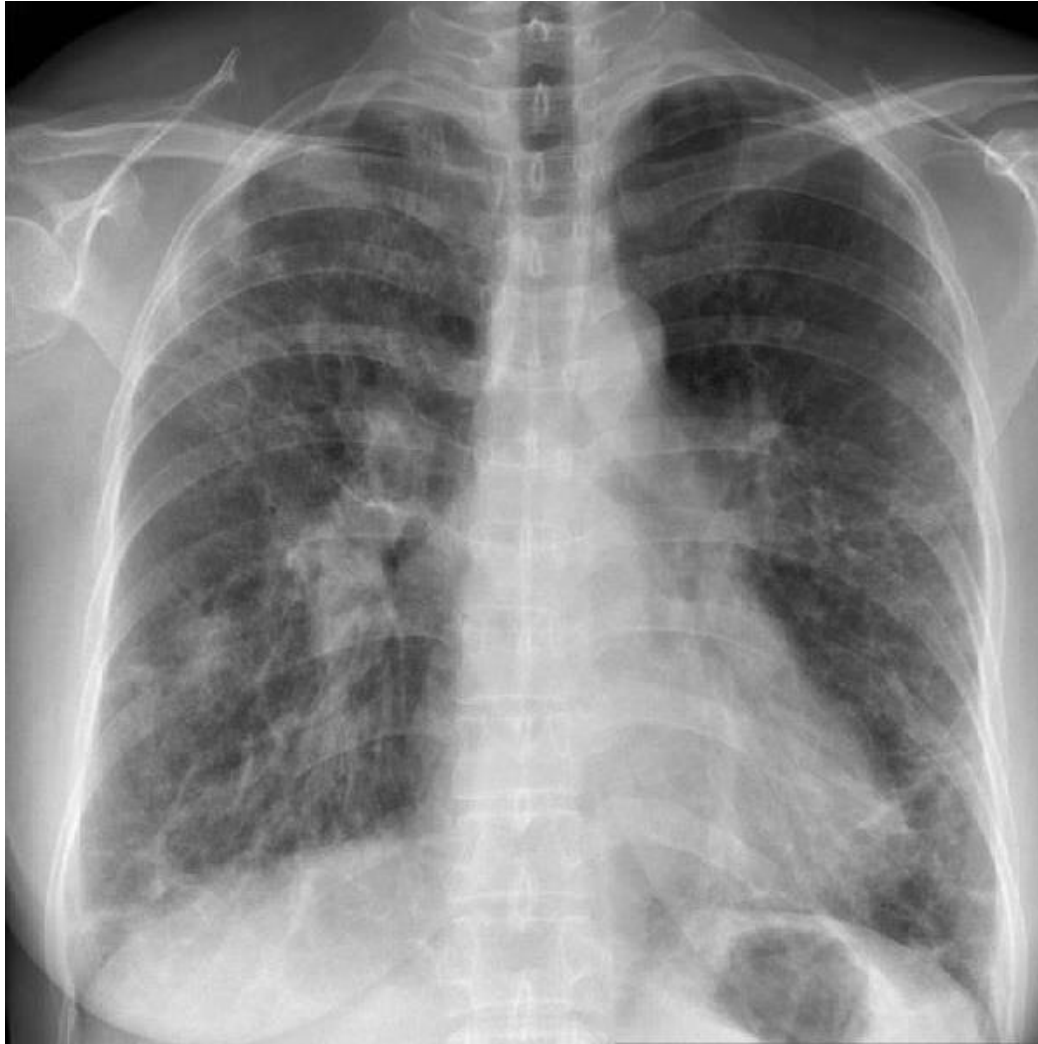
- Sarkoidozis
- Lenfoma
- Viral pnömoni
- Metastaz
- LHH

SARKOİDOZİS

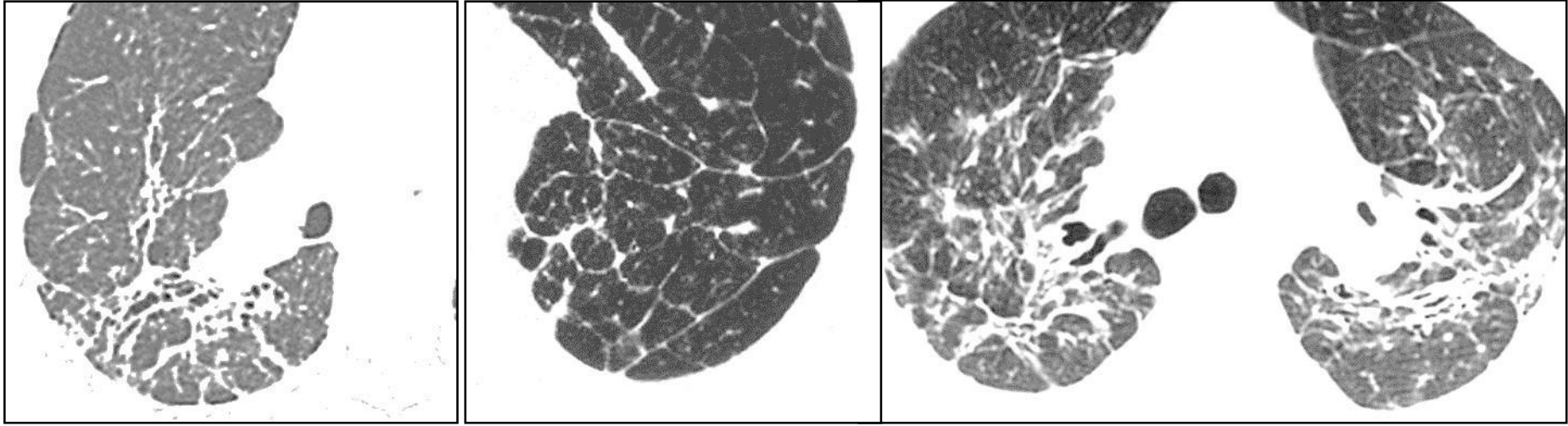
- Multi-sistemik bir hastalık
- Akciğer, karaciğer, deri, göz, kalp, SSS vb
- Asemptomatik olabilir. % 50 solunum veya sistemik semptomlar
- Spontan remisyon (2/3), pulmoner fibrozis, SSS veya kalp tutulumunda kötü prognoz (%1-5)
- Patoloji: Perilenfatik dağılımlı nonkazeöz granülomlar







SARKOİDOZİS



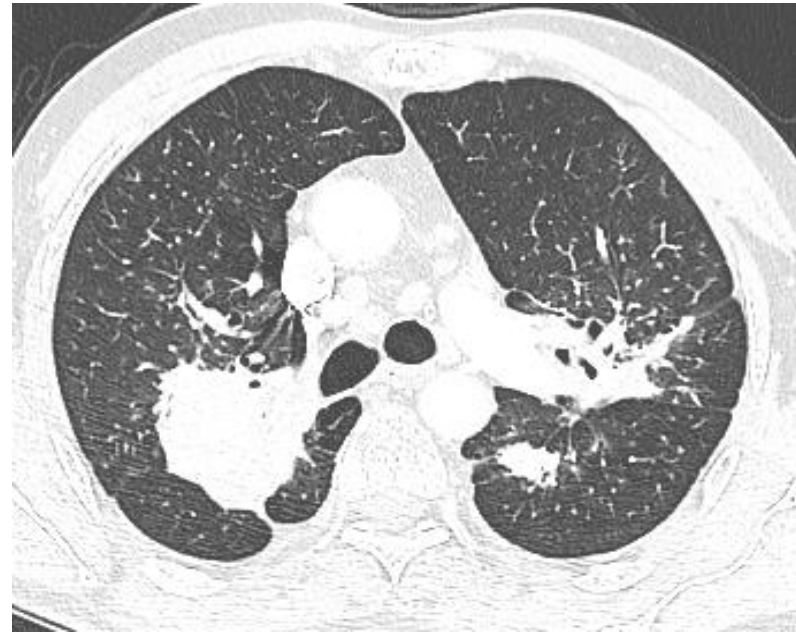
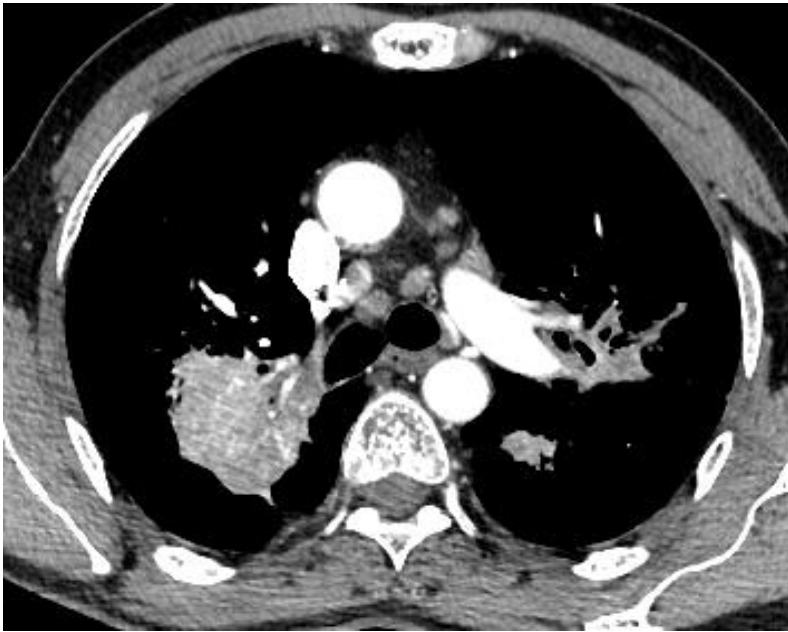
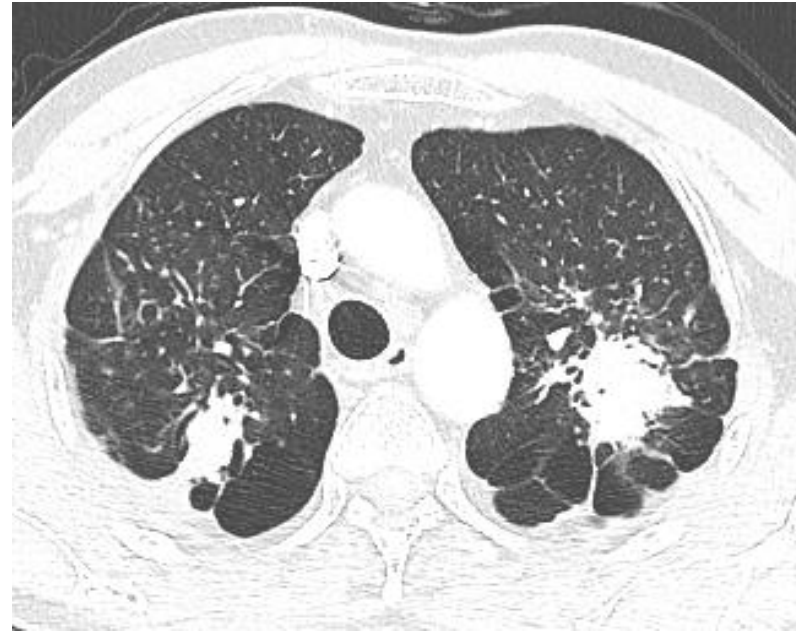
- Üst lob hakimiyeti
- Belirgin retikülasyon olmadan akciğer parankiminde distorsiyon
- Septal kalınlaşmalar
- SARKOİDOZİS** lehine

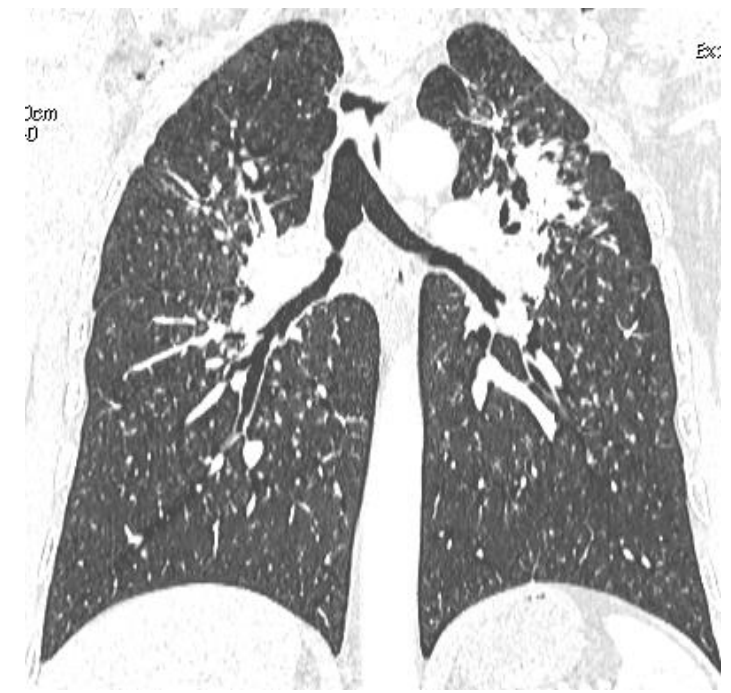
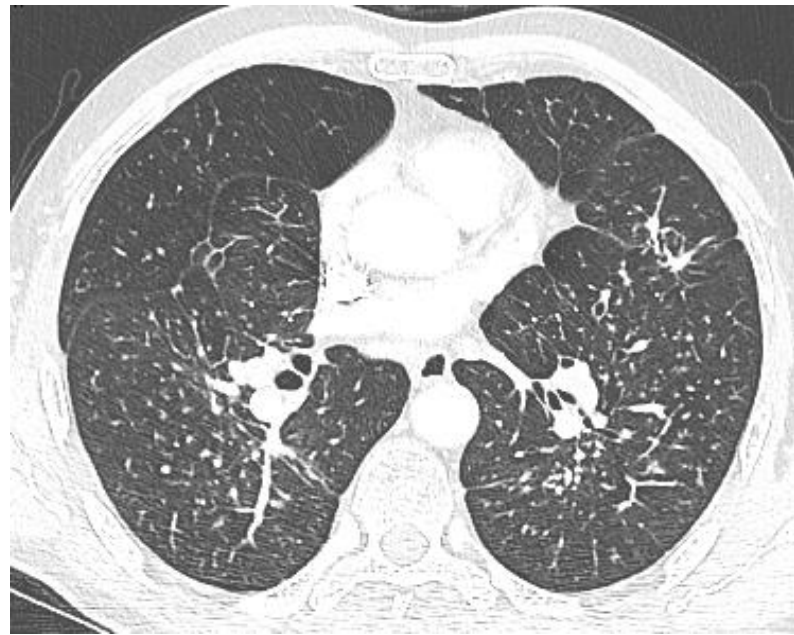
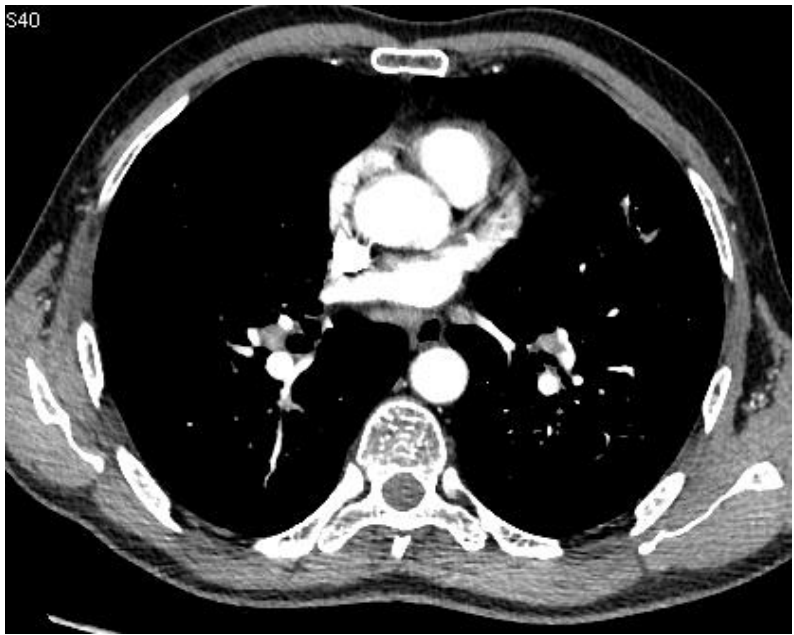
Sarkoidozis evreleri:

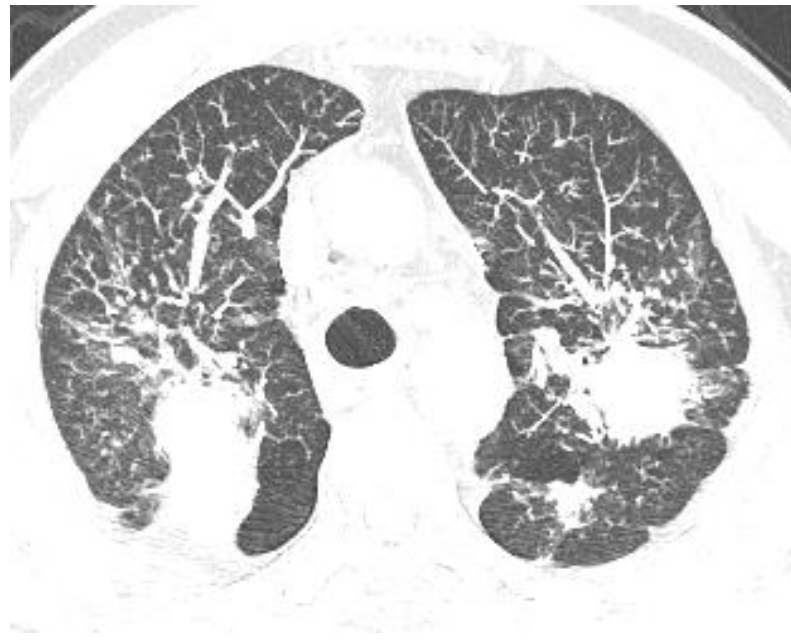
- Evre 0, normal akciğer grafisi;
- Evre 1, bilateral hiler adenopati;
- Evre 2, bilateral hiler adenopati ile birlikte parankimal infiltrasyon;
- Evre 3, hiler adenopati olmaksızın parankimal infiltrasyon;
- Evre 4, pulmoner fibrozis

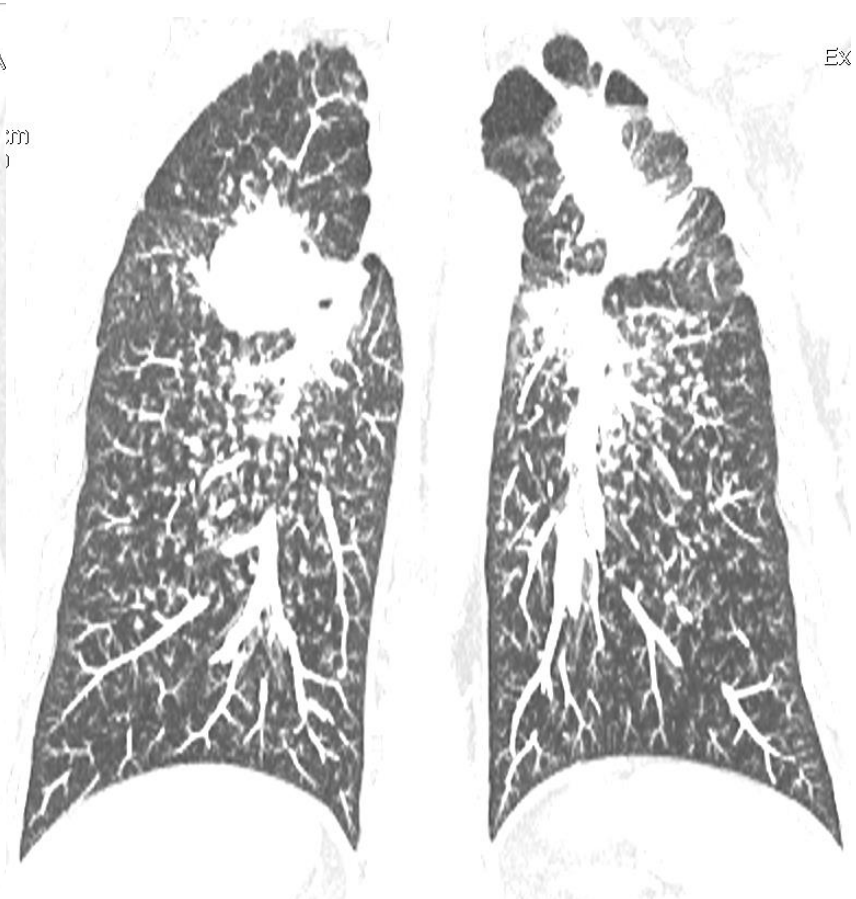
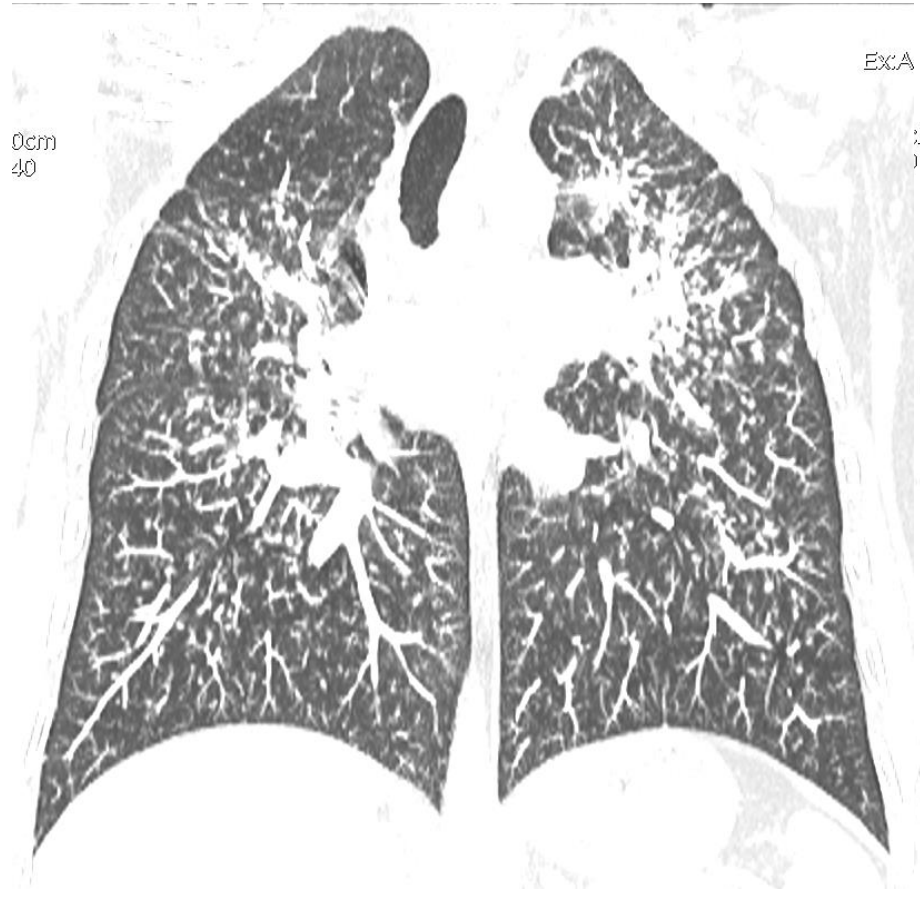


65 yaşında erkek hasta
Kömür işçisi
Yakınmaları
Öksürük ve solunum sıkıntısı



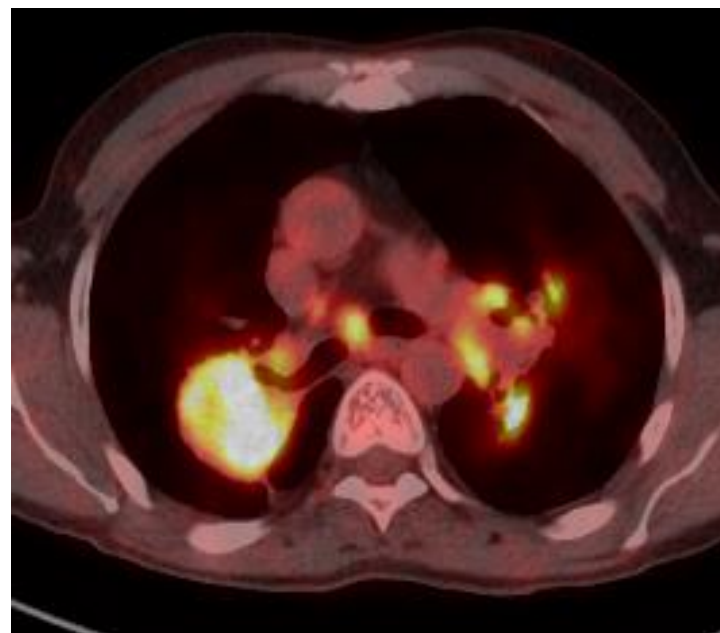
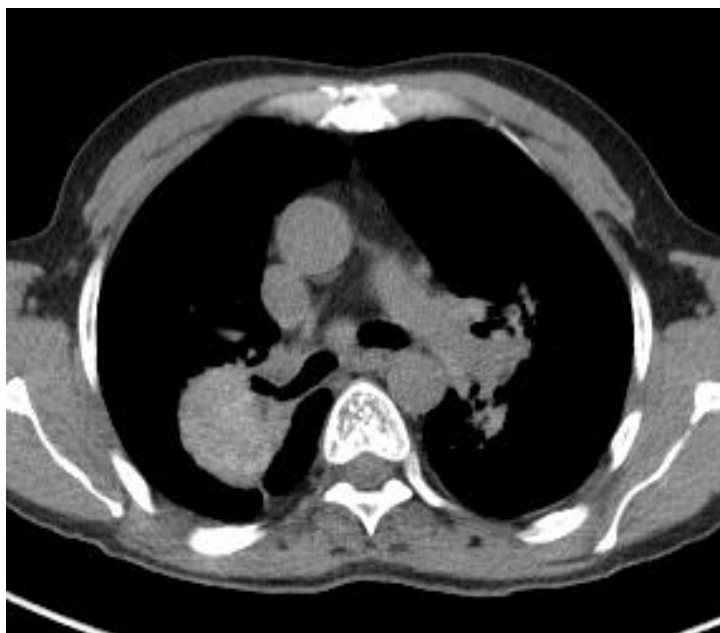
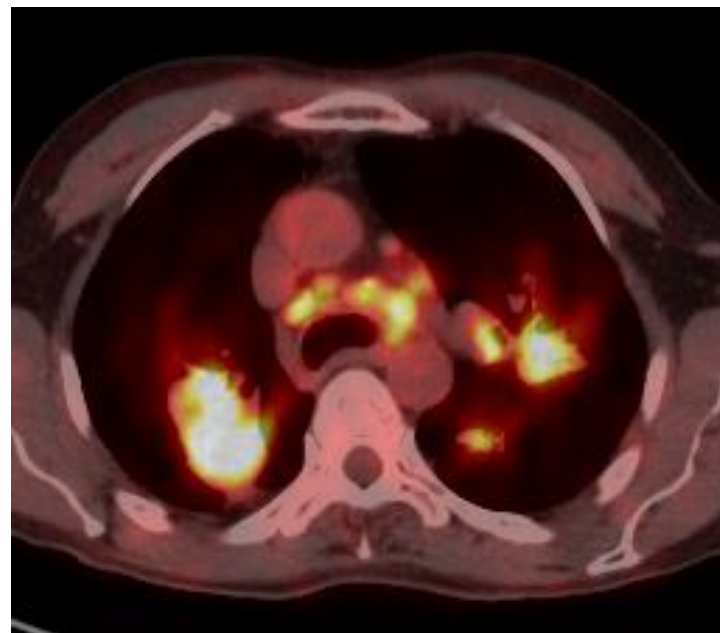


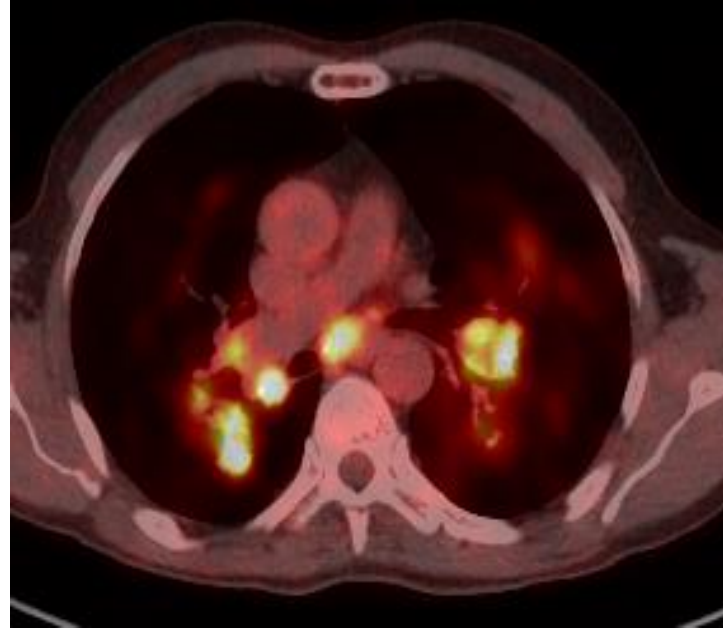
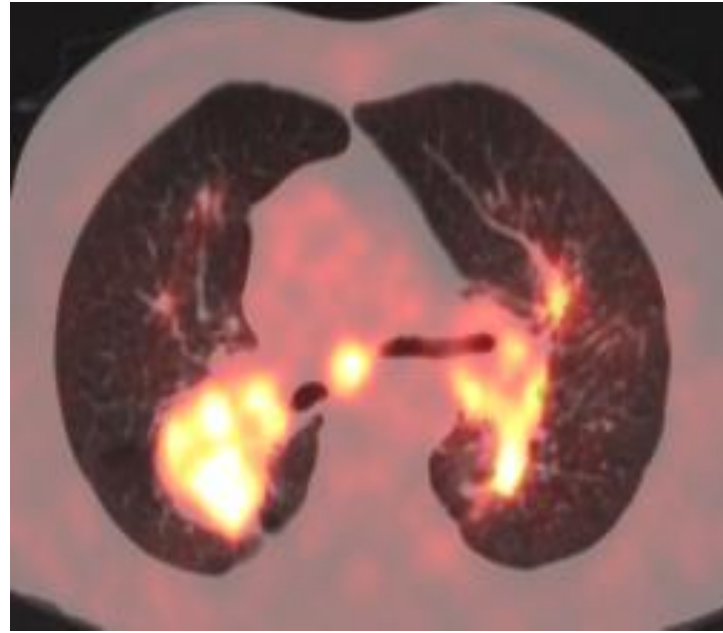
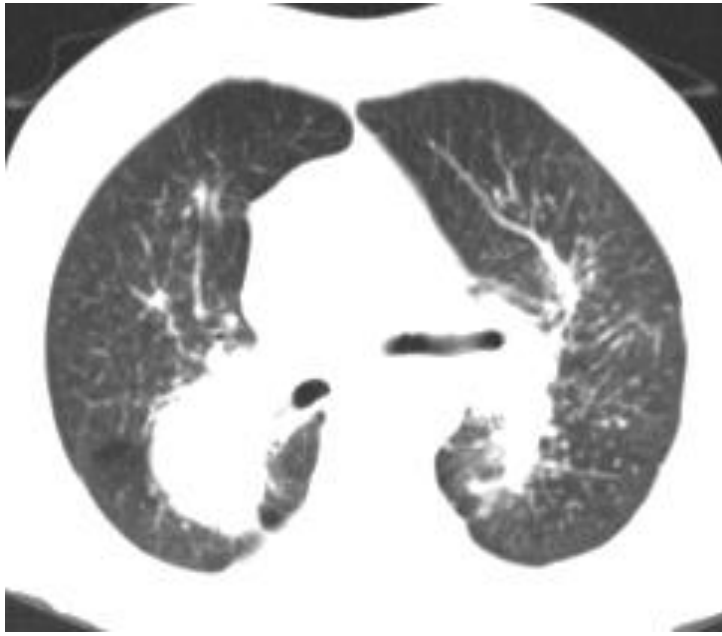




Radyolojik olarak ne düşünürdünüz?

- a) Lenfoma
- b) Tüberküloz
- c) Akciğer kanseri
- d) Silikozis
- e) Bakteriyel ve viral enfeksiyon





Şimdi ne düşünürdünüz?

- a) Lenfoma
- b) Tüberküloz
- c) Akciğer kanseri
- d) Silikozis
- e) Bakteriyel ve viral enfeksiyon

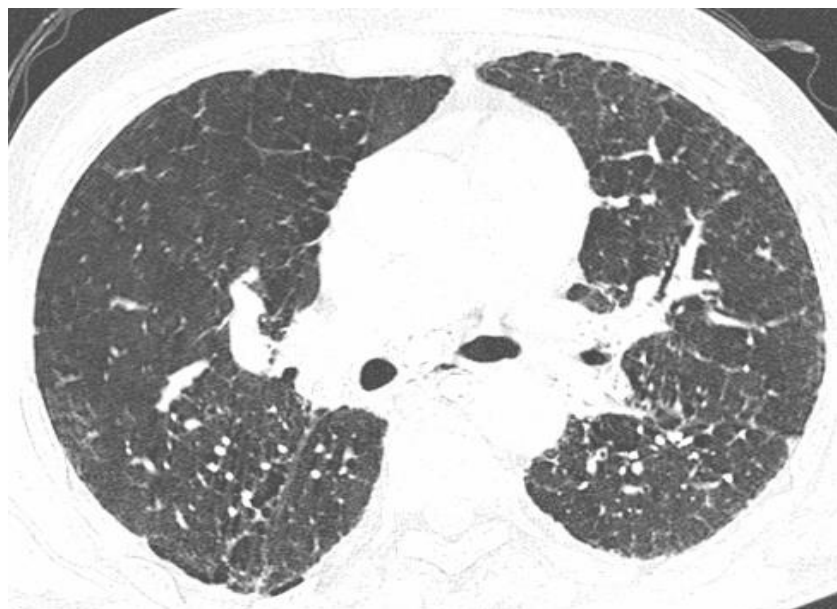
SİLİKOZİS/KÖMÜR İŞÇİSİ PNÖMOKONYOZU

- İn hale edilen silika tozlarının makrofajlarca fagositozisi ile karakterize
- Hasar gören makrofajlarca salınan inflamatuvar mediatörler
- İnterstisyel inflamasyon ve fibrozise neden olur.
- Akut (silikoproteinozis), hızlanmış ve klasik formları var

SİLİKOZİS/KÖMÜR İŞÇİSİ PNÖMOKONYOZU

- Basit pnömokonyozlarda, **üst zon ve posterior** ağırlıklı bilateral küçük nodüller nodüller,
- Lenf nodlarında **yumurta kabuğu şeklinde kalsifikasyonlar**
- Komplike pnömokonyozda üst zonlarda simetrik retikülonodüler ve kitle benzeri opasiteler (PMF), komşulukta paraskatrisyel amfizem.



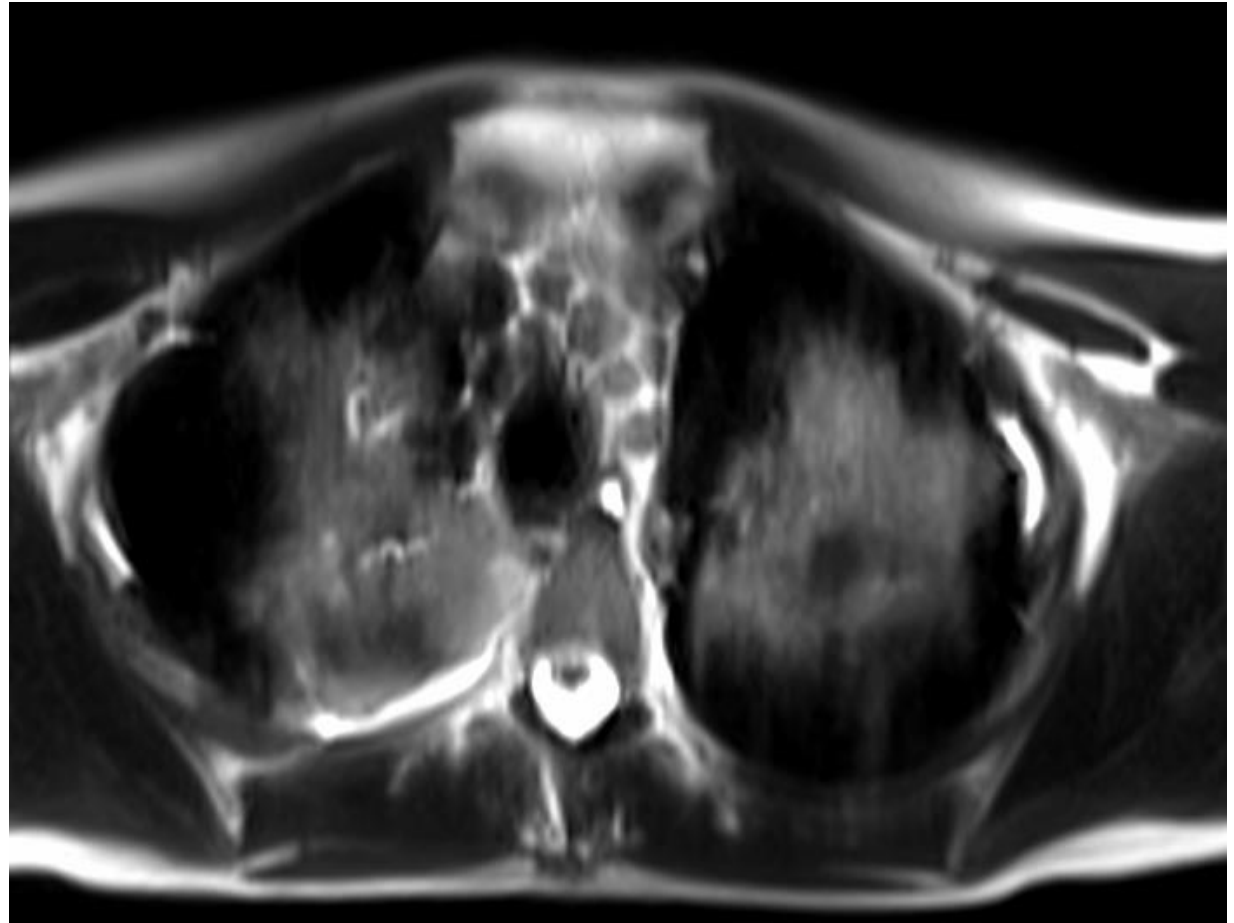
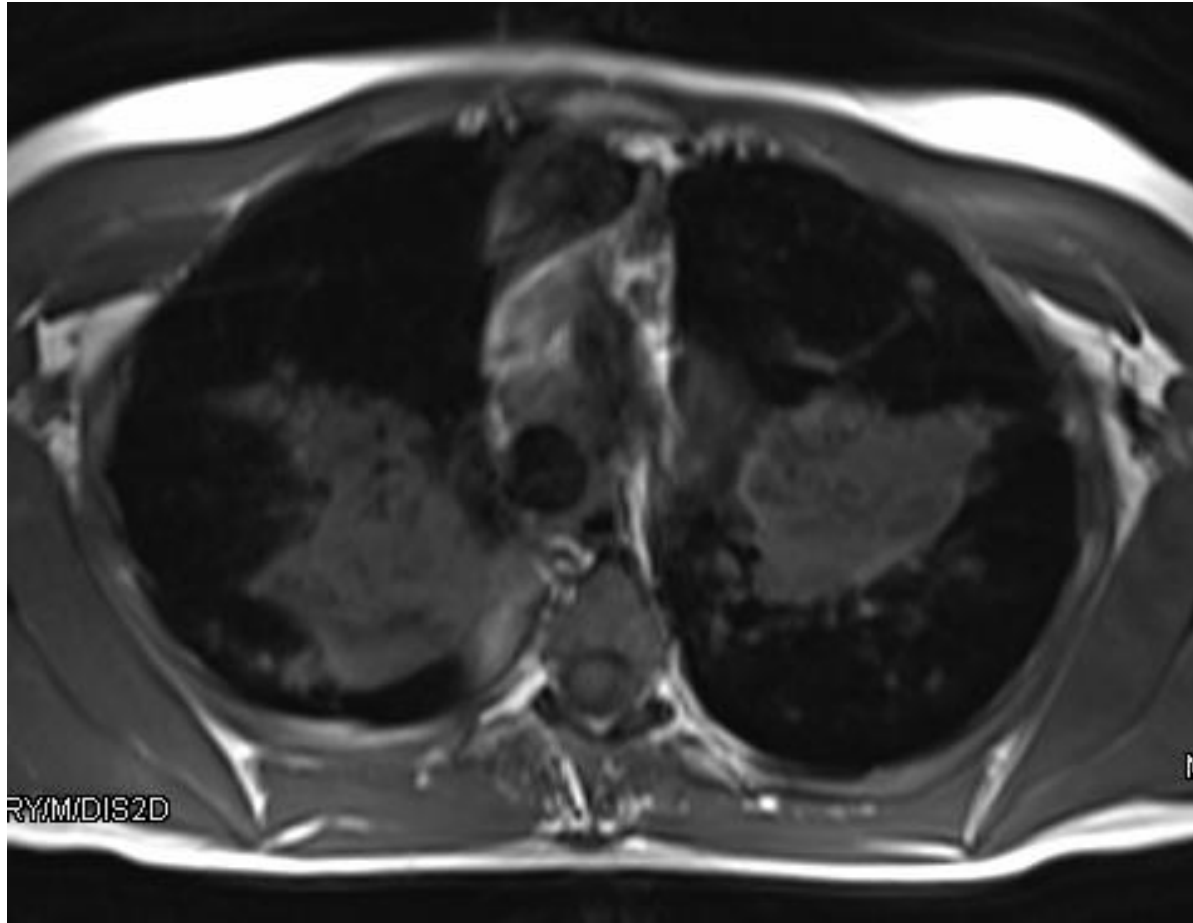


PMF

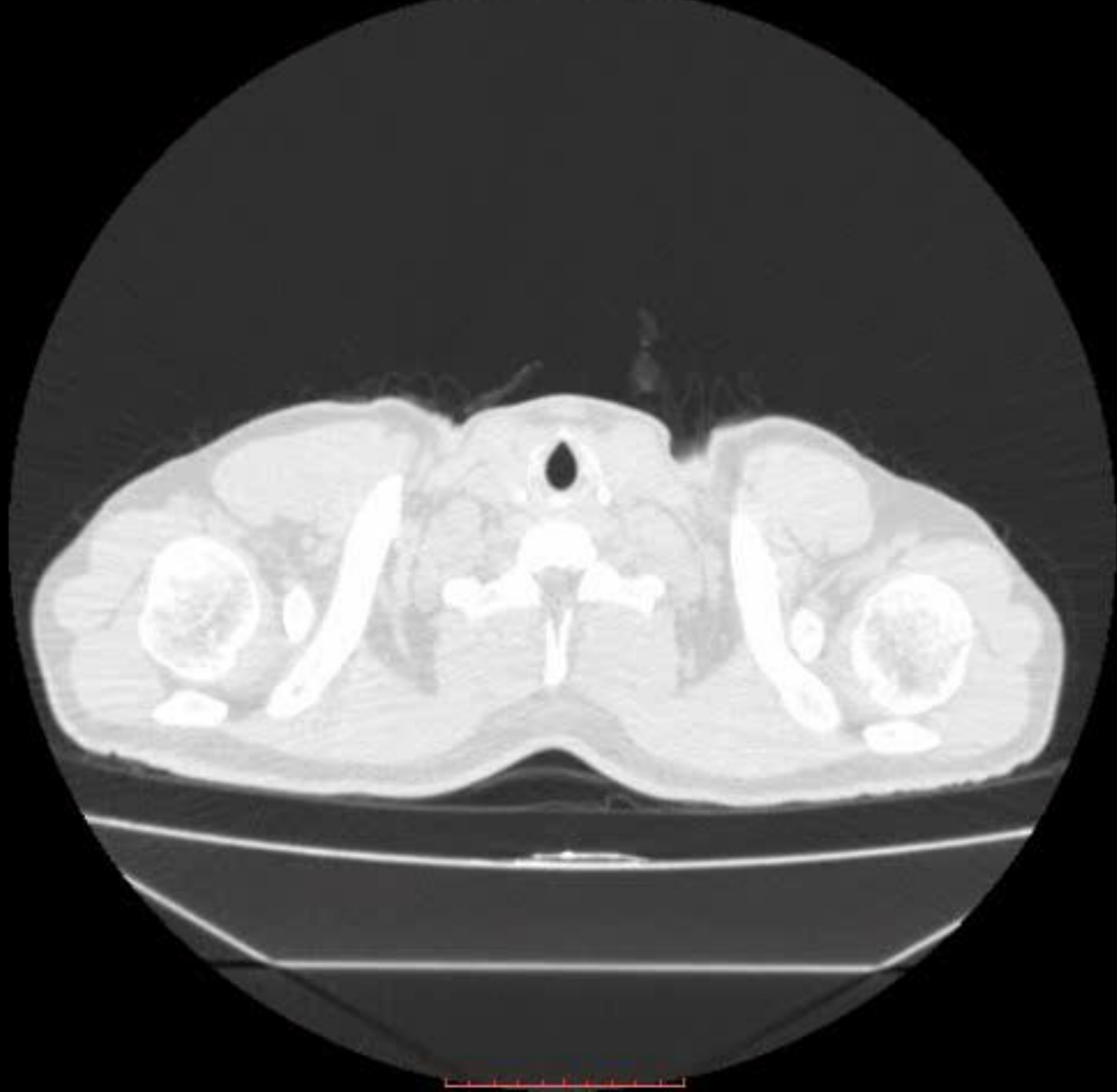
- Silikozis
- Kömür işçisi pnömokonyozu
- Sarkoidozis
- Tüberküloz

UZUN YILLAR BU ALANLAR FDG TUTABİLİR

MALİGNİTEDEN AYRIM İÇİN MRG VE TAKİP BT GEREKLİDİR



Olgü



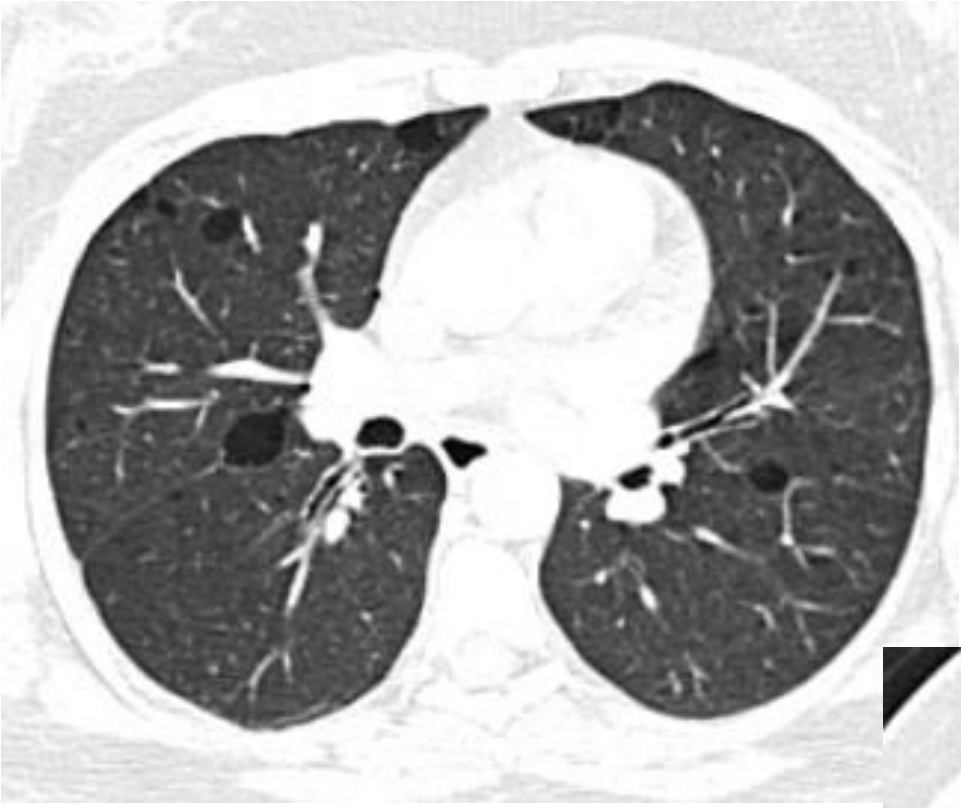
AYIRICI TANI

- Amfizem?
- LAM?
- LHH?
- Nörofibromatozis?
- BHD sendromu?
- Amiloidozis?
- Hafif zincir hastalığı?
- LİP ?

BİRT-HOGG-DUBE SENDROMU

-Birt-Hogg-Dubé sendromu (BHD), saç folikülü tümörlerinin, renal neoplazmaların ve pulmoner kistlerin gelişimi ile karakterize nadir görülen, otozomal dominant bir hastalıktır.

-HRCT bulguları, akciğerin baziler ve subplevral – perivasküler bölgelerinde dağılmış çeşitli boyutlarda yuvarlak veya füziform şeklinde, ince cidarlı, bazılarının içerisinde vasküler yapıların izlendiği pulmoner kistler içermesidir.



AYIRICI TANI:

BHD sendromu

LİP

Amiloidoz

Baltoma

Hafif zincir hastalığı

Sigaraya bağı İLD



Hasta Adı Soyadı	Ahmet Arzuman	Gön.Merkez/Doktor	TINAZTEPE HASTANESİ GENETİK TANI MERKEZİ
T.C. Kimlik No	48*****36	İncelenen Materyal	EDTA'LI KAN
Doğum Tarihi	1.10.1979	Örnek Alım Tarihi	10.1.2019 11:04:12
Cinsiyet	ERKEK	Lab.Kabul Tarihi	10.1.2019 19:21:40
Protokol / Lab. No	1010 / 236309 / Revizyon:	Rapor Onay Tarihi	1.2.2019 15:21:06
Endikasyon	MİDE AĞRISI ŞİKAYETİ, KİST OLUŞUMU		

Birt - Hogg - Dube Sendromu FLCN

Uygulanan Yöntem : FLCN tüm gen dizi analizi

Sonuçlar aşağıdaki tabloda sunulmuştur.

Gen	Yeri	Varyant	Zigozite	Sınıflandırma	Hastalık	Kalıtım
FLCN	Ekzon 8	c.1213dup (p.Tyr405Leufs) rs1131690837	Heterozigot	Class 1	Birt-Hogg-Dube	Otozomal Dominant

Klinik Bilgiler ve Değerlendirme:

Birt-Hogg-Dube sendromu, otozomal dominant geçişli bir hastalıktır. FLCN gen mutasyonları hastalığın oluşumundan sorumludur.

Öneriler :

- FLCN geninin incelenen ekzonlarında heterozigot c.1213dup (p.Tyr405Leufs) mutasyonu belirlenmiştir. Bu sonucun Birt-Hogg-Dube sendromu kliniğine yol açması beklenmektedir.
- Hastaya ait bu sonucun klinik ve laboratuvar bulguları ile beraber değerlendirilmesi önerilmektedir.
- Aile bireylerinde genetik tarama ve klinik olarak değerlendirme yapılması önerilmektedir.
- Genetik danışmanlık verilmesi önerilir.

Uygulanan Test Yöntemi :

FLCN geni tüm ekzonlarını kapsayan primerler kullanılarak dizi analizi yöntemi uygulanmıştır. Sonuçlar Nextgene analiz programı kullanılarak analiz edilmiştir.

Yöntemin Sınırlamaları :

Bu yöntem sadece FLCN geninde belirtilen bölgelerdeki mutasyonları taramakta olup bu bölgeler dışında kalan ya da farklı bir genin sorumlu olduğu değişiklikleri ekarte etmemektedir. Bu yöntem nadir görülen delesyon ve duplikasyonları saptamamaktadır.

Türk Akreditasyon Kurumu(TÜRKAK) analiz raporlarının tanınması konusunda Avrupa Akreditasyon Birliği(EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşmasını imzalamıştır. Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız raporlar geçersizdir. Akreditasyon olan Testler (*) olarak belirtilmiştir.

Cinnah Caddesi No: 47/1 Çankaya - ANKARA / TÜRKİYE Tel : +90(312) 427 48 01 Fax: +90(312) 427 48 03

Yeşilbağlar Mah. Fıncın Sok. No:2 Beyaz Otis İş Merkezi B Blok No:3 Pendik - İSTANBUL/TÜRKİYE Tel : +90(216) 306 08 20 Fax: +90(216) 306 08 54

Hasta Adı Soyadı	Ahmet Arzuman	Gön.Merkez/Doktor	TINAZTEPE HASTANESİ GENETİK TANI MERKEZİ
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Endikasyon	MİDE AĞRISI ŞİKAYETİ, KİST OLUŞUMU		

Birt - Hogg - Dube Sendromu FLCN

Varyant Sınıflandırma (American College of Medical Genetics'in belirlediği kriterlere göre)

*ACMG STANDARDS AND GUIDELINES, Standards and guidelines for the interpretation of sequence variants 17(5):405-424. doi:10.1038/gim.2015.30 GENETICS in MEDICINE,2015

Class	Değişiklik Türü	Patojenite Olasılığı	Açıklama
1	Patojenik	>%99	Hastalık yapıcı etkisi(patojenitesite) yeterli verilerle gösterilmiş değişiklikler.
2	Olası Patojenik	%95-99	Hastalık yapıcı etkisinin (patojenitesite) varlığı lehinde çok güçlü veriler bulunan değişiklikler.
3	Patojenik Etkisi Bilinmeyen Varyant	%5-95	Hastalık yapıcı etkisine (patojenitesite) ilişkin sınırlı ve/veya tartışmalı veriler bulunan değişiklikler.
4	Olası Benign	%1-5	Hastalık yapıcı etkisinin (patojenitesite) olmadığı lehinde çok güçlü veriler bulunan değişiklikler.
5	Benign	<%1	Hastalık yapıcı etkisinin (patojenitesite) olmadığı yeterli verilerle gösterilmiş değişiklikler.

Hum Mutat. 2008 November;29(11): 1282-1291. doi:10.1002/humu.20880*

Yar.Doç.Dr.Süleyman Aiktuna

(Signature)

Dr. Leyla ÖZER MD, PhD

(Signature)

Türk Akreditasyon Kurumu(TÜRKAK) analiz raporlarının tanınması konusunda Avrupa Akreditasyon Birliği(EA) ve Uluslararası Laboratuvar Akreditasyon Birliği (ILAC) ile karşılıklı tanıma anlaşmasını imzalamıştır. Bu rapor, laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız raporlar geçersizdir. Akreditasyon olan Testler (*) olarak belirtilmiştir.

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KİSTİK PATERN

- Akciğerde ince duvarlı kistik yapıların gözlendiği paterndir.
- LHH, LİP, tuberoskleroz, LAM, nörofibromatozis gibi hastalıklarda görülür. Ancak bu hastalıklar ile karışabilecek amfizem, bronşektazi ve bal peteği akciğerde bu paternde ayırıcı tanıda düşünülmelidir.

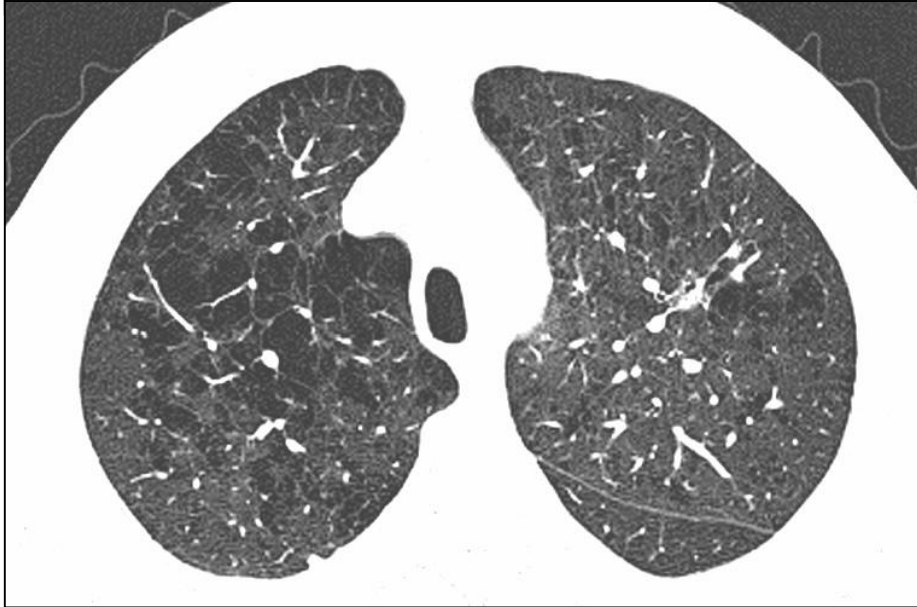
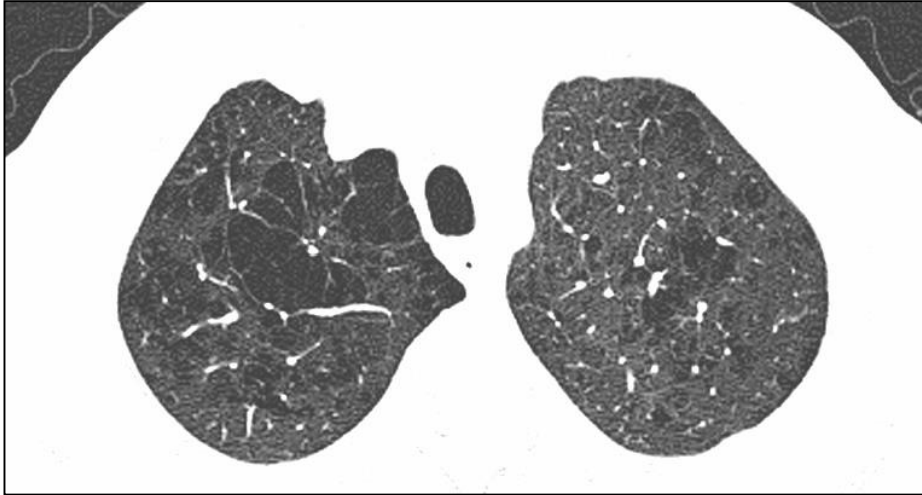
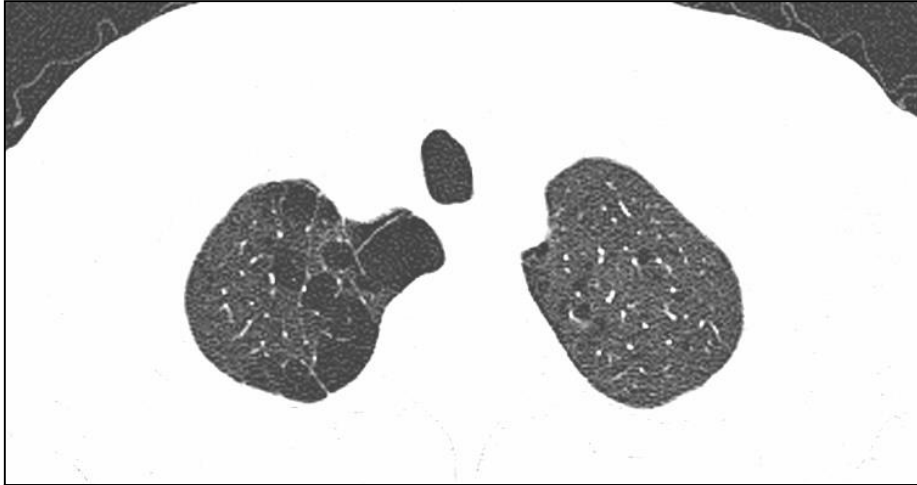
KİSTİK AKCİĞER HASTALIKLARI

AKCİĞER KİSTLERİ

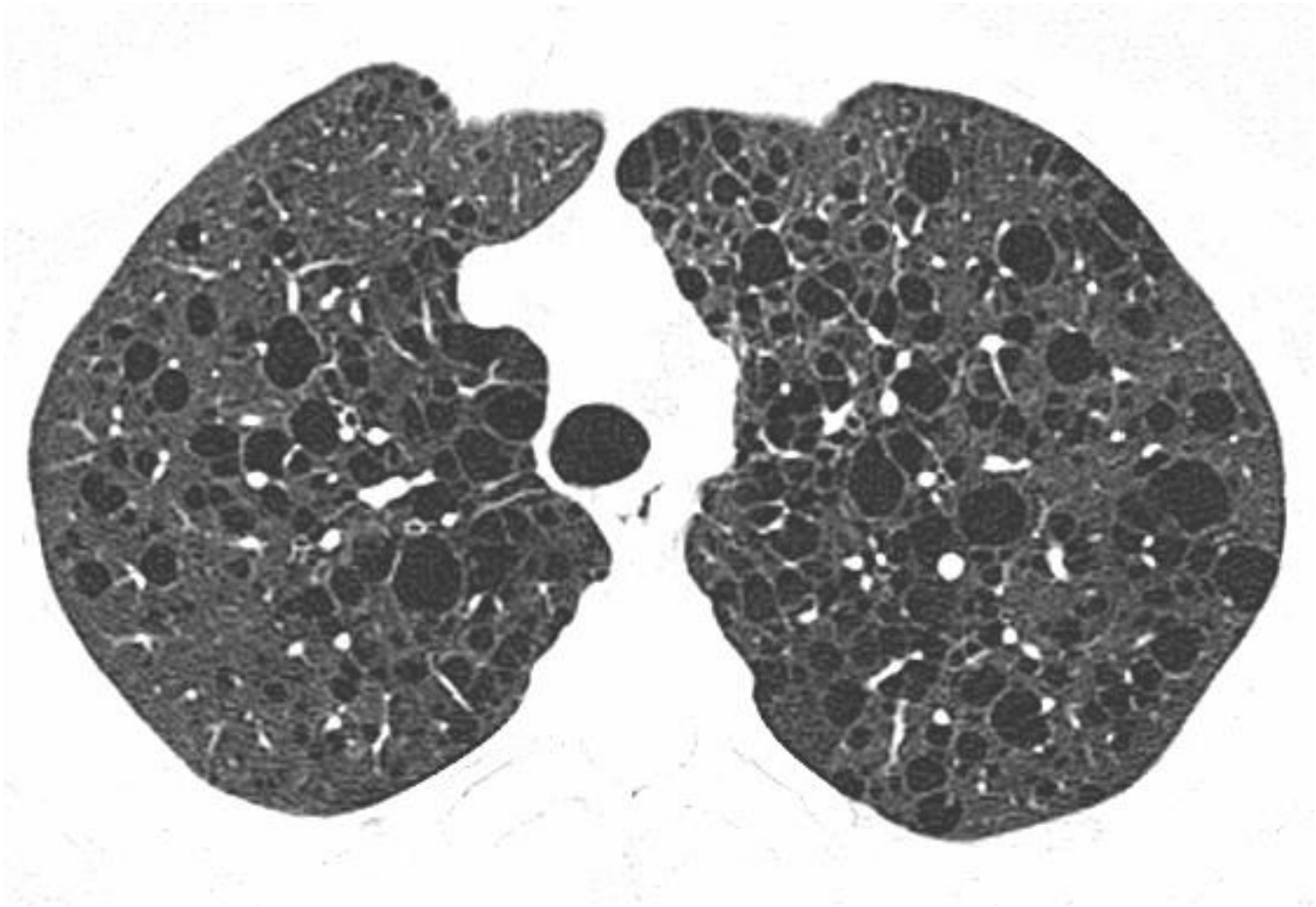
- Balpeteği akciğer
- LAM
- LHH
- LIP
- Tüberoskleroz
- Nörofibromatozis

KİST BENZERİ/KAVİTER

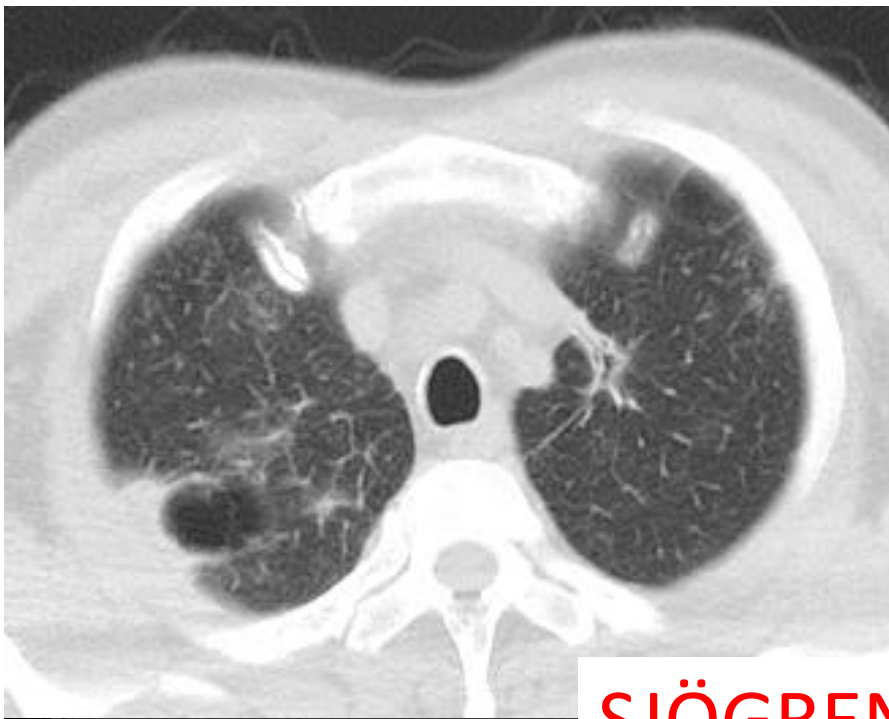
- LHH
- Metastazlar
- Septik emboli
- Wegener gr.
- Tüberküloz
- RA (nekrobiyotik nodül)
- Sarkoidoz



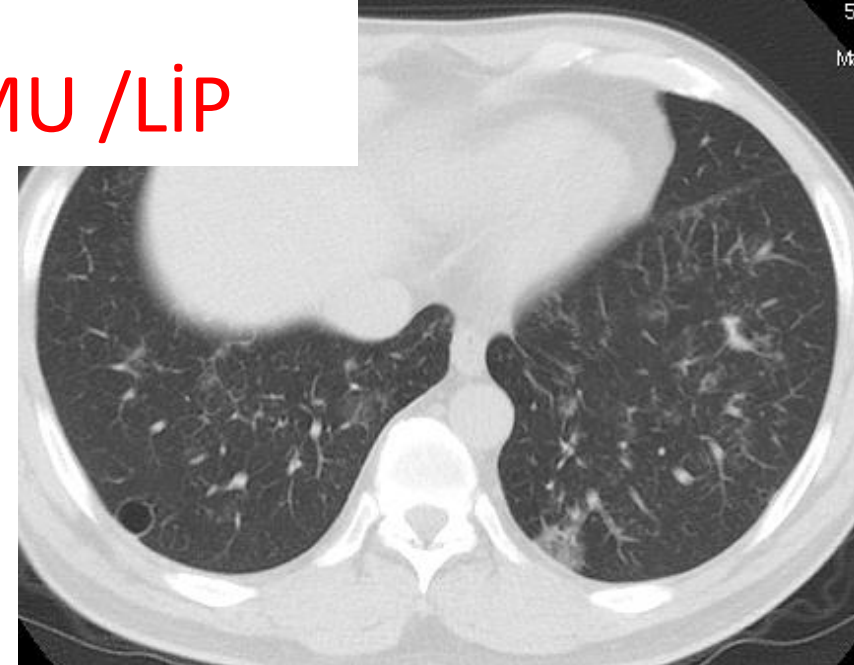
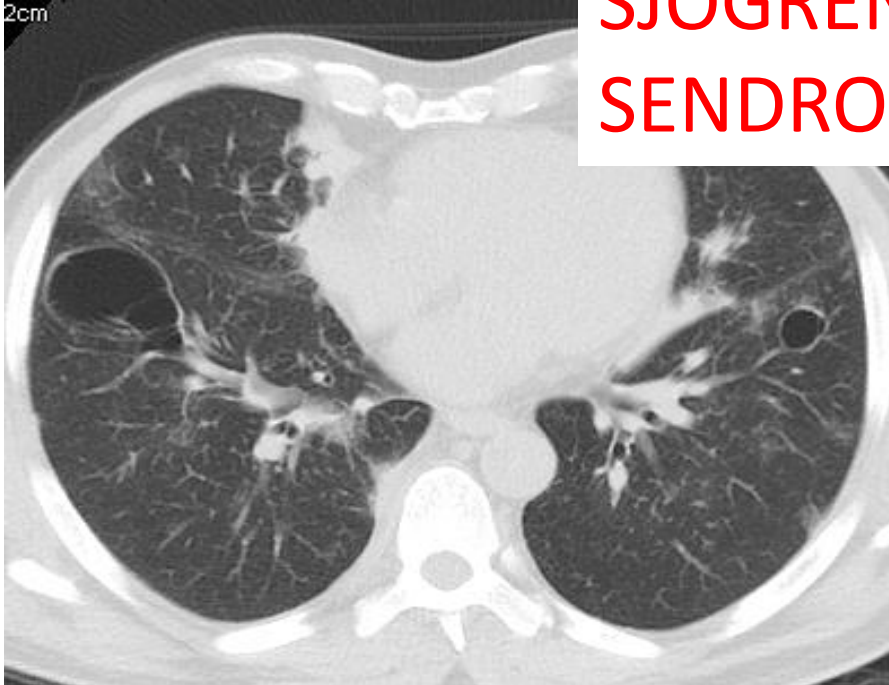


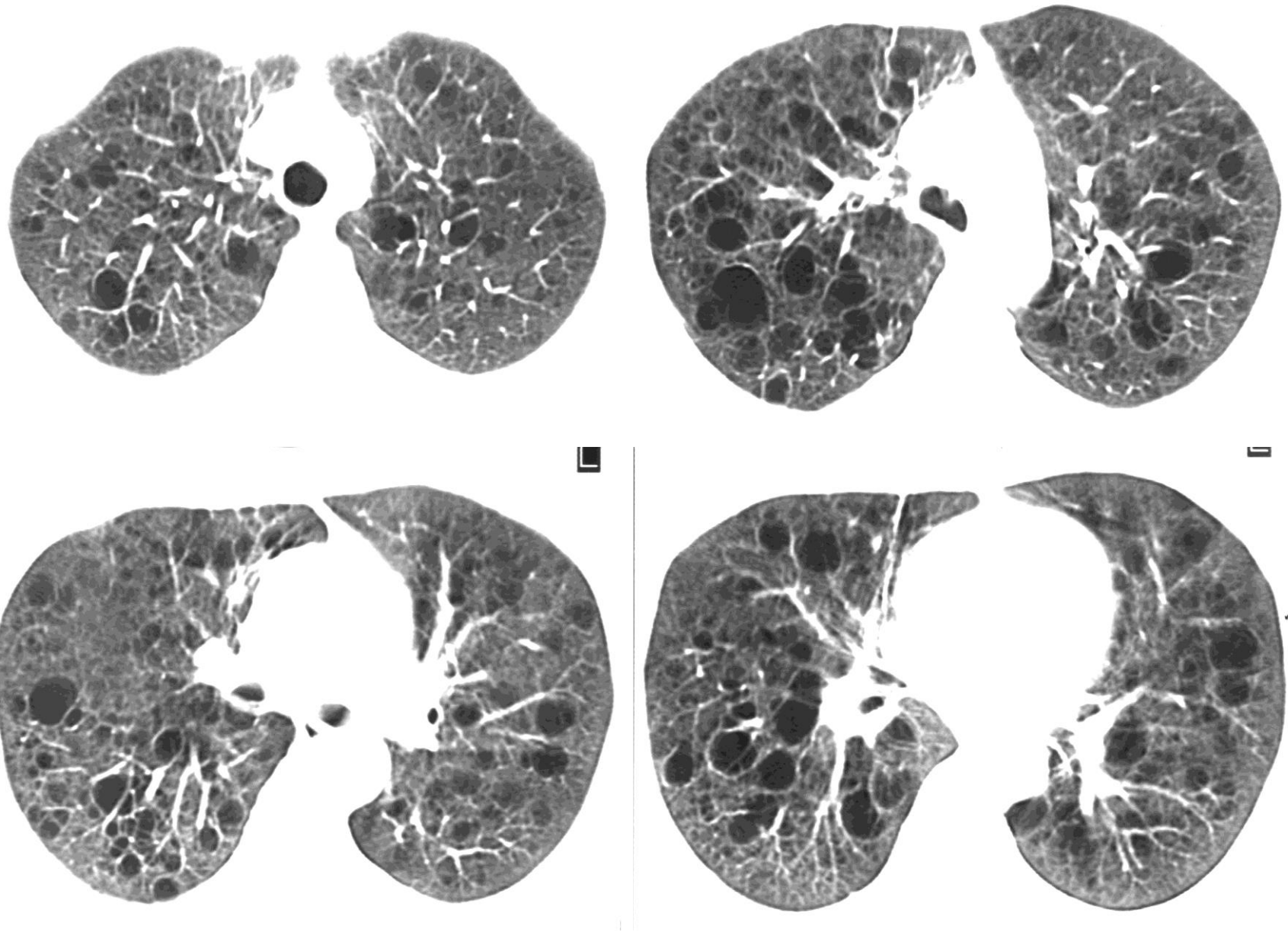


LAM



**SJÖGREN
SENDROMU /LİP**





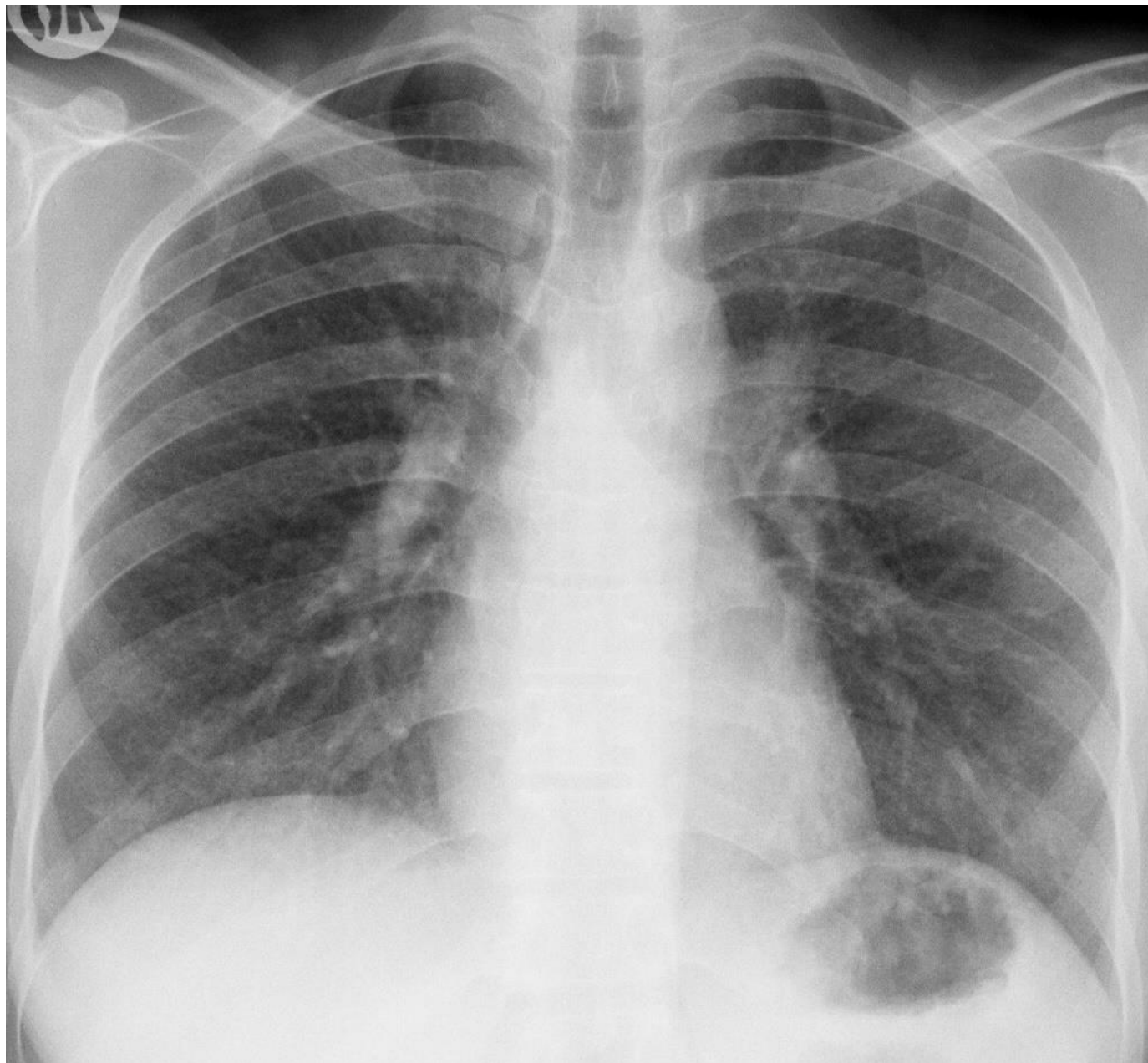
Nörofibromatozis

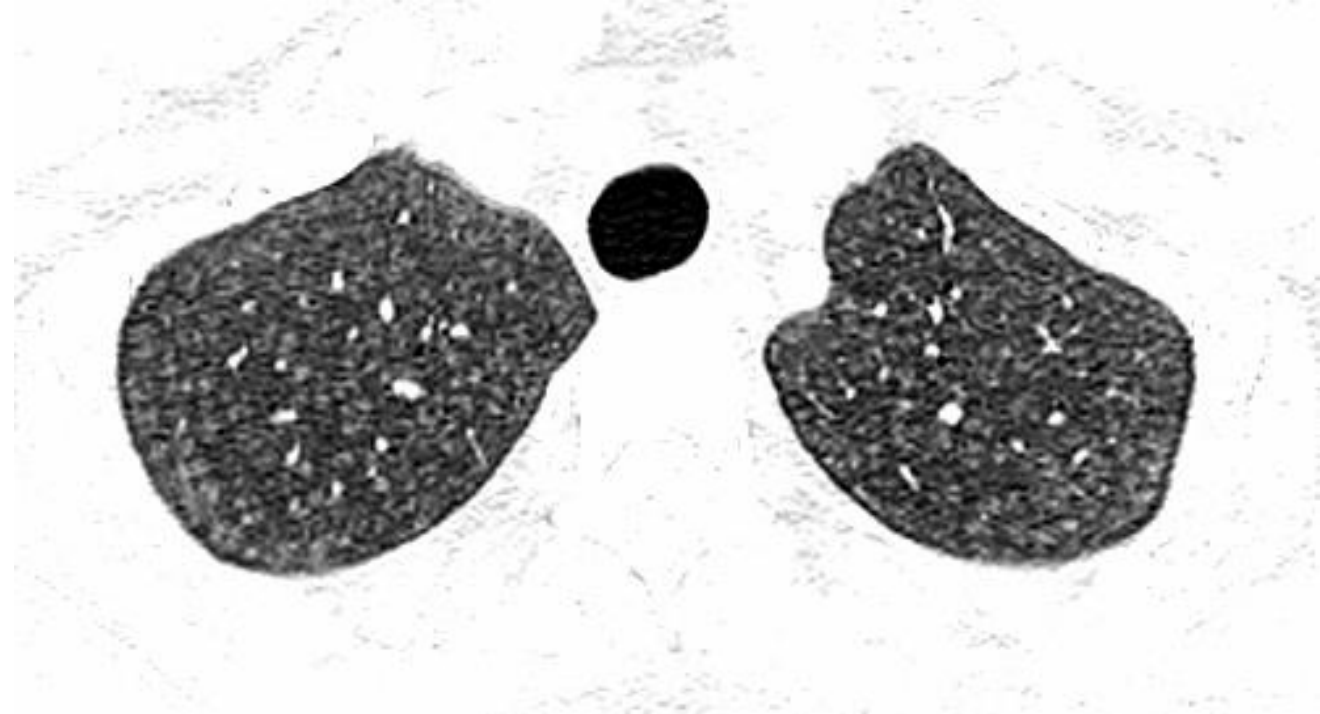
Olgu

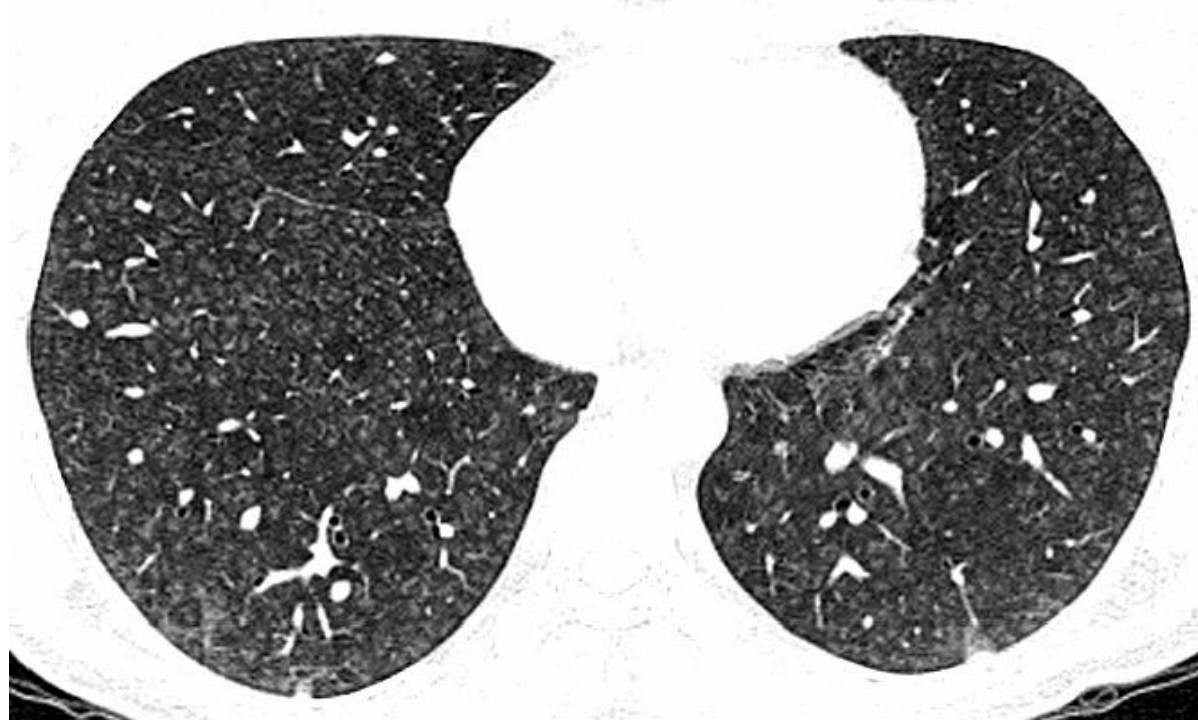
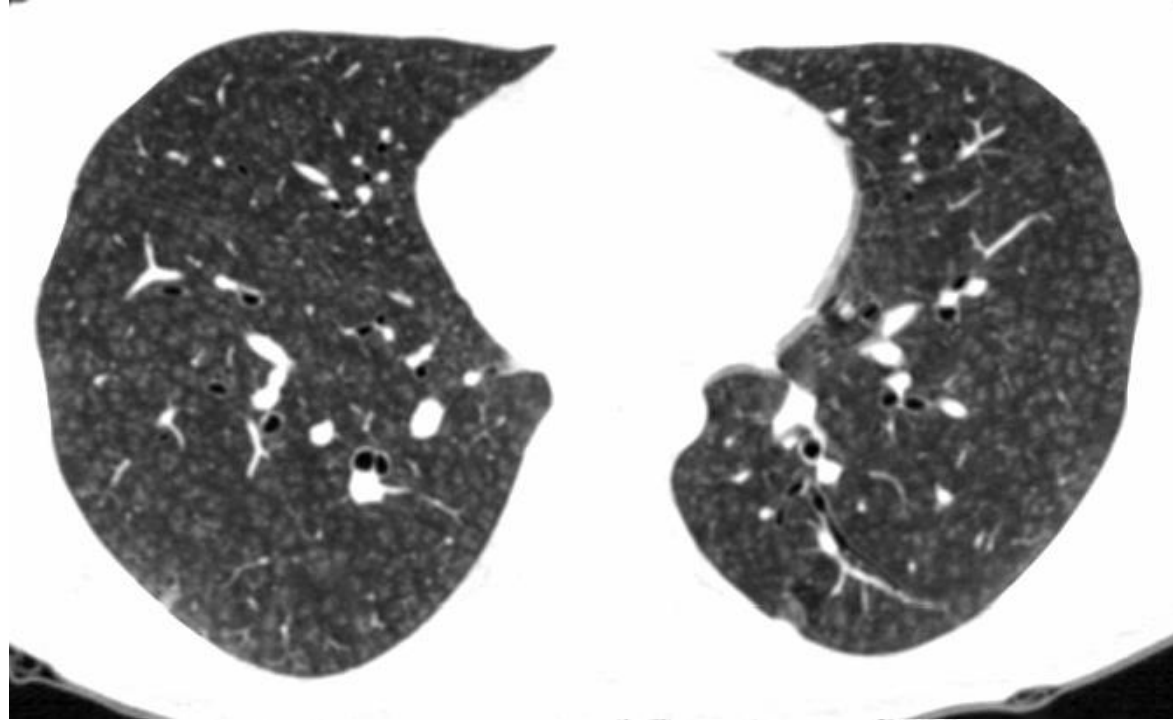
- 26 yaşında kadın

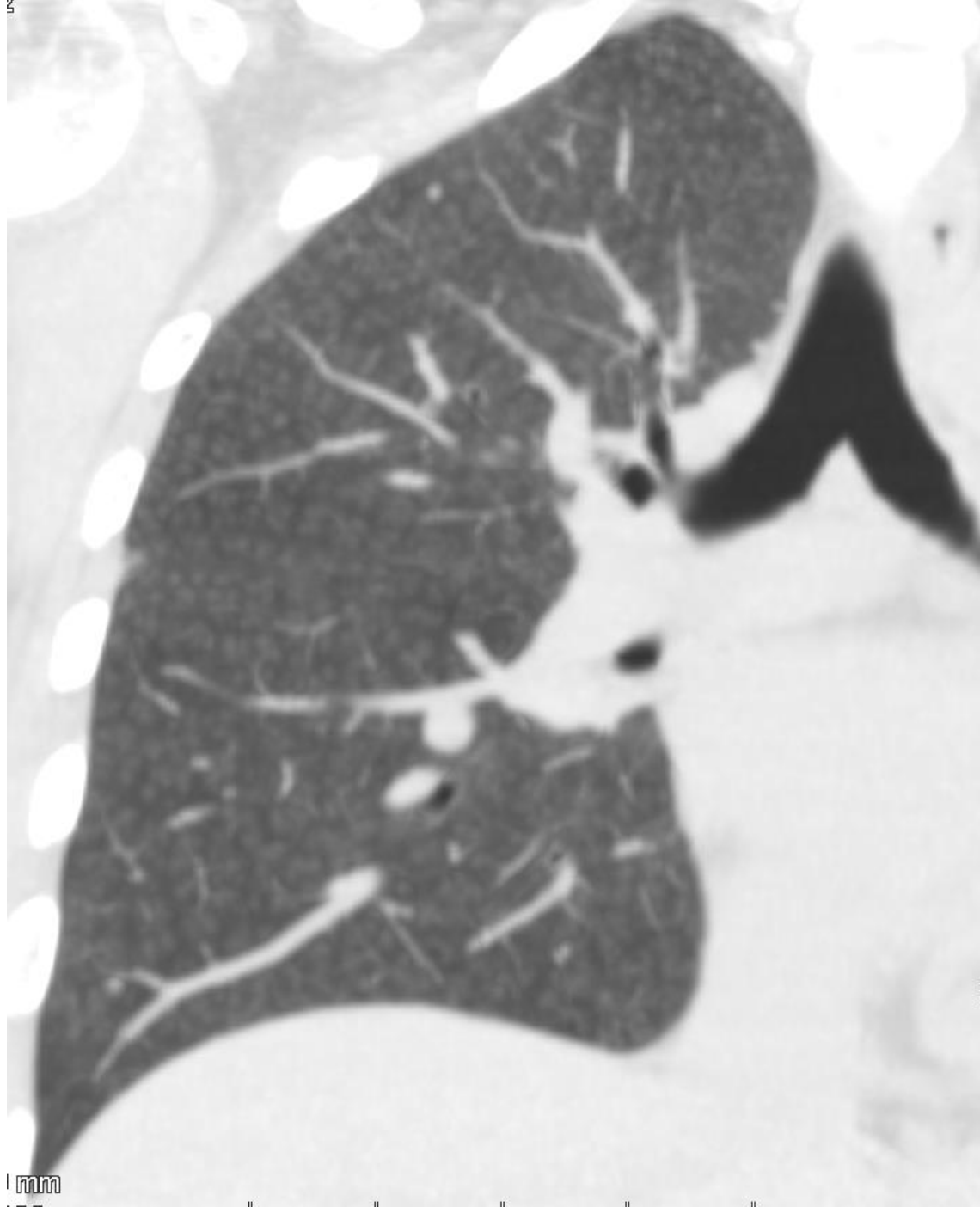
- Yakınmaları

- Solunum sıkıntısı mevcut (10 gündür belirginleşmiş, 1 aydır devam ediyor)









Radyolojik bulgular eşliğinde hangisi en olasıdır?

- A) Miliyer tüberküloz
- B) Sarkoidozis
- C) Metastaz
- D) Hipersensitivite pnömonisi
- E) Viral pnömoni



Radyolojik bulgular eşliğinde hangisi en olasıdır?

- A) Miliyer tüberküloz
- B) Sarkoidozis
- C) Metastaz
- **D) Hipersensitivite pnömonisi**
- E) Viral pnömoni



Hipersensitivite Pnömonisi

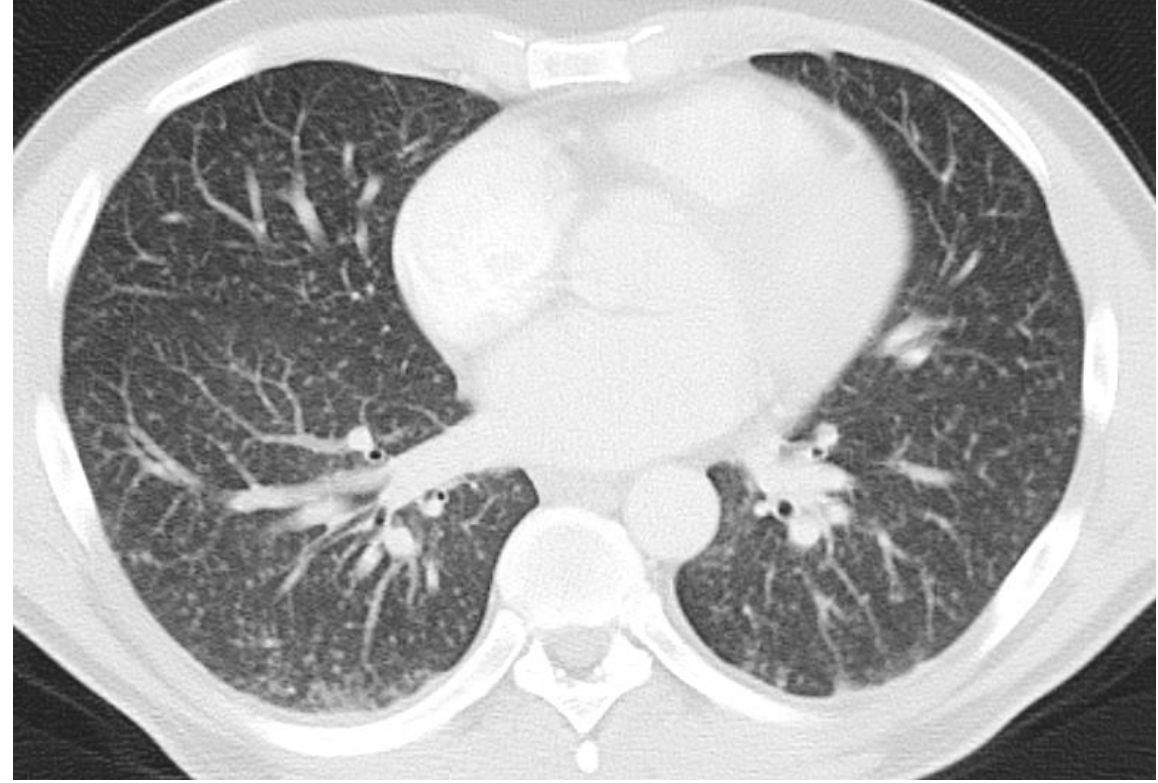
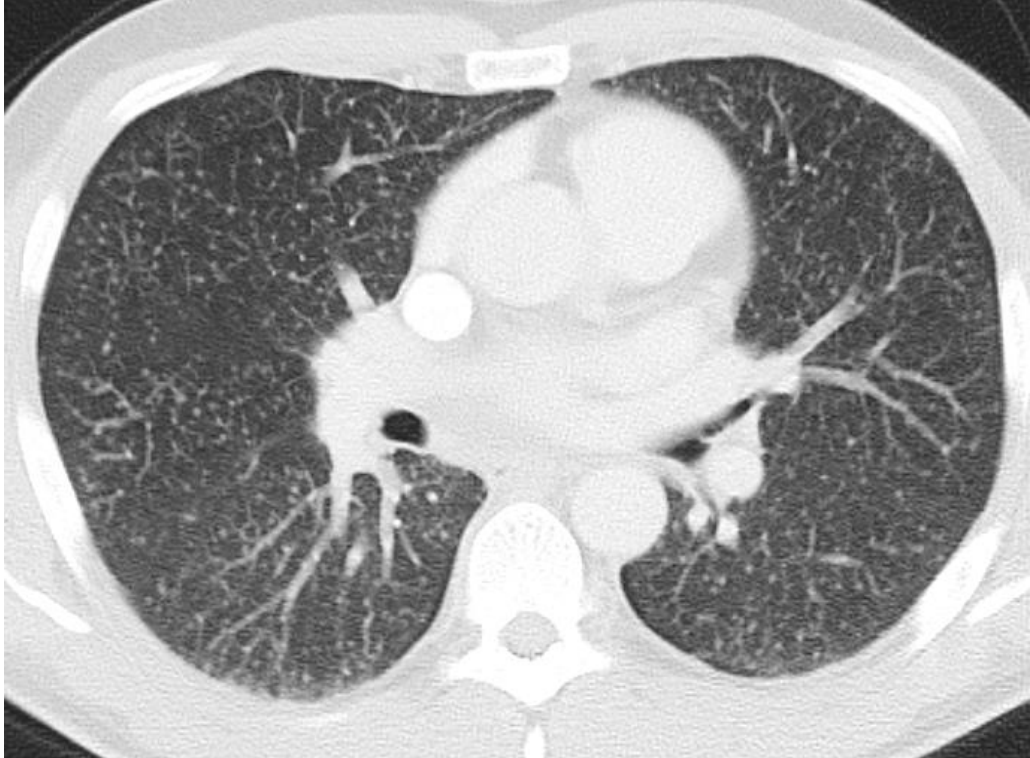
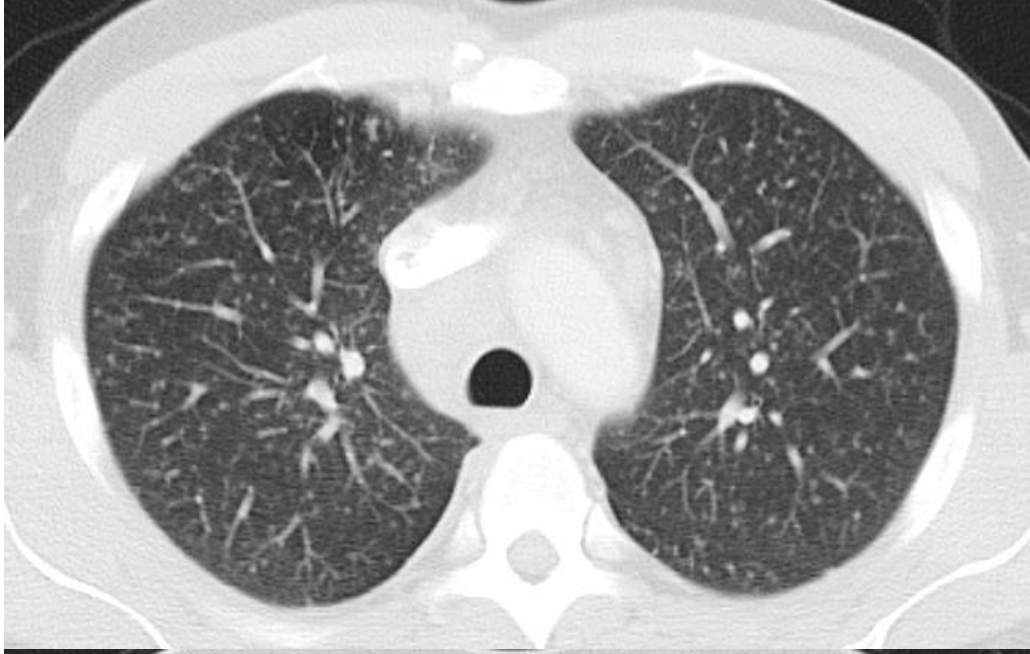
Termofilik bakteri, fungus, mikobakteri, hayvan proteinleri, küçük moleküler ağırlıklı kimyasal bileşimler

- Patoloji:

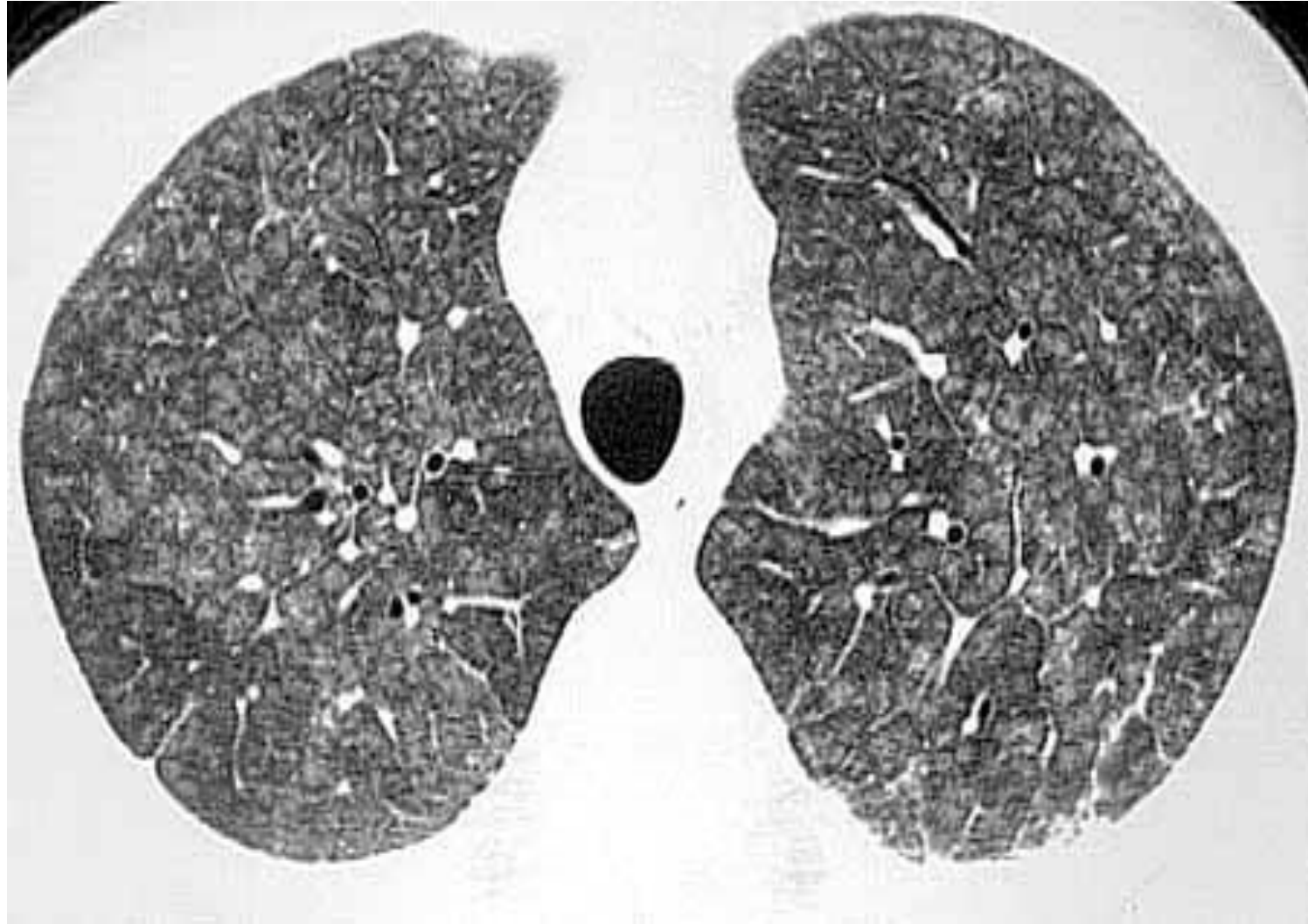
- Akut HP: Diffüz alveoler hasar ve inflamatuvar hücreler

- Subakut HP: Sellüler bronşiolit, bronkocentrik interstisyel pnömoni, nonkazeöz granülomlar

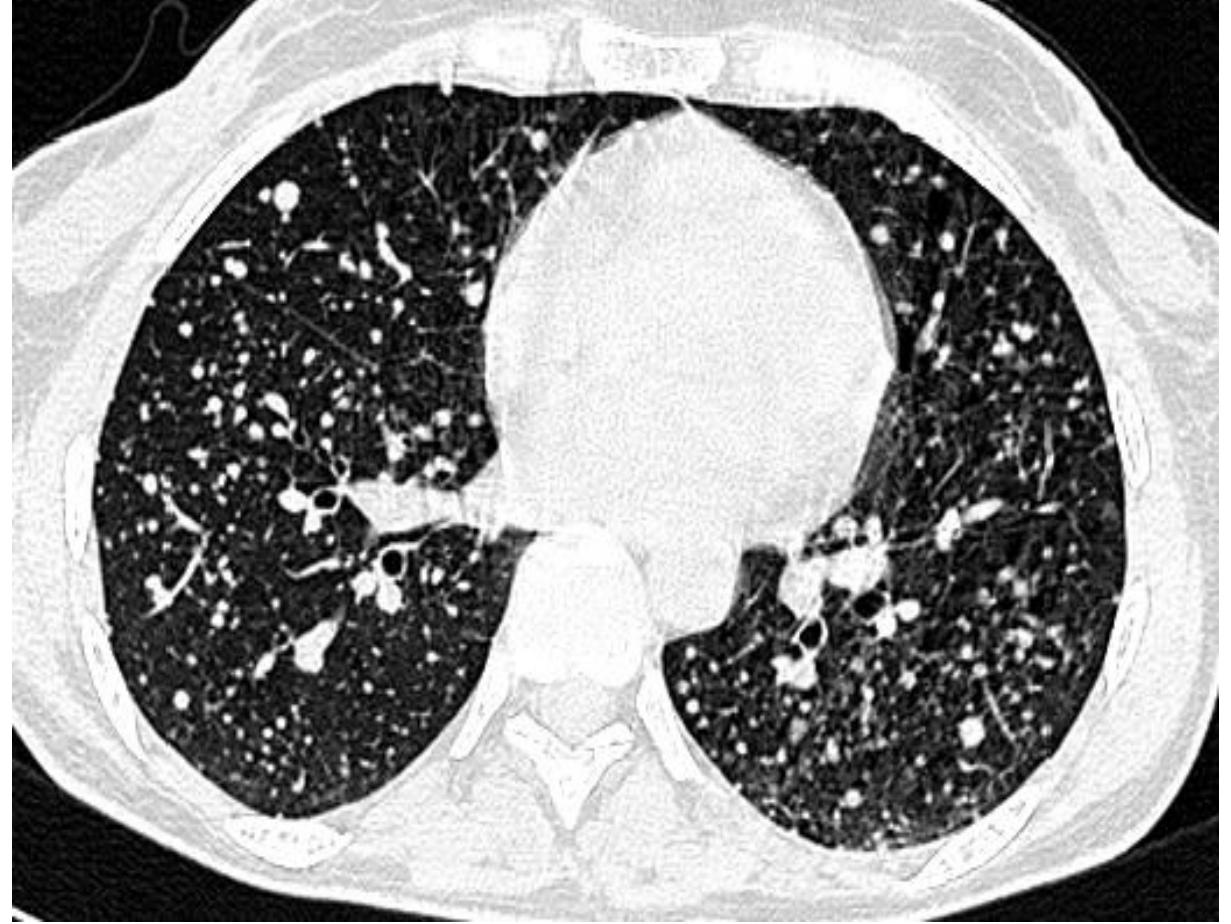
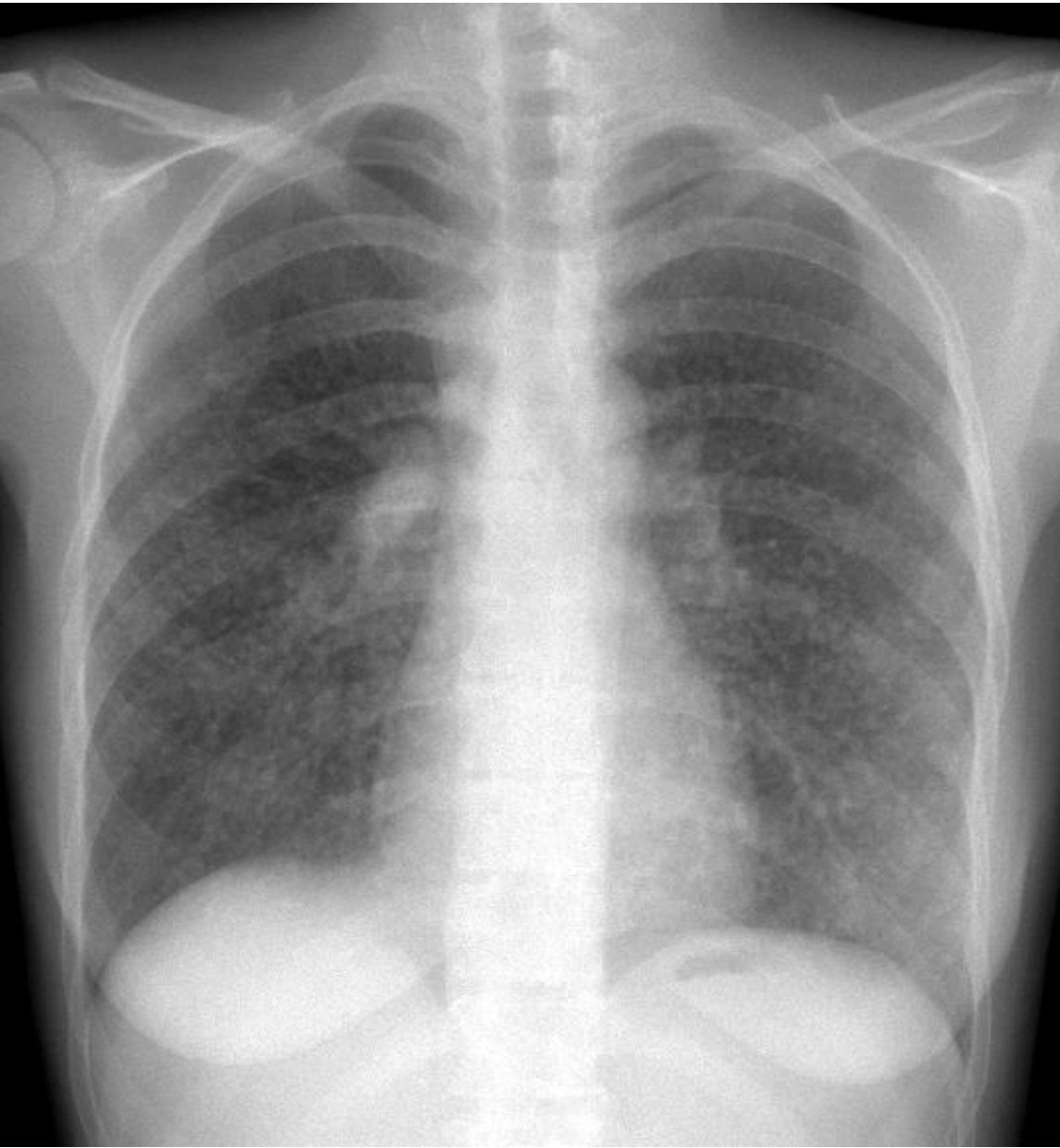
- Kronik HP: IPF benzeri fibrozis



Miliyer tüberküloz



Hipersensitivite pnömonisi



Akciğer kanseri

Olgu

- 23 Y, bayan
- Yakınması: Efor dispnesi, öksürük, çarpıntı

Öykü

- Son bir yıldır nefes darlığı olan hastanın şikayeti son bir aydır artmış
- Öksürük ve çarpıntı şikayetleri olmuş
- Sigara öyküsü yok

FİZİK MUAYENE

- Genel durumu iyi, koopere, oriyante
- TA:120/70 A:36.2 N:98
- Baş boyun: lenfadenopati yok
- Solunum sistemi: bazallerde raller duyuluyor
- KVS: S1-S2 normal, üfürüm yok
- Batın: normal
- Ekstremiteler: PTÖ(-)

- Hb:12.8
- Wbc:6.8
- Plt:313
- Sed:18
- CRP:15
- BFT: N
- KCFT: N

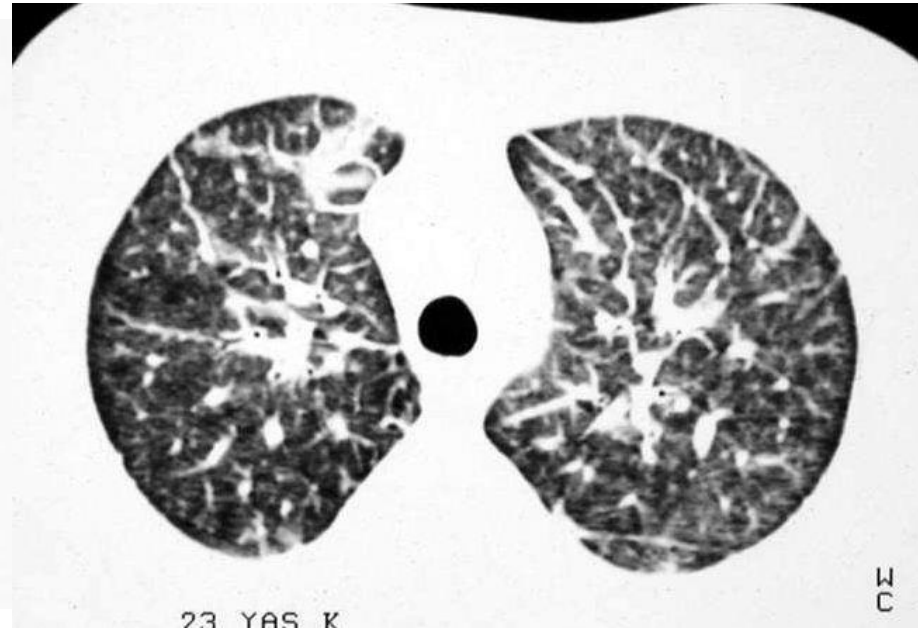
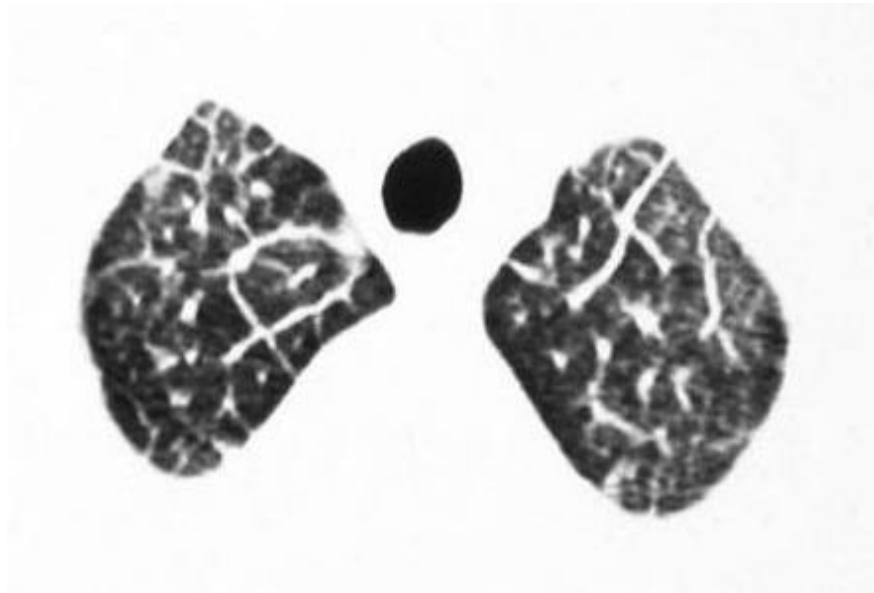
- **Solunum fonksiyon testi**

FEV1:%99

FVC:%99

FEV1/FVC:%100





23 YAS K

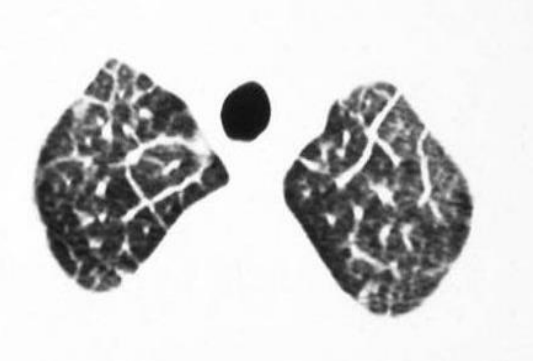


DEC-05 23 YAS K



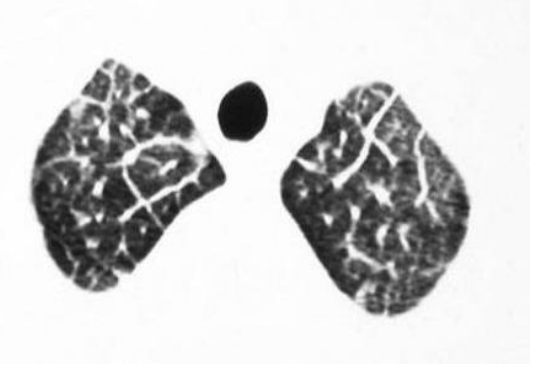
30-DEC-05 23 YAS K

W 1082
C -664



Tanı için hangisini en ön planda düşünürsünüz?

- a) Akut eozinofilik pnömoni
- b) ARDS
- c) Viral enfeksiyon
- d) Akciğer ödemi
- e) Lenfanjitik metastaz



Tanı için hangisini en ön planda düşünürsünüz?

- a) Akut eozinofilik pnömoni
- b) ARDS
- c) Viral enfeksiyon
- d) Akciğer ödemi**
- e) Lenfanjitik metastaz

- Mitral darlık ve akciğer ödemi

