

# Interpretación básica de la TC del pulmón

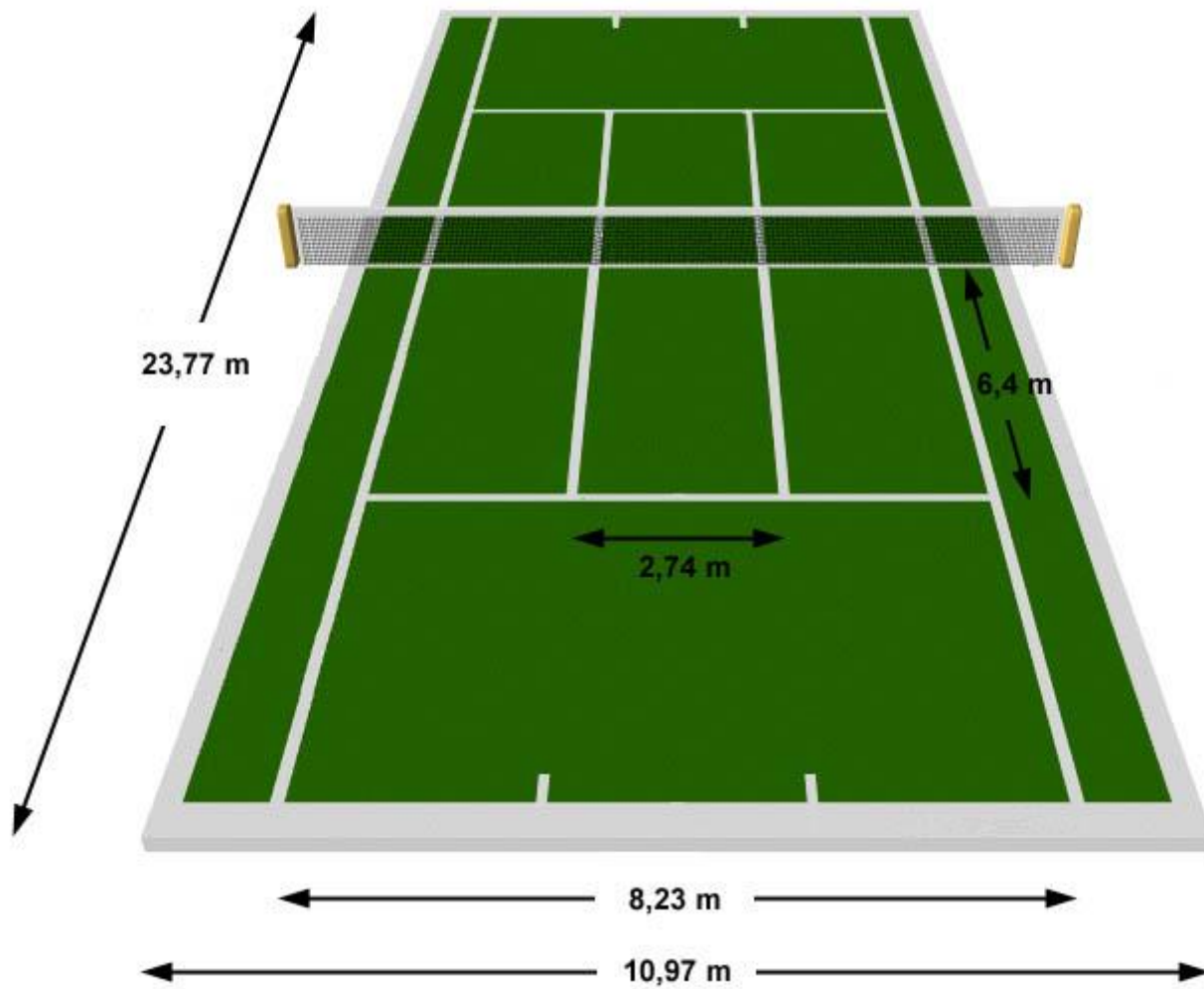
Un abordaje desde los patrones pulmonares

Julio 2020

# **PARTE 1**

**ANATOMÍA BÁSICA  
INTERPRETACIÓN TC  
PATRONES HIPERDENSOS**

# ANATOMÍA BÁSICA



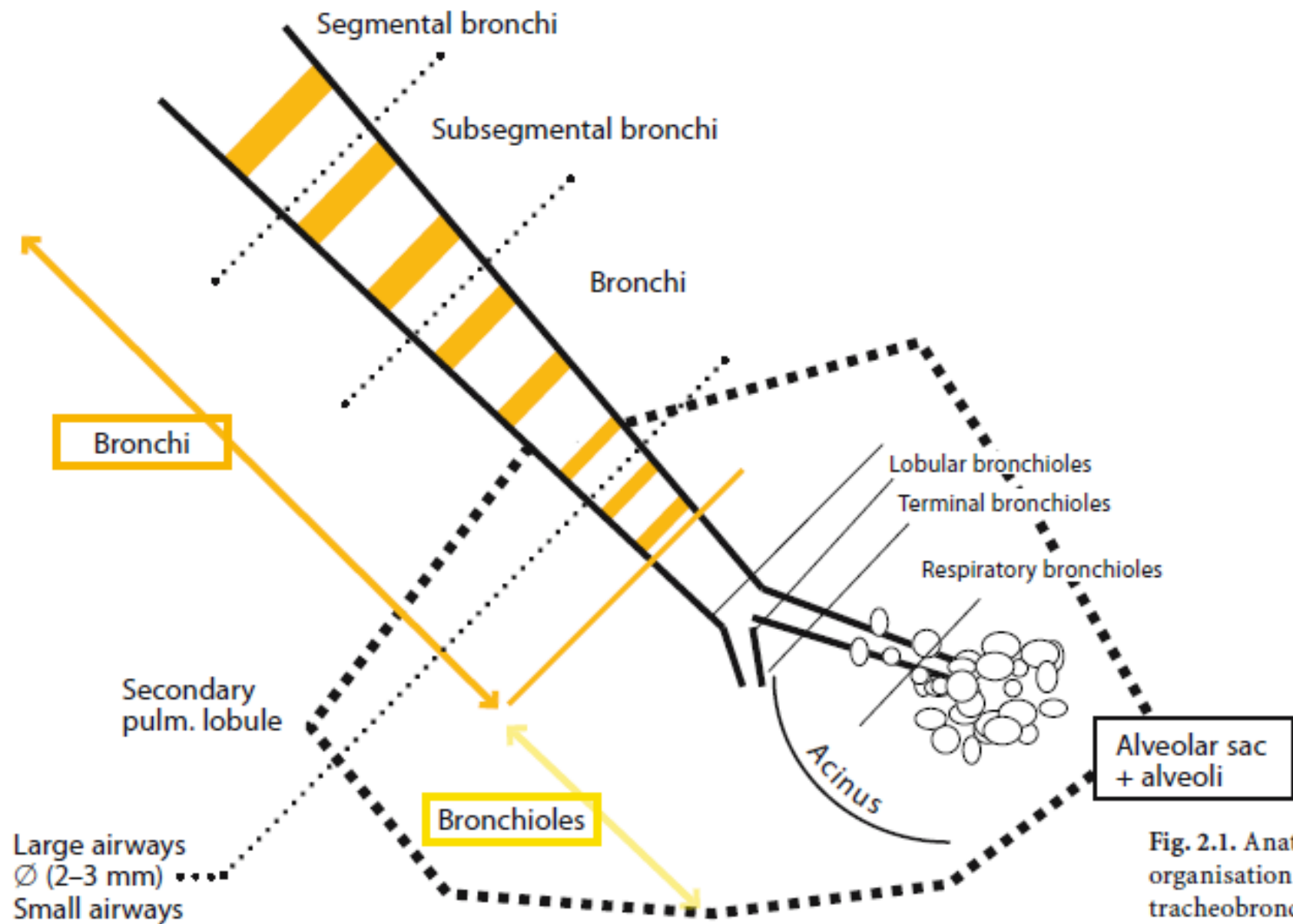
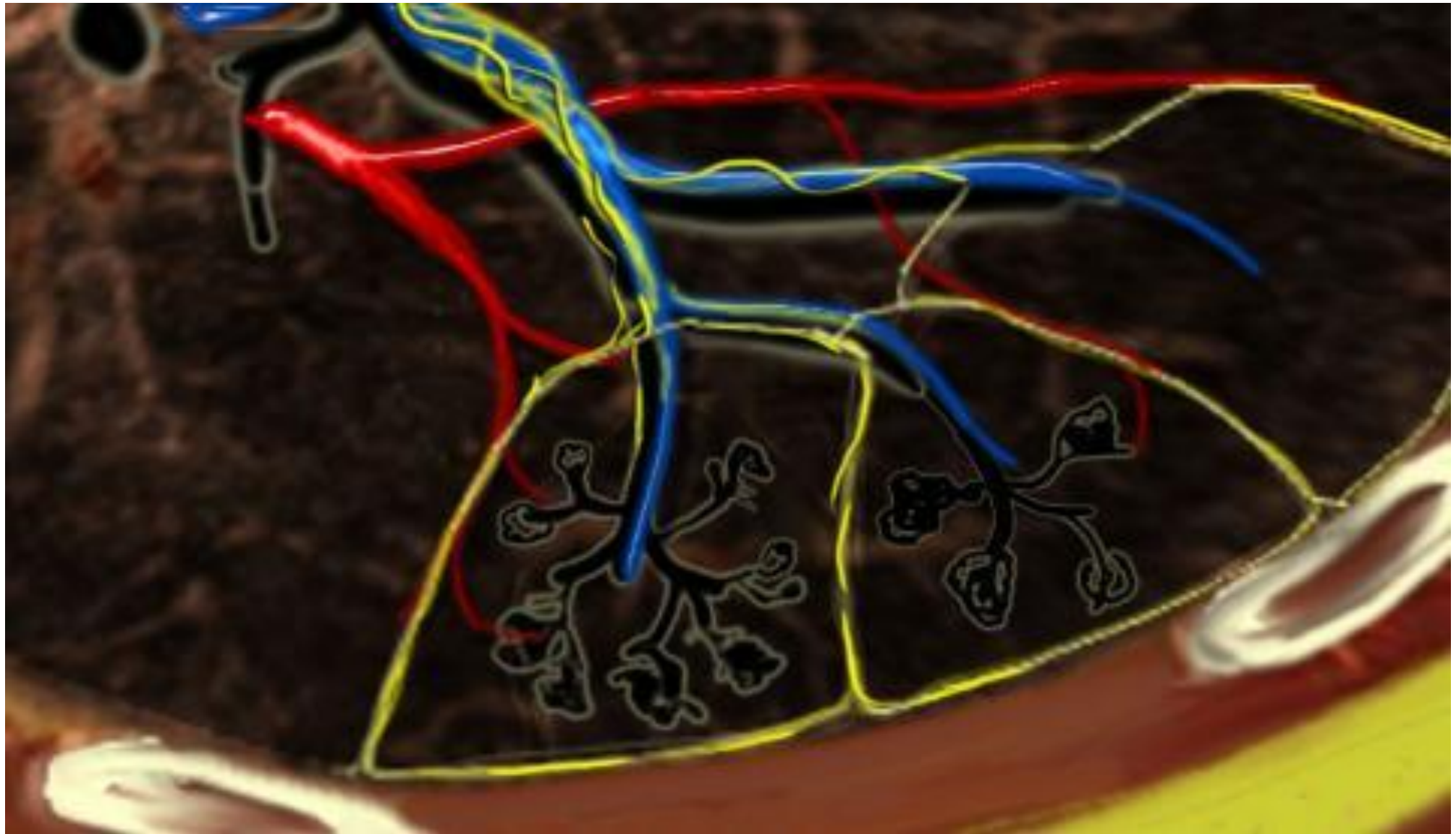
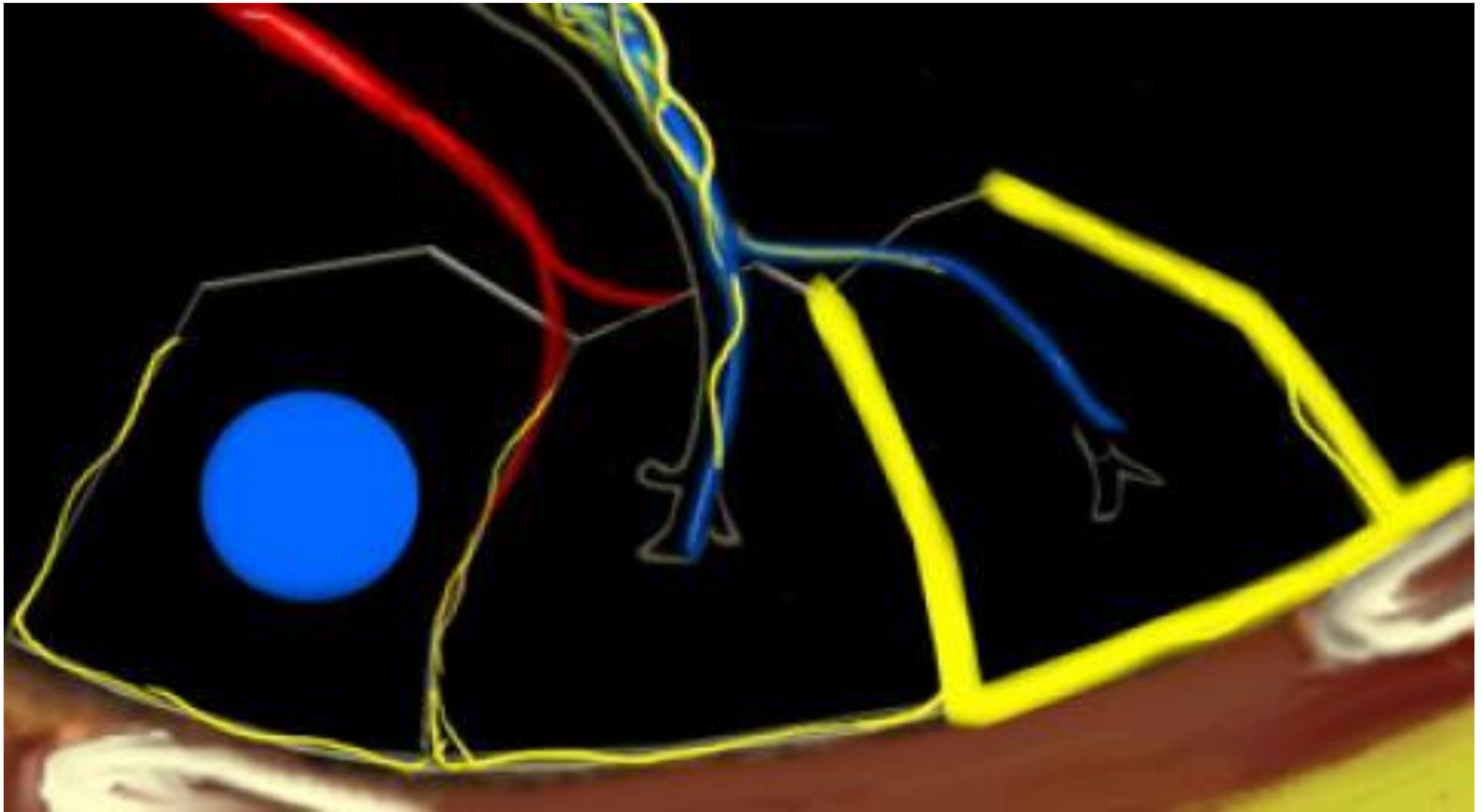


Fig. 2.1. Anatomic organisation of the tracheobronchial tree







Structure	Generation	Diameter (mm)
Trachea	0	25
Main bronchi	1	11–19
Lobar bronchi	2–3	4–13
Segmental bronchi	3–6	4–7
Subsegmental bronchi	4–7	3–6
Bronchi	6–8	1.5–3
Terminal bronchi		1
Bronchioles	9–15	0.8–1
Lobular bronchioles		0.8
Terminal bronchioles	15–16	0.6–0.7
Respiratory bronchioles	17–19	0.4–0.5
Alveolar ducts and sacs	20–23	0.4
Alveoli		0.2–0.3



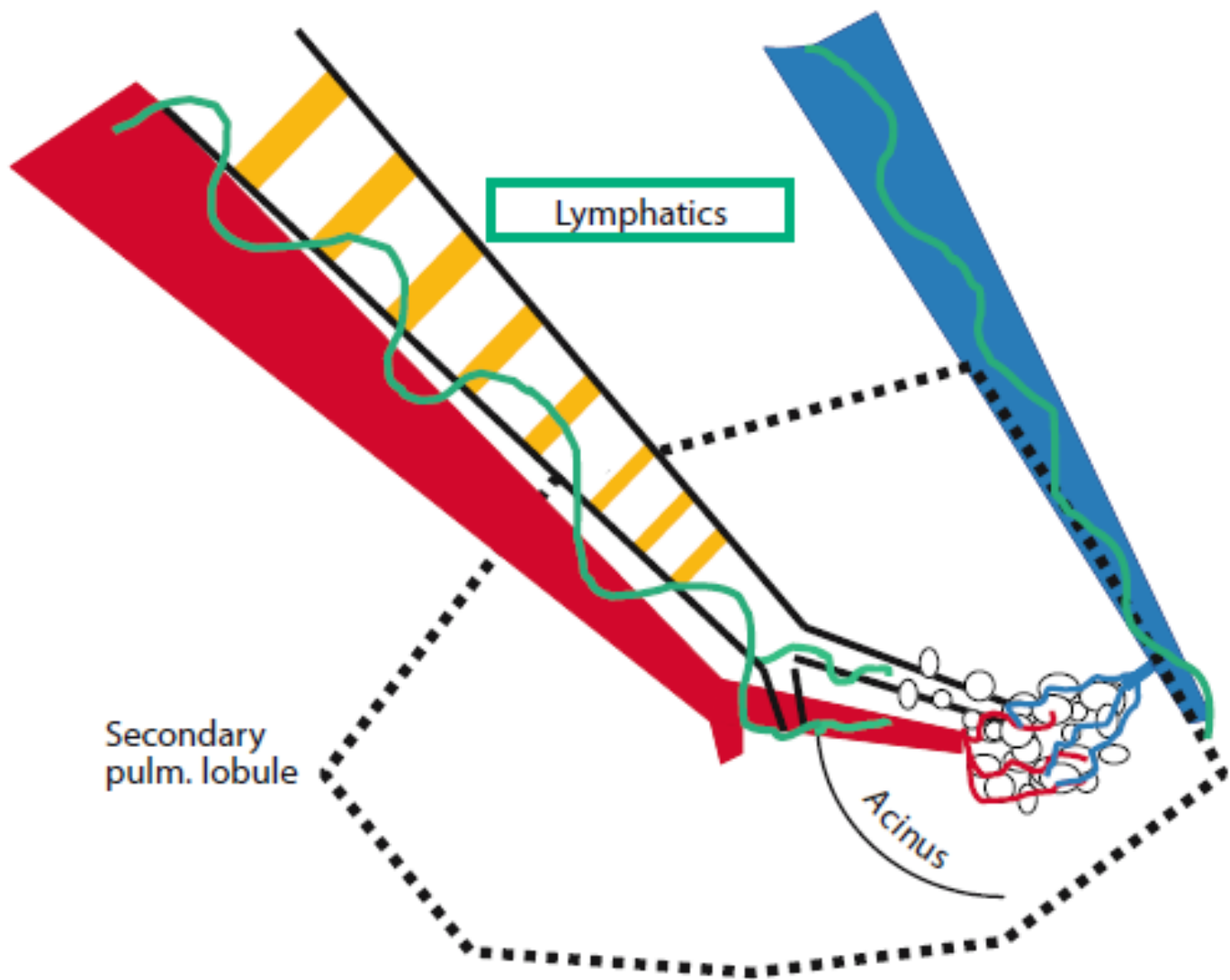
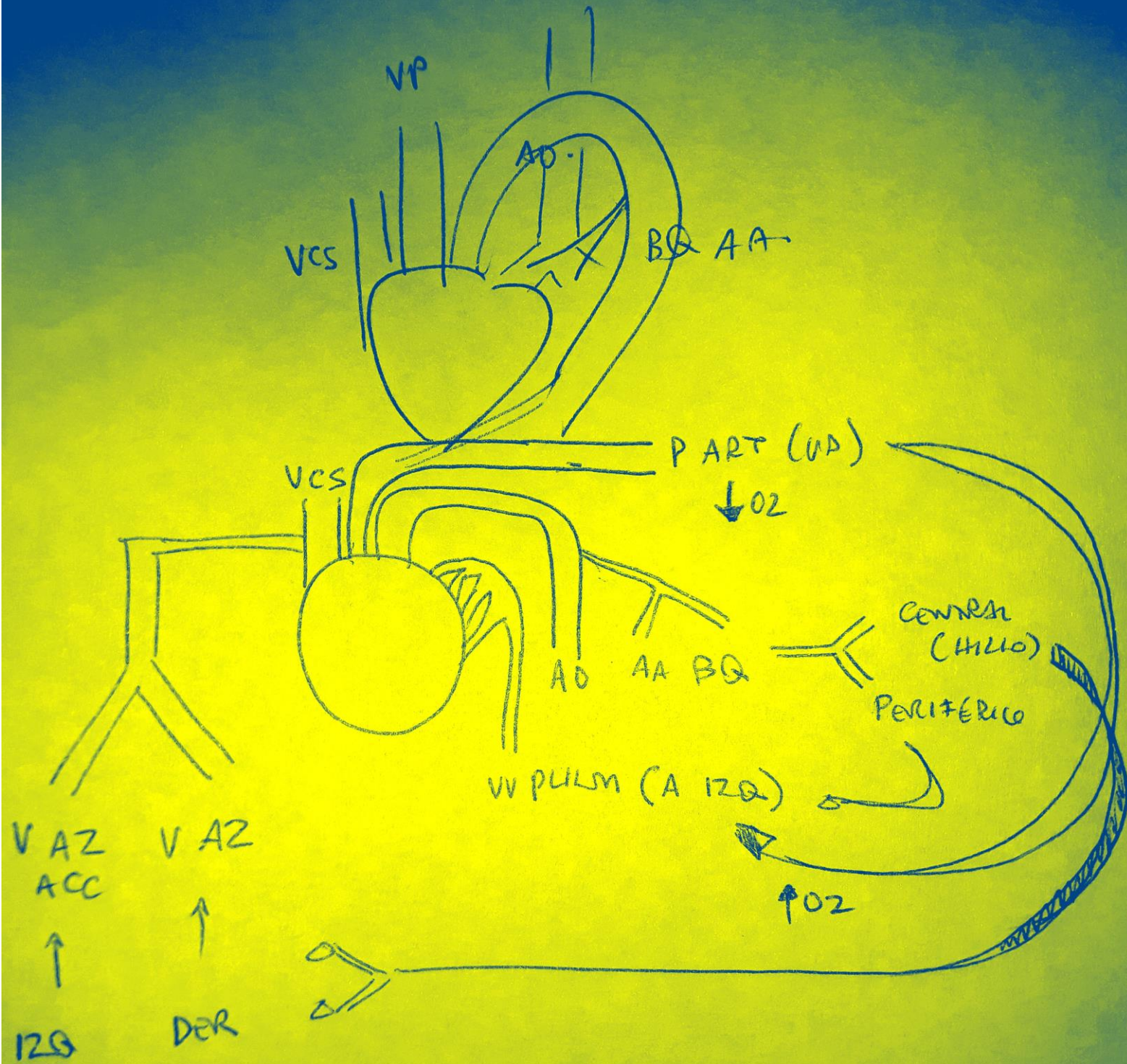


Fig. 2.3. Anatomic organisation of the lymphatics



# INTERSTICIO PULMONAR

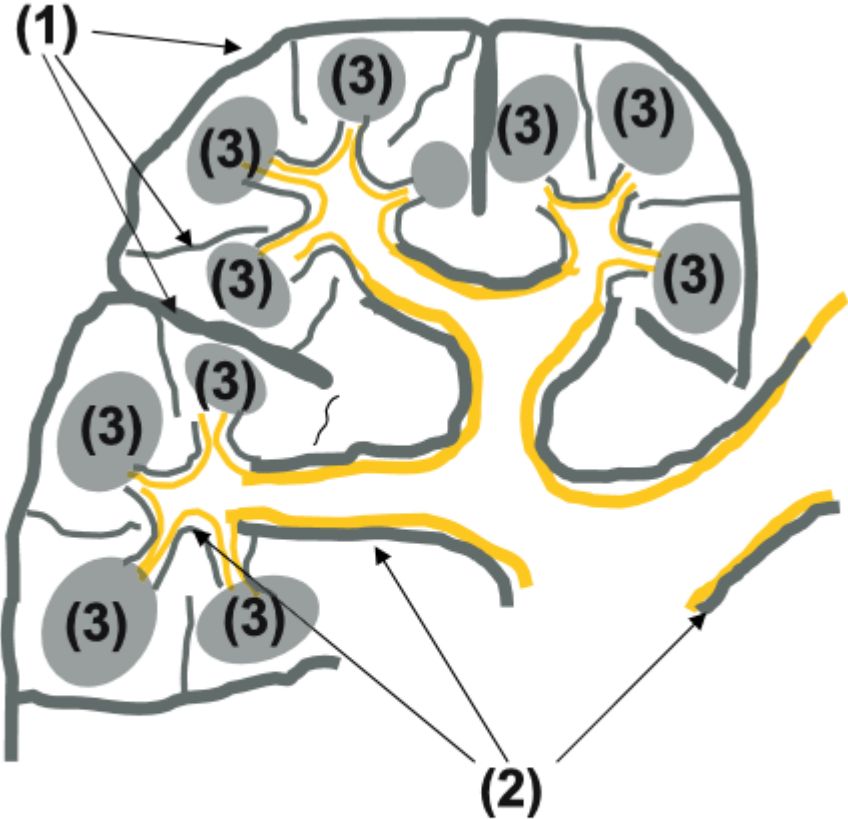
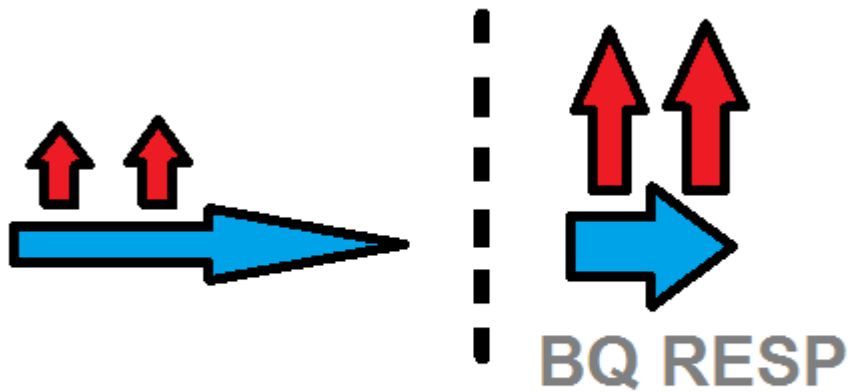


Fig. 2.5. The pulmonary interstitium can be divided into three component parts that communicate freely: (1) the peripheral connective tissue; (2) the axial connective tissue; (3) the parenchymatous connective tissue

# INTERPRETACIÓN TOMOGRÁFICA





**BERNOULLI**

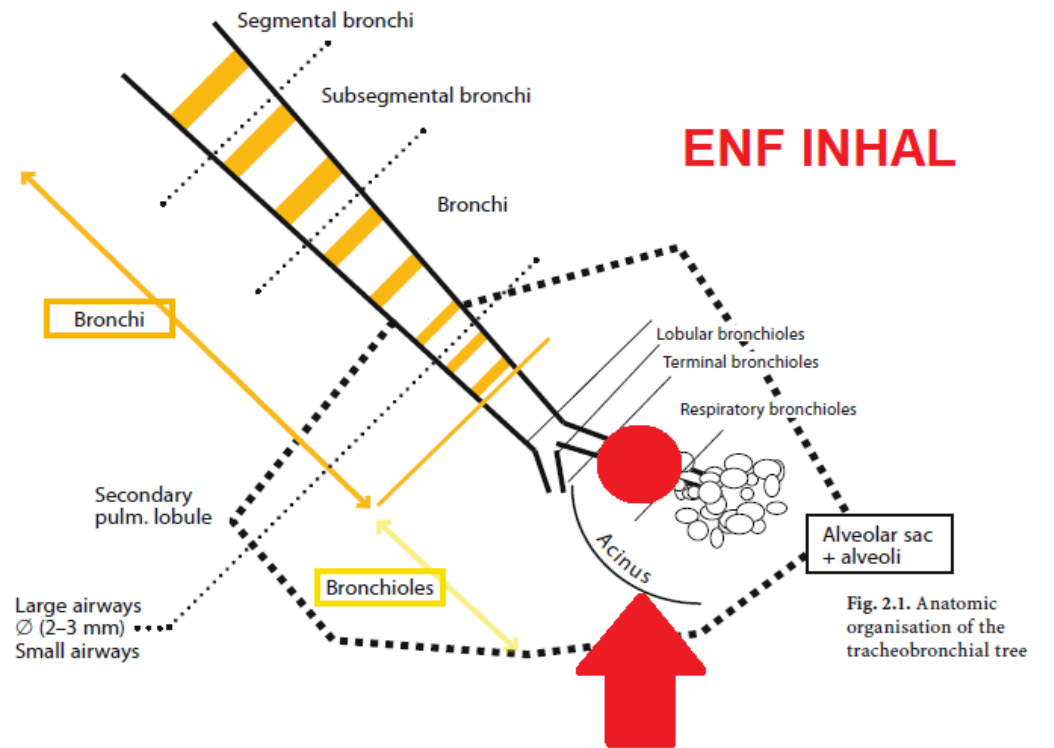


Fig. 2.1. Anatomic organisation of the tracheobronchial tree

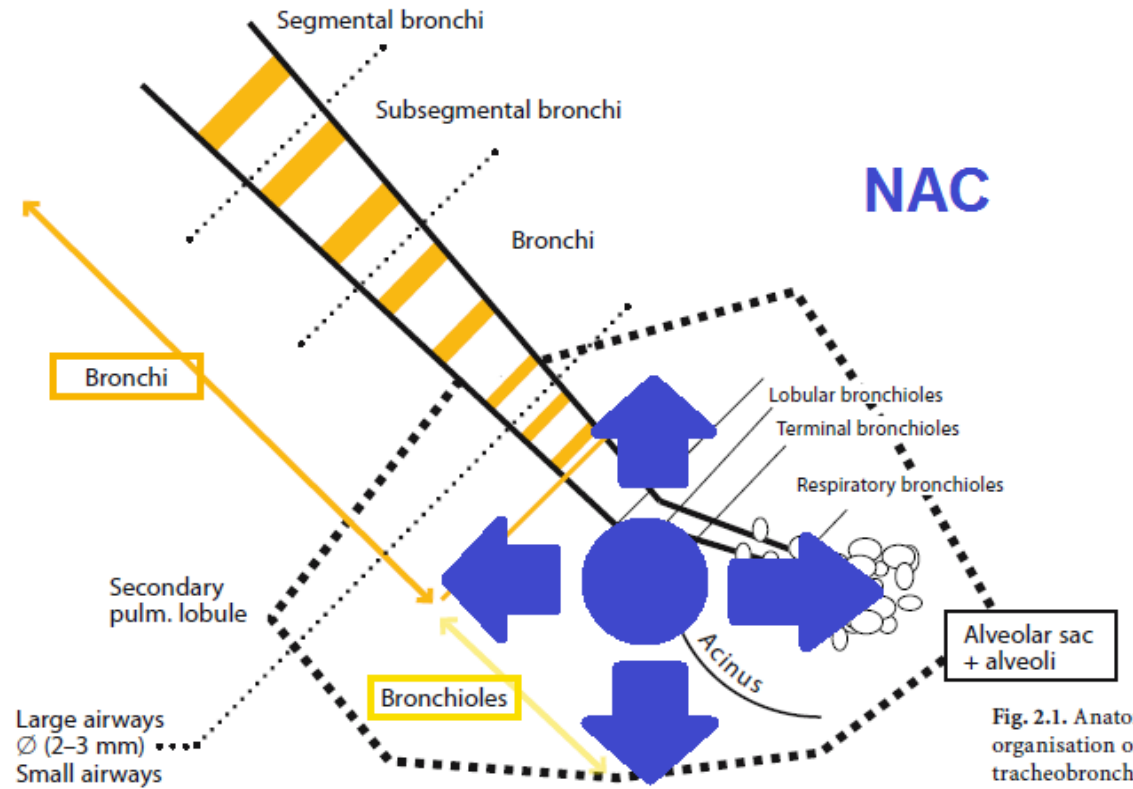
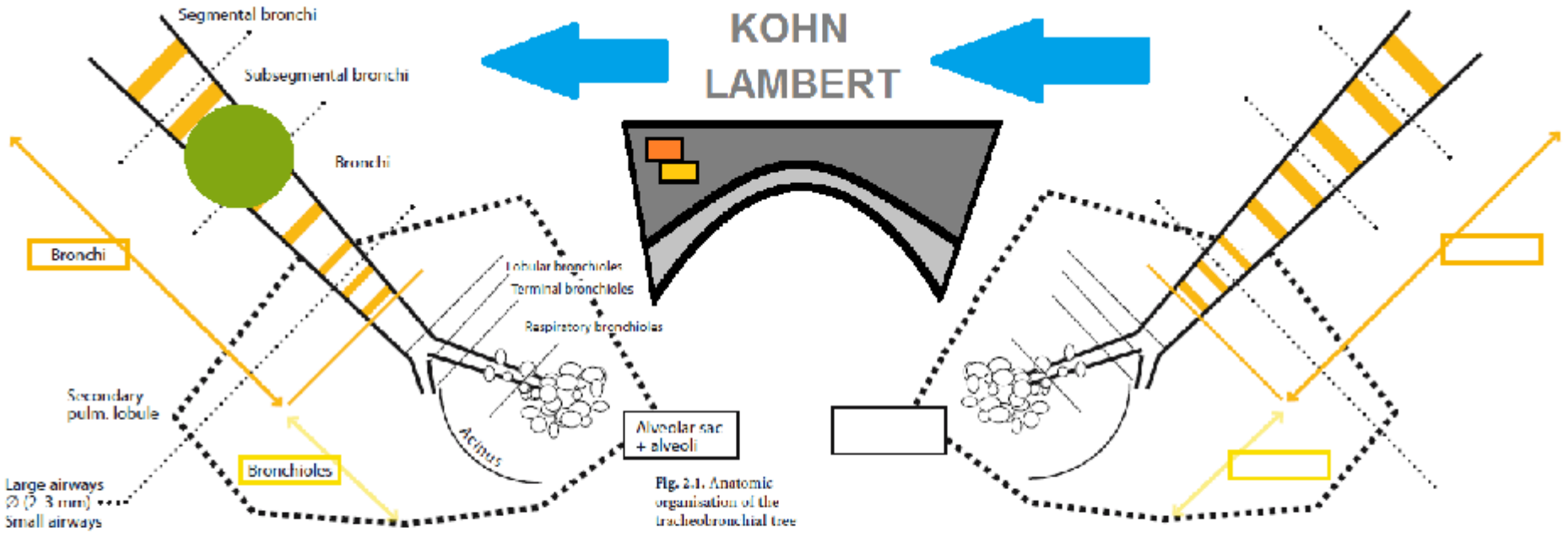


Fig. 2.1. Anatomic organisation of the tracheobronchial tree



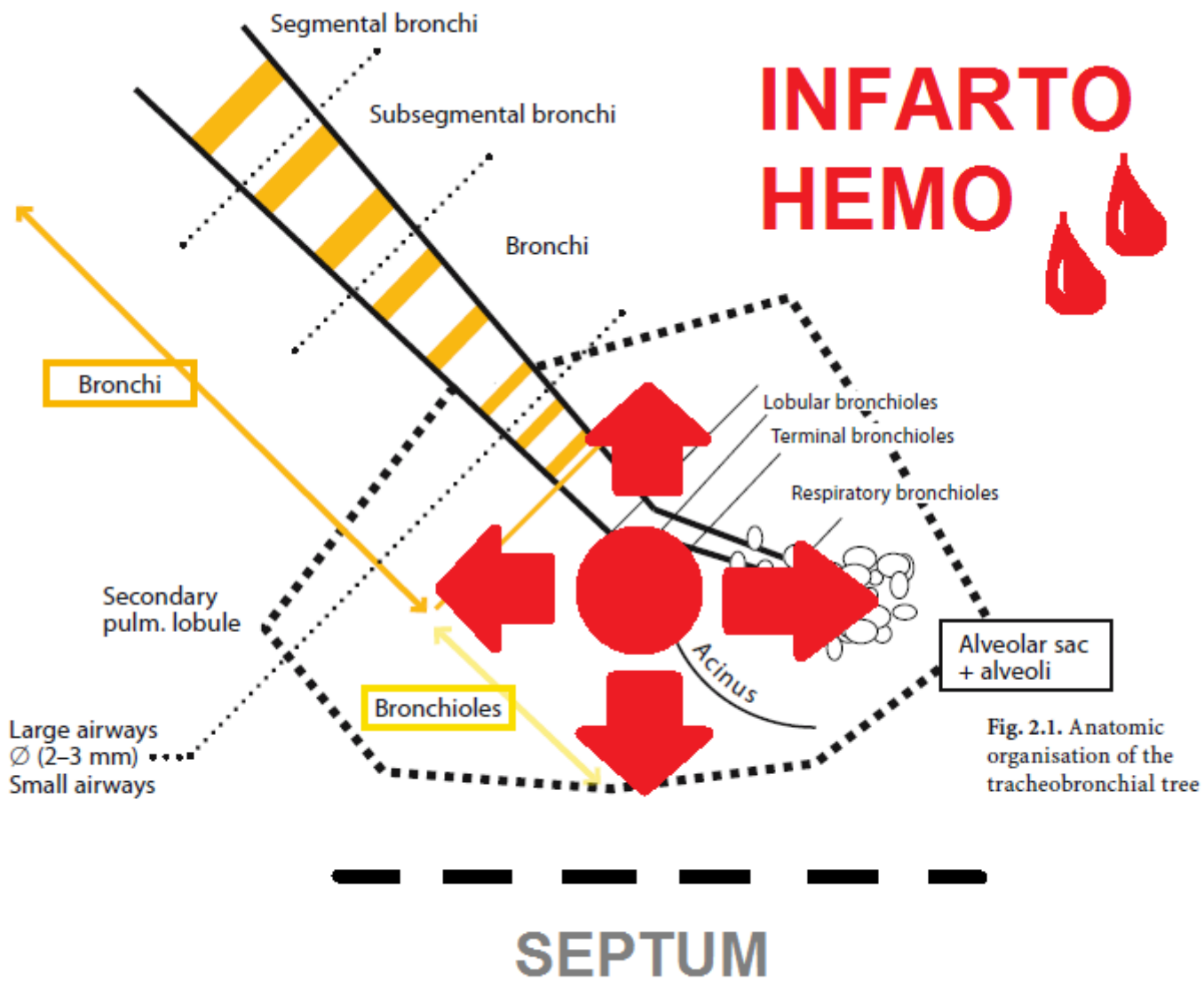
↓ O<sub>2</sub>

**ATELECTASIA**

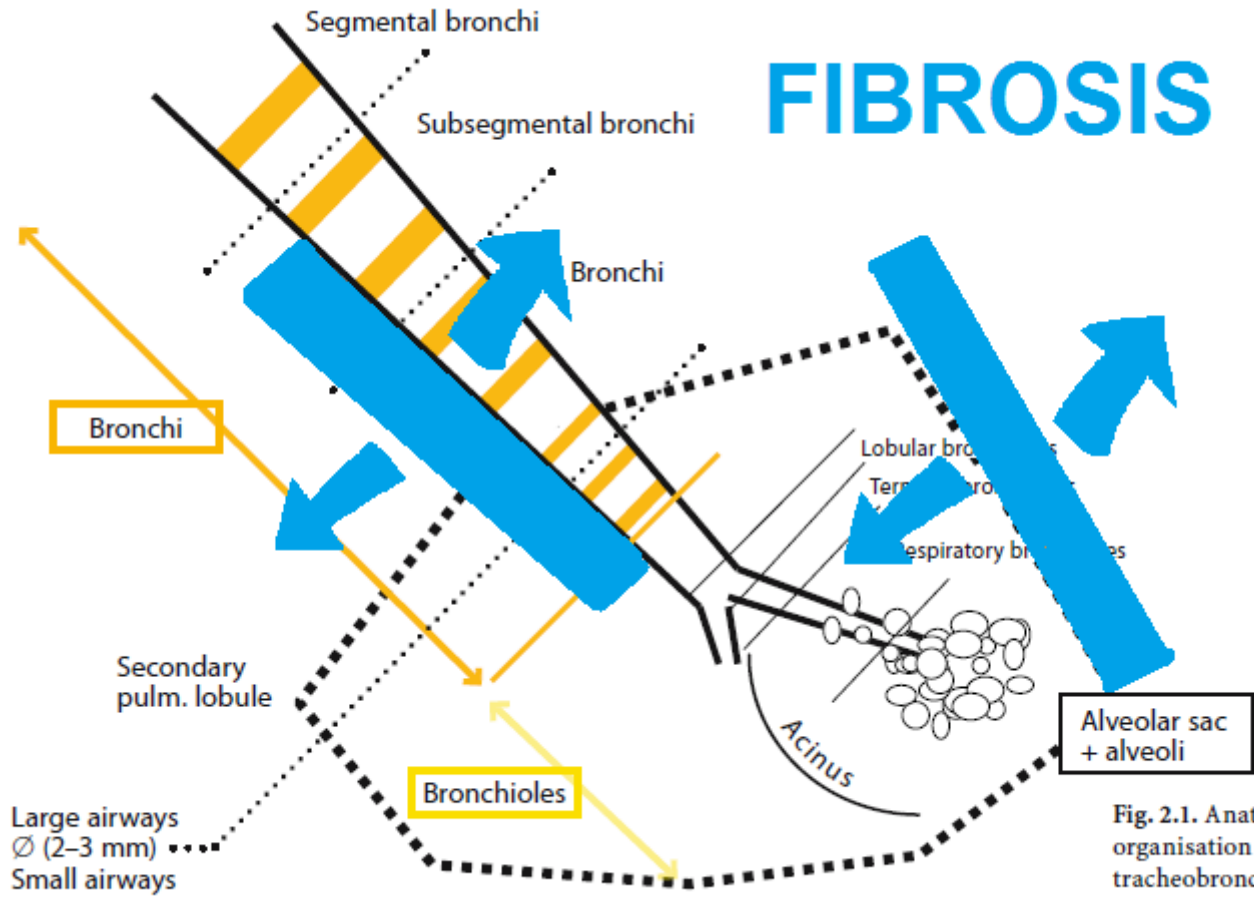
$$K = A - A$$

$$L = BQL - A$$





# FIBROSIS



# Normal lung on CT

CT presentation

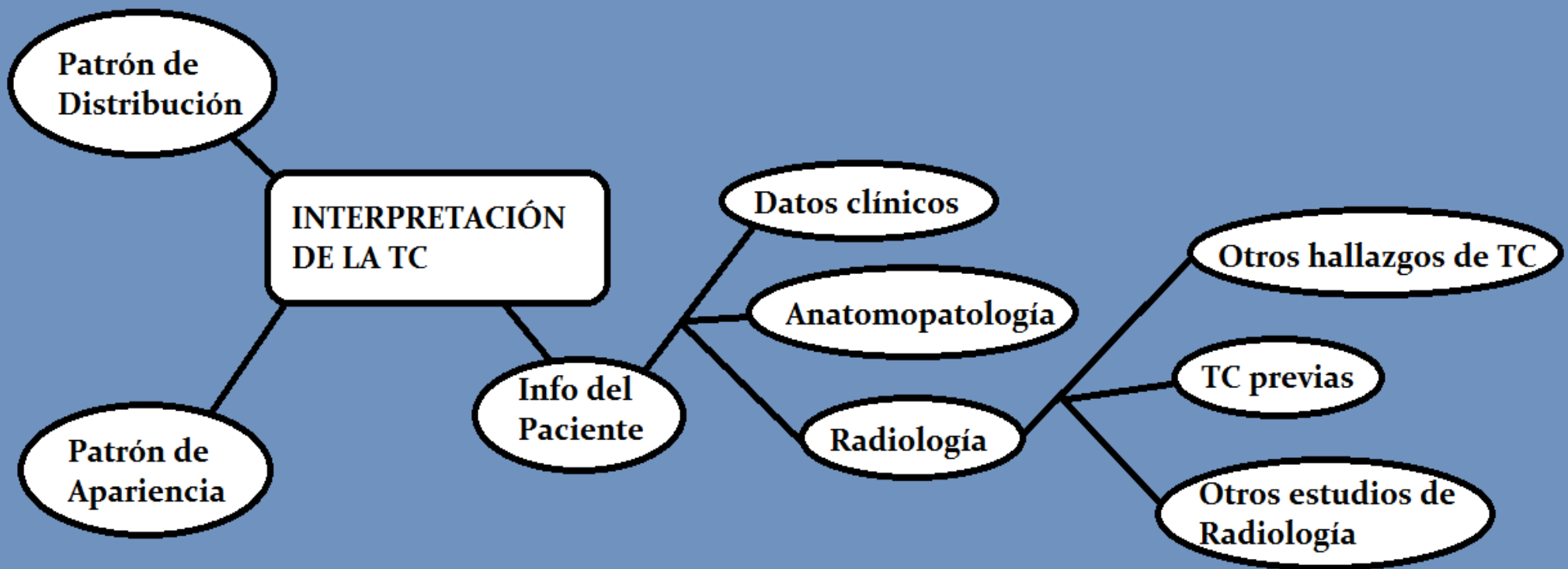


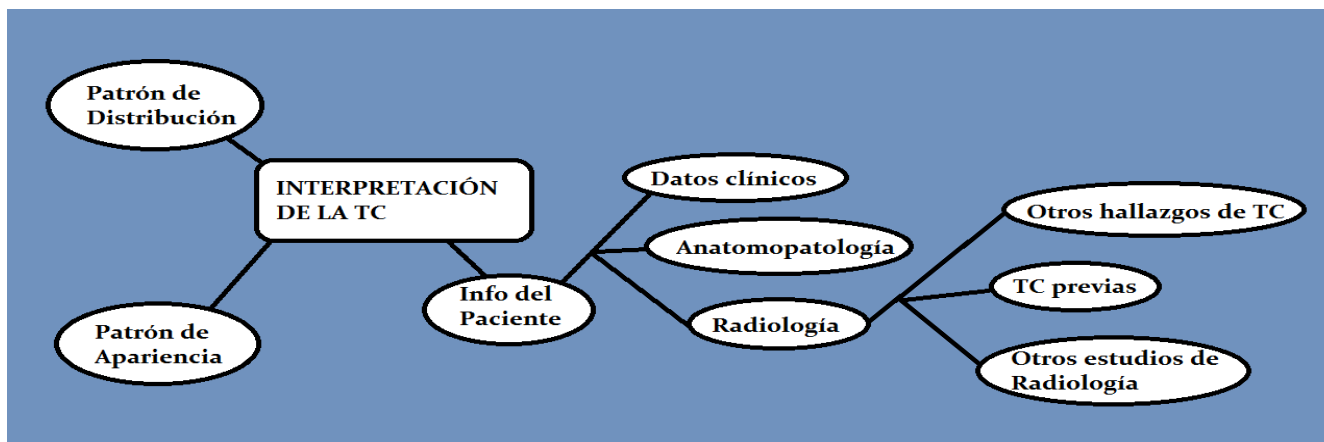
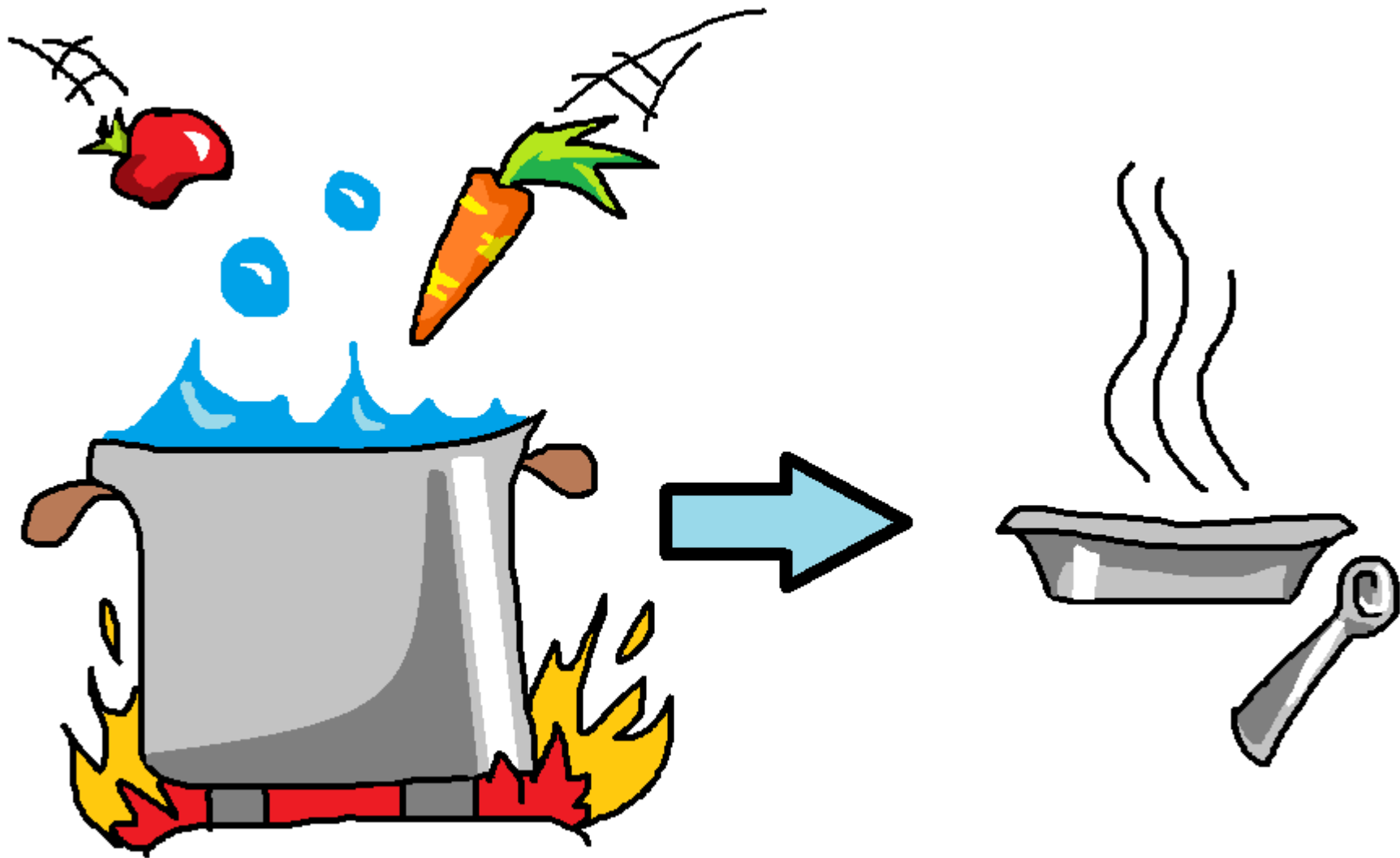
Lung tissue and (capillary) blood

Large blood vessel

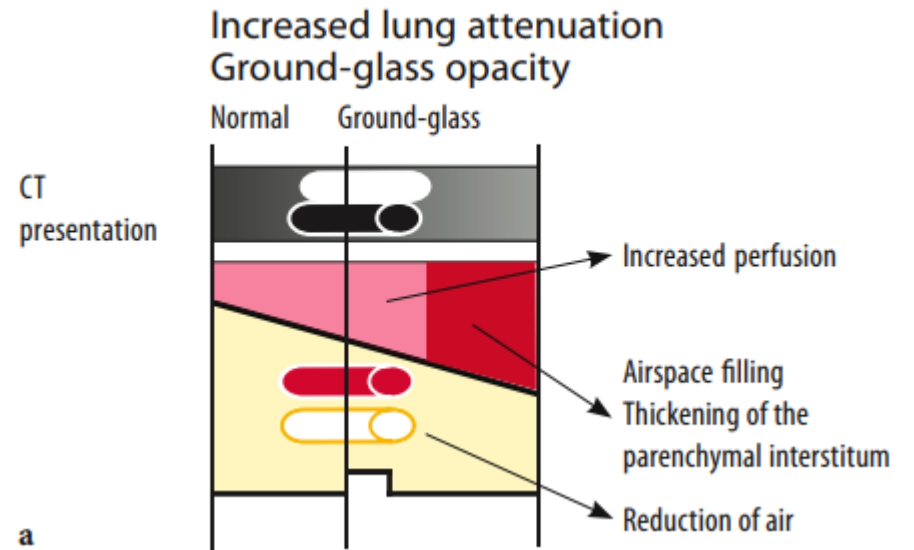
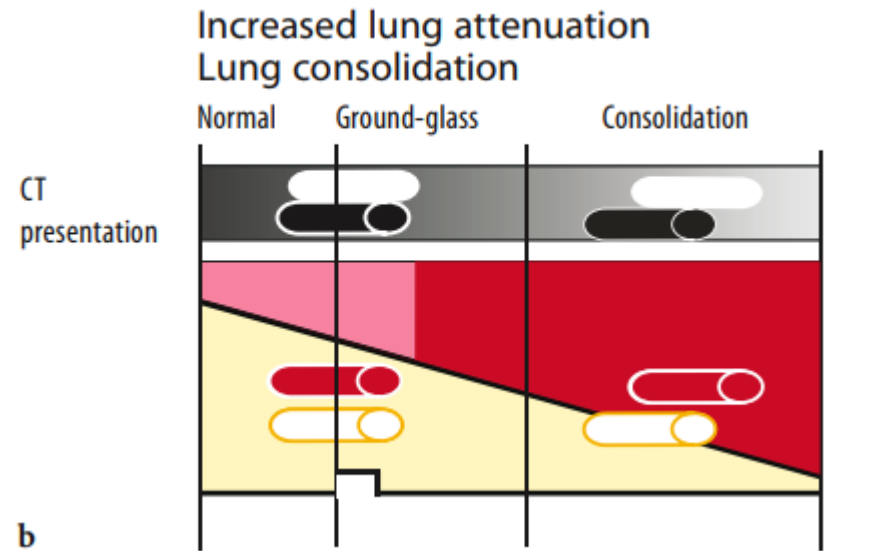
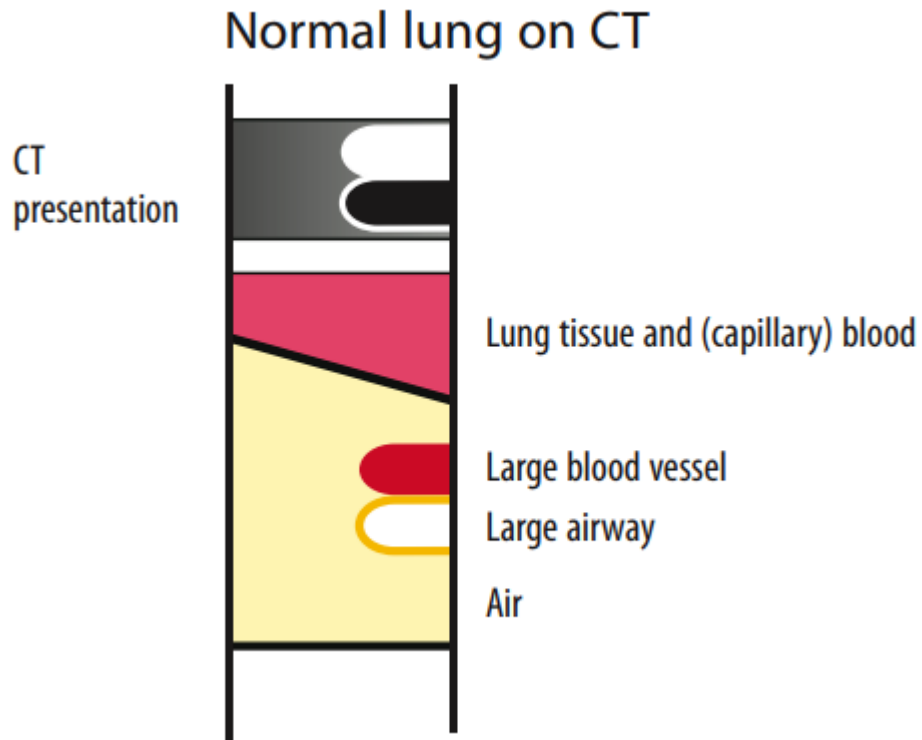
Large airway

Air

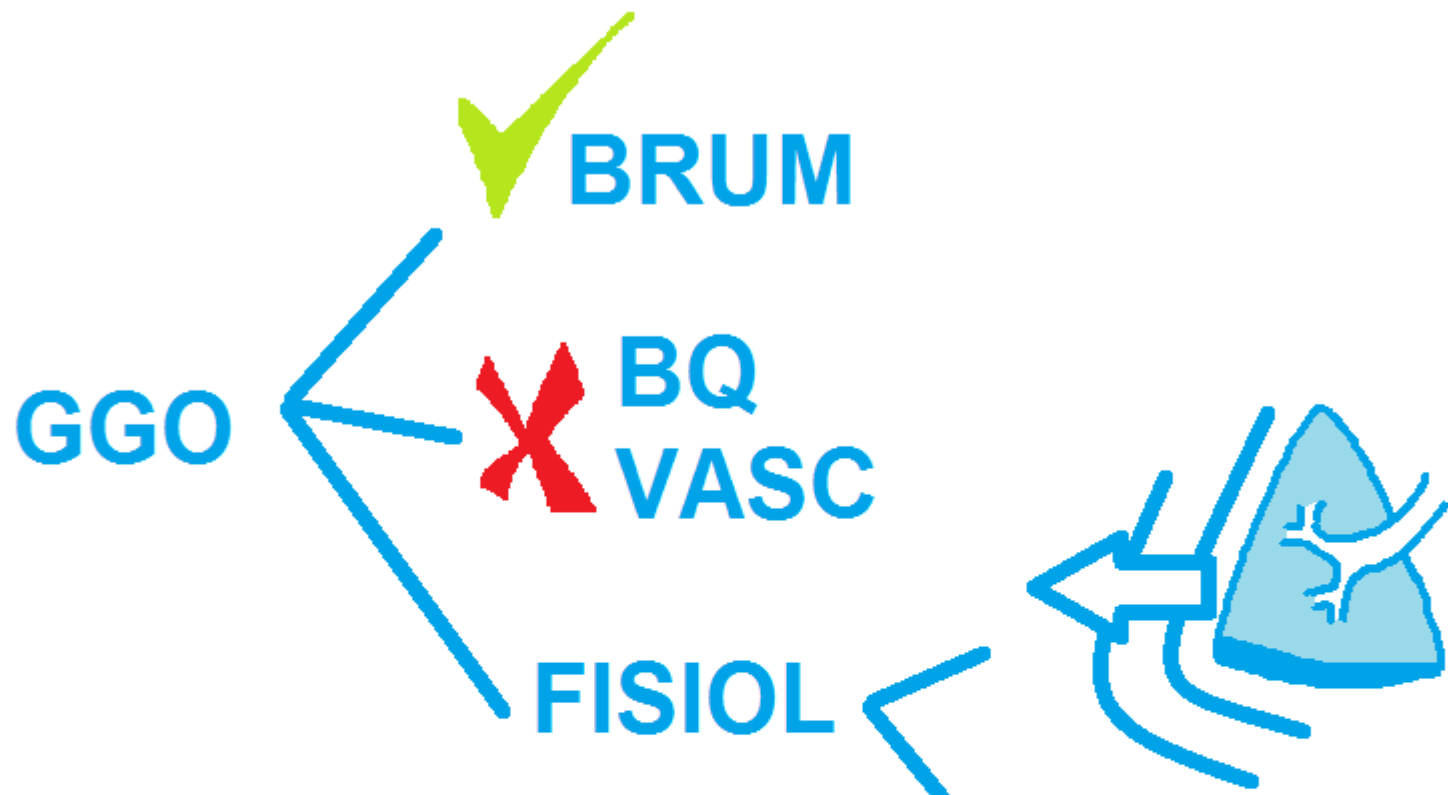




# PATRONES HIPERDENSOS



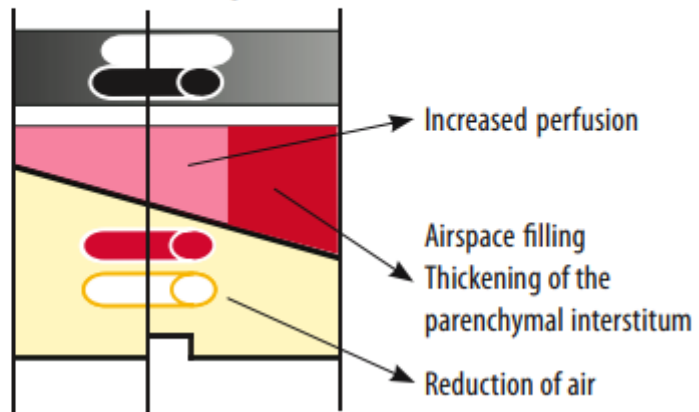




Increased lung attenuation  
Ground-glass opacity

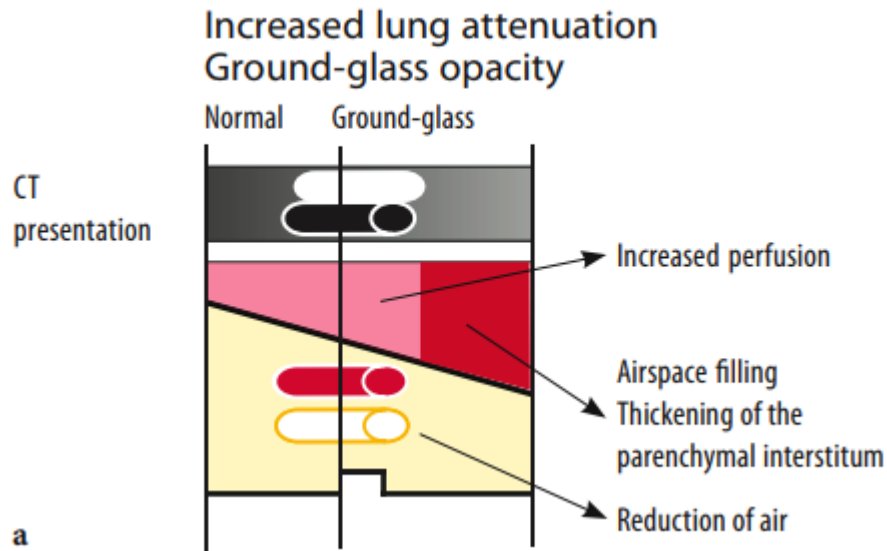
Normal    Ground-glass

CT  
presentation



**a**

# Vidrio esmerilado



## Acute course of disease

- Pulmonary infection (bacterial, viral, pneumocystis jiroveci pneumonia, mycoplasma pneumonia)
- Pulmonary oedema
- Pulmonary haemorrhage
- Adult (acute) respiratory distress syndrome [ARDS]
- Acute interstitial pneumonia [AIP]

- Eosinophilic pneumonia (acute)
- Radiation pneumonitis (acute)

## Subacute/chronic course of disease

- Hypersensitivity pneumonitis
- Smoking related parenchymal lung disease, respiratory bronchiolitis (Respiratory bronchiolitis - interstitial lung disease [RB-ILD], Desquamative interstitial pneumonia [DIP])

- Usual interstitial pneumonia [UIP]: idiopathic pulmonary fibrosis [IPF] and disease associated UIP
- Nonspecific interstitial pneumonia (NSIP)
- Alveolar proteinosis
- Lymphocytic interstitial pneumonia [LIP] (Sjögren syndrome, AIDS)

## Asbestosis

- Vasculitis (Churg-Strauss syndrome)
- Eosinophilic pneumonia (chronic)
- Organising pneumonia

## Bronchioloalveolar carcinoma

## Lipoid pneumonia

## Sarcoidosis

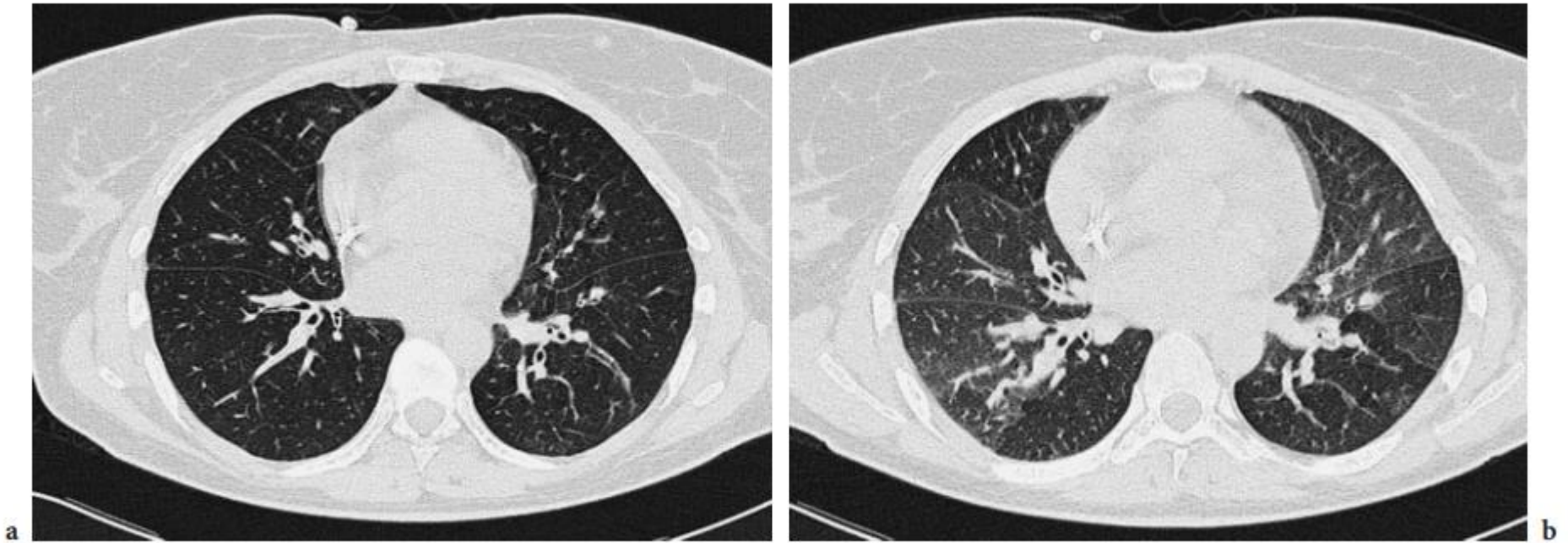
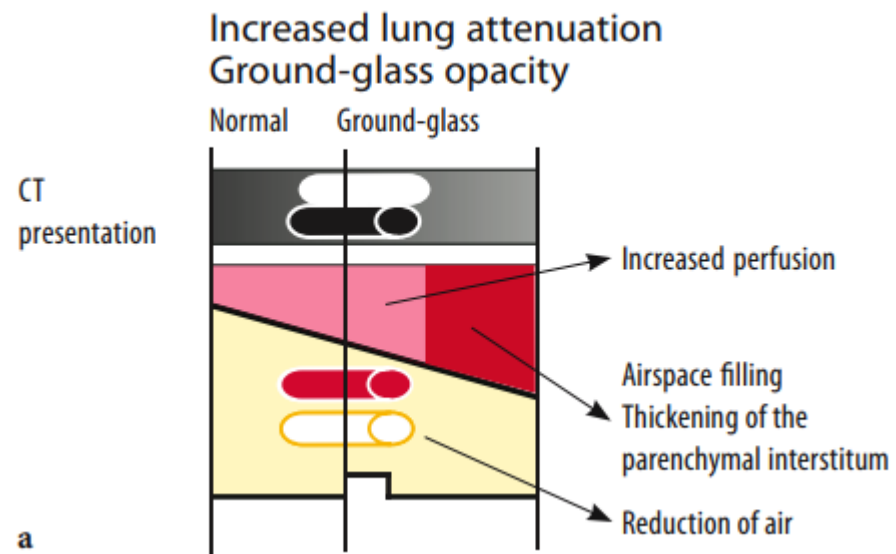


Fig. 3.6a,b. CT at end inspiration (a) and at end expiration (b). Multiple large areas of air-trapping are seen in both lungs

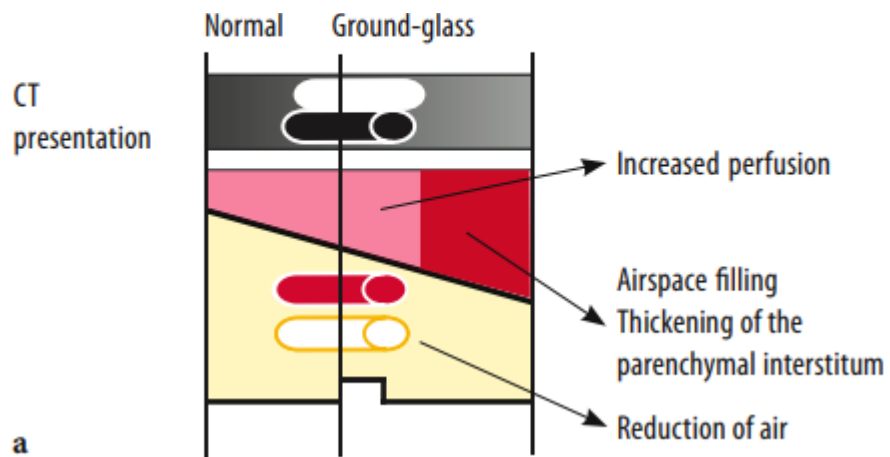


**Fig. 3.2a,b.** Thin-slice (a) and standard CT (b) of the right lung in a patient with a pulmonary infection. The patchy areas of ground-glass opacity are most pronounced in the lower lobe. Note the hazy increase in lung opacity with preservation of the bronchial and vascular markings

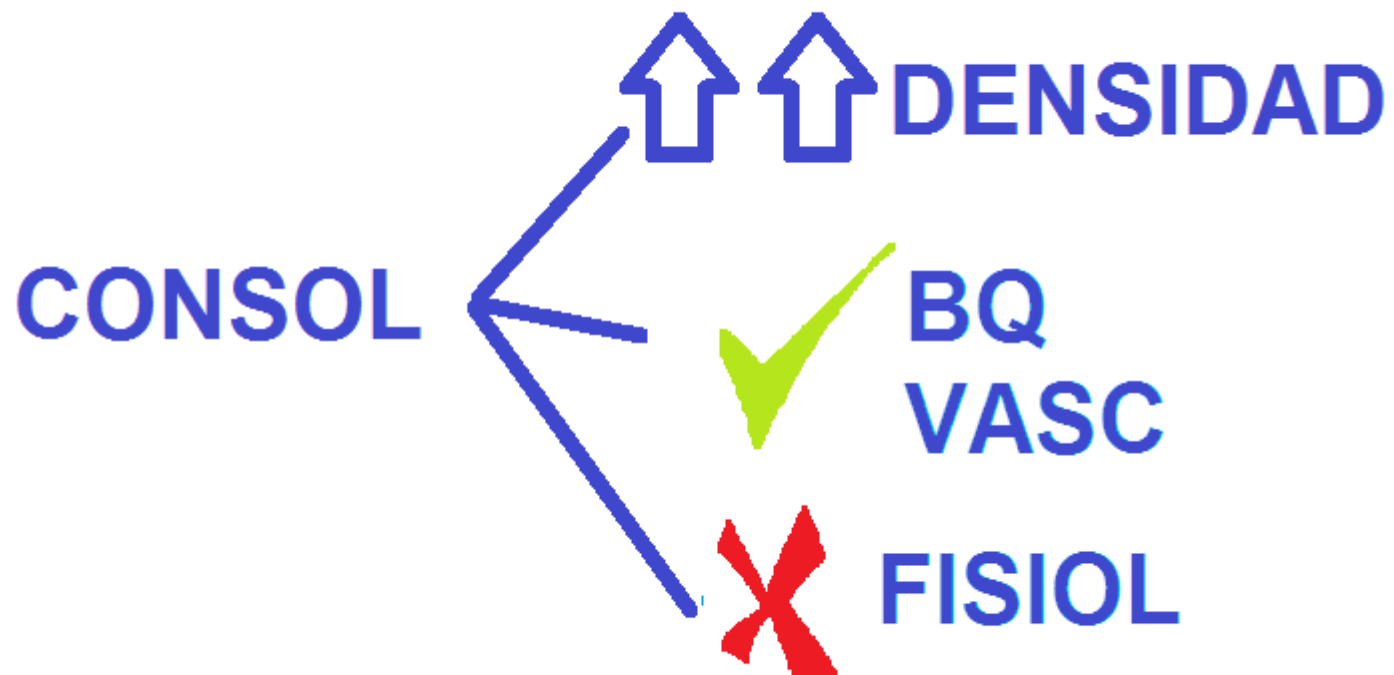


a

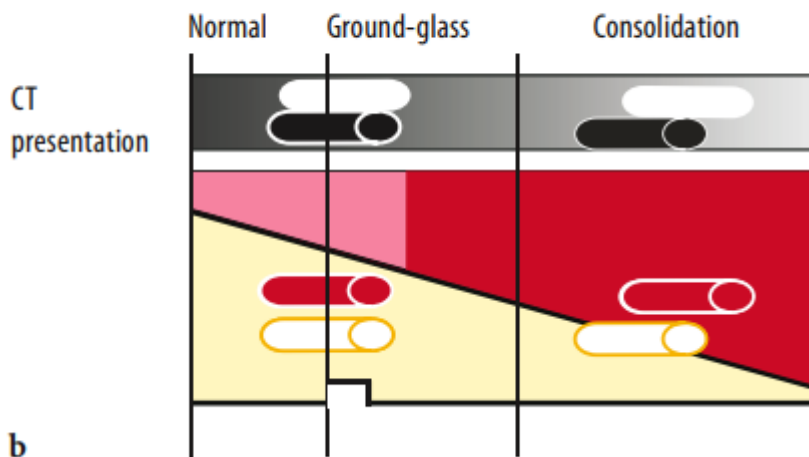
b

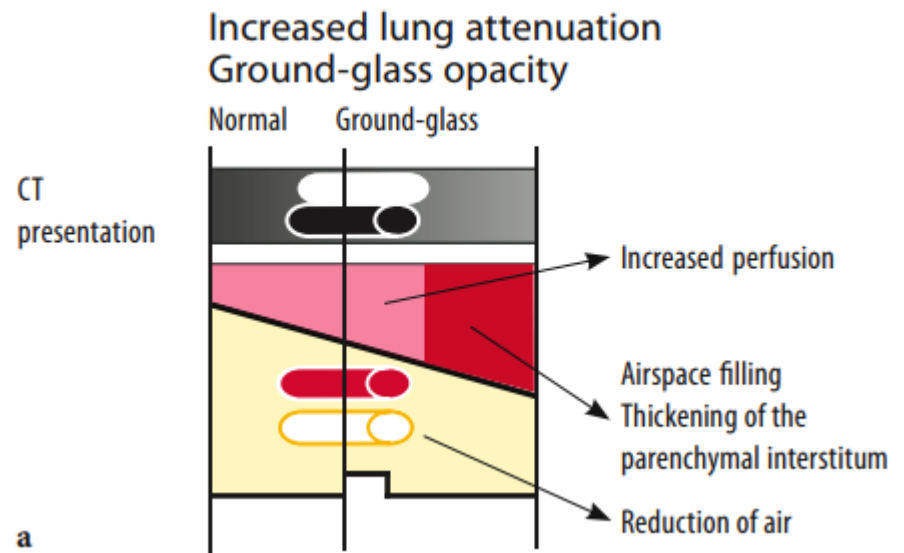
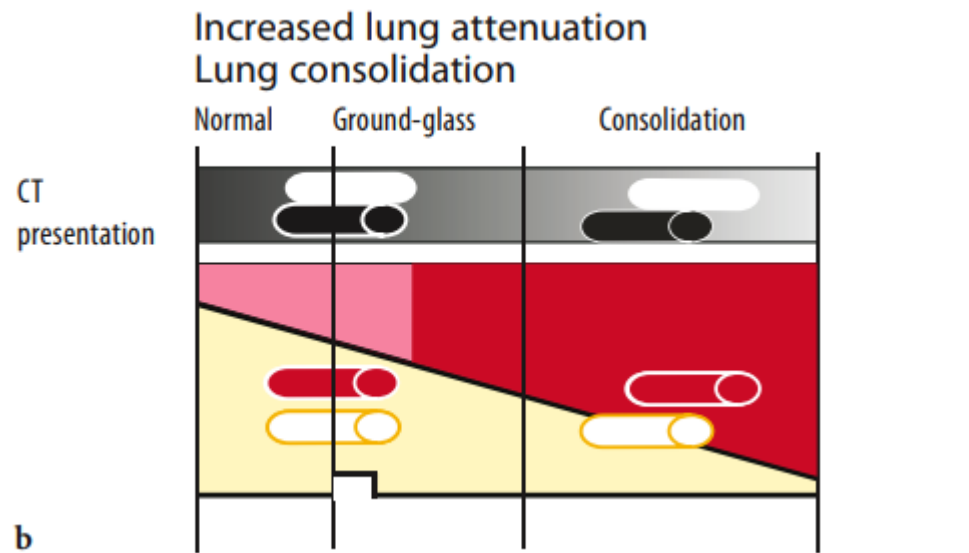
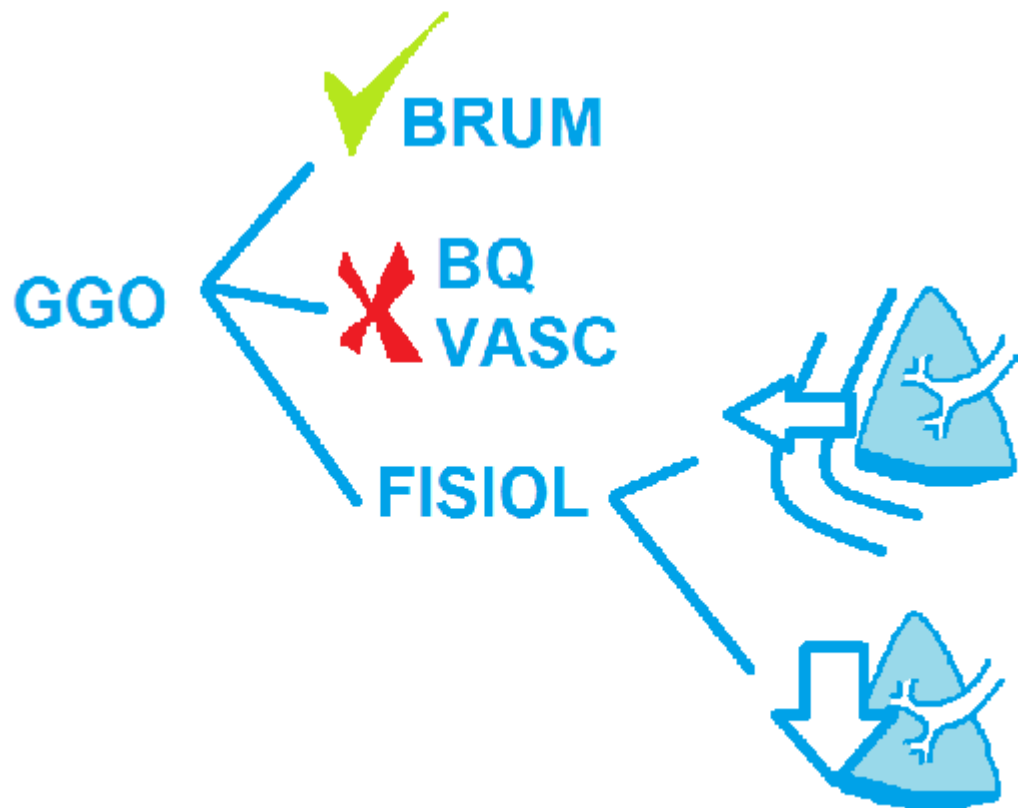
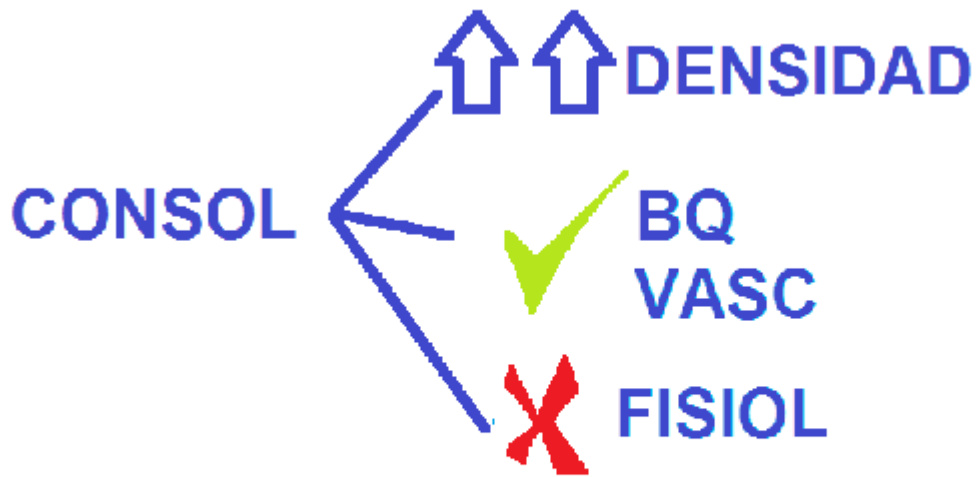


a

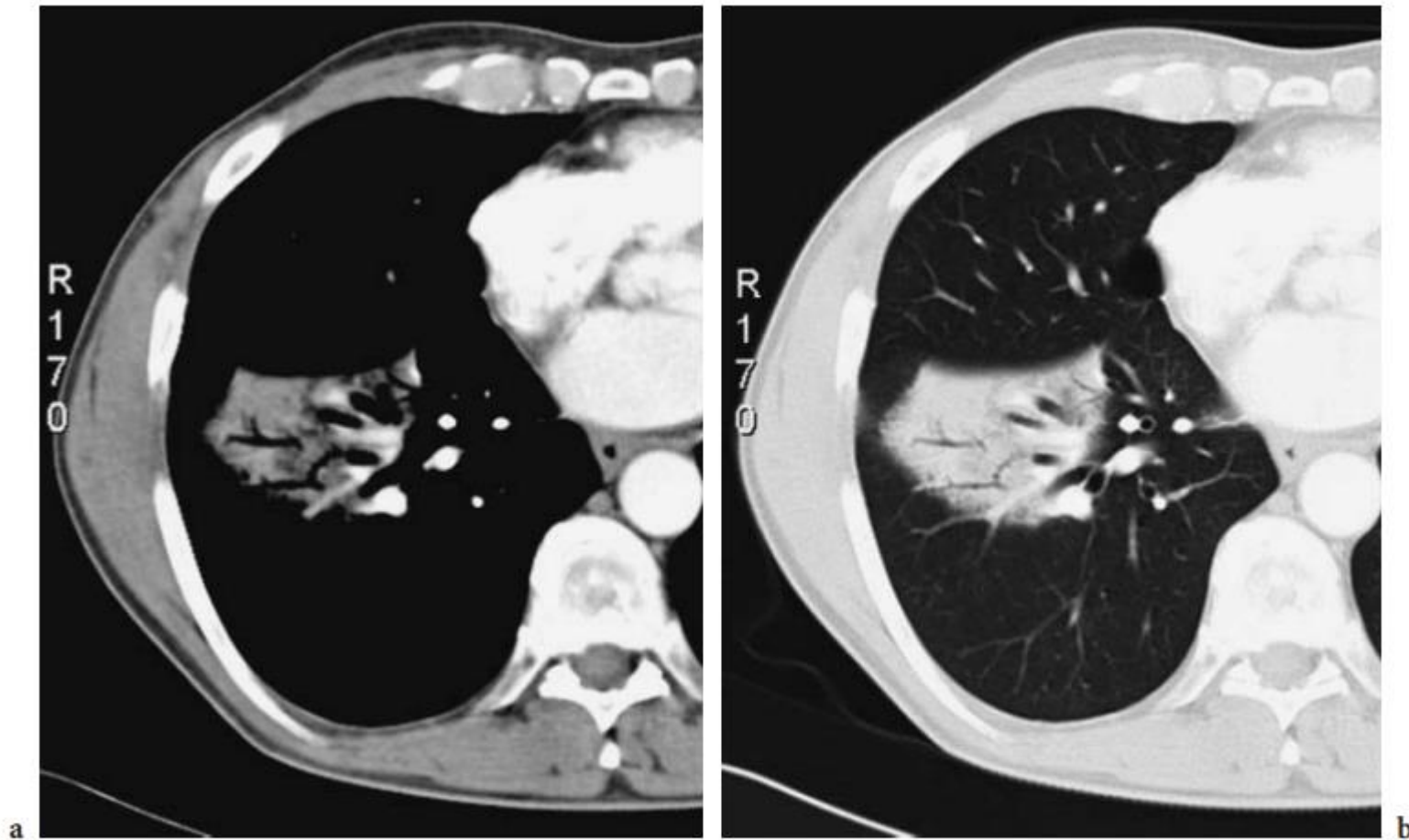


Increased lung attenuation  
Lung consolidation

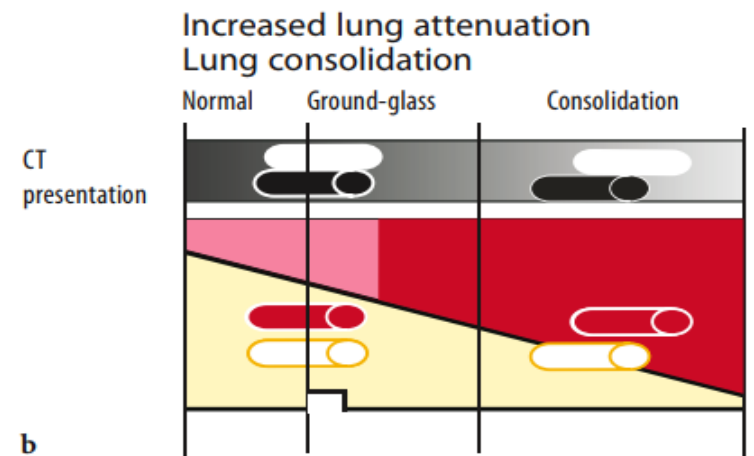






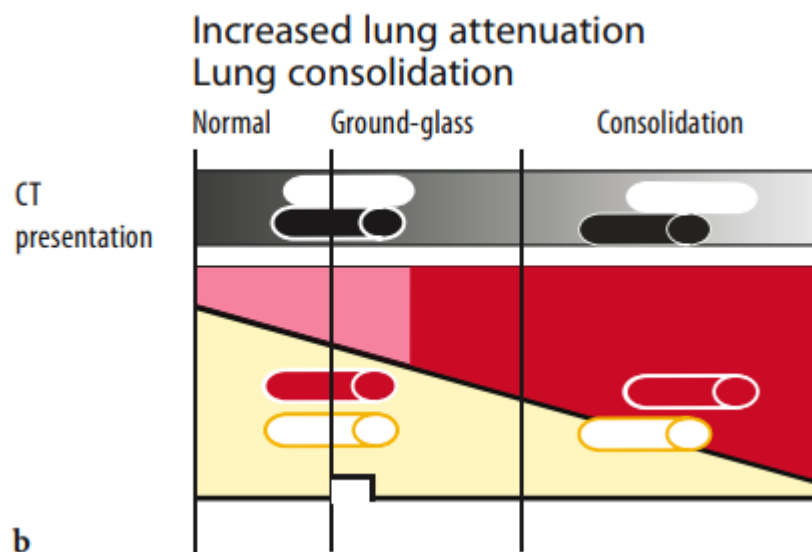
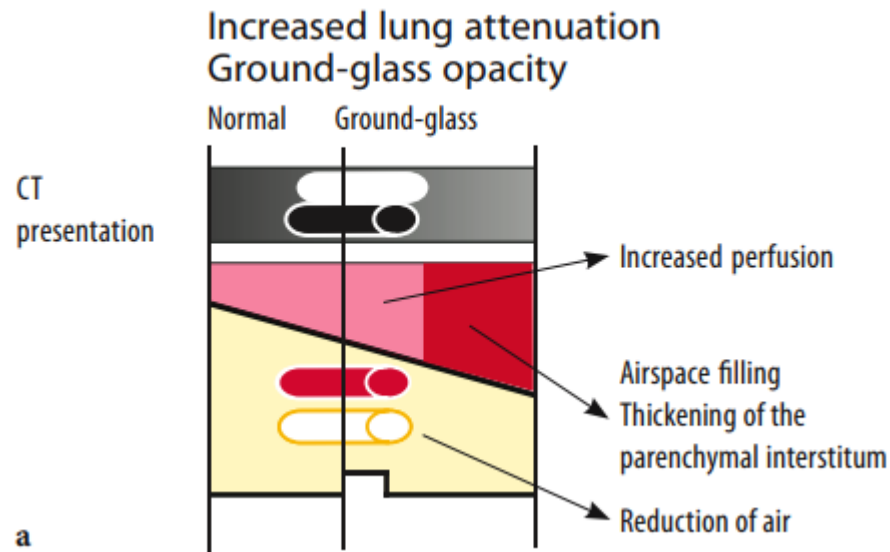


**Fig. 3.3a,b.** CT of the right lung (**a:** mediastinal and **b:** lung window-center settings). Sharply defined area of lung consolidation. The increased pulmonary density obscures the vessels and the margins of the airways. The lumen of some airways still contain air and these airways become visible as an air-bronchogram





# Consolidación



## Acute course of disease

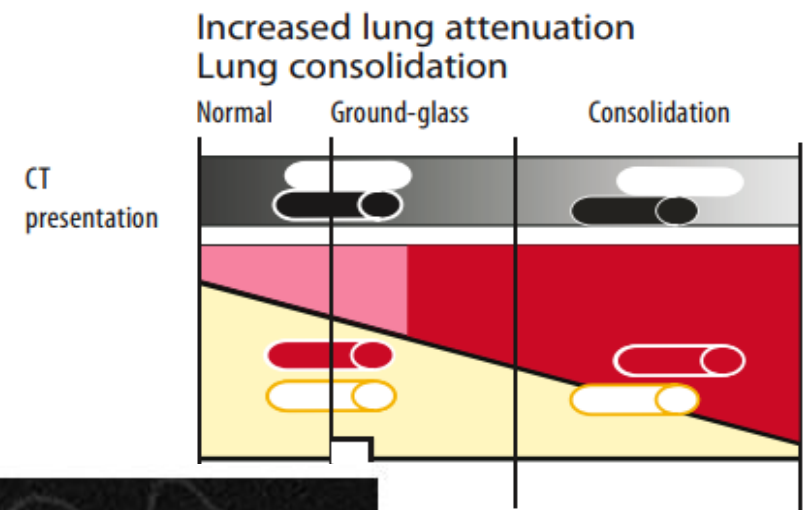
- Pulmonary infection (bacterial, *Pneumocystis jiroveci* pneumonia, aspergillus and mycoplasma pneumonia)
- Pulmonary oedema
- Pulmonary haemorrhage
- Adult (acute) respiratory distress syndrome [ARDS]
- Acute interstitial pneumonia [AIP]
- Eosinophilic pneumonia (acute)
- Radiation pneumonitis (acute)

## Subacute/chronic course of disease

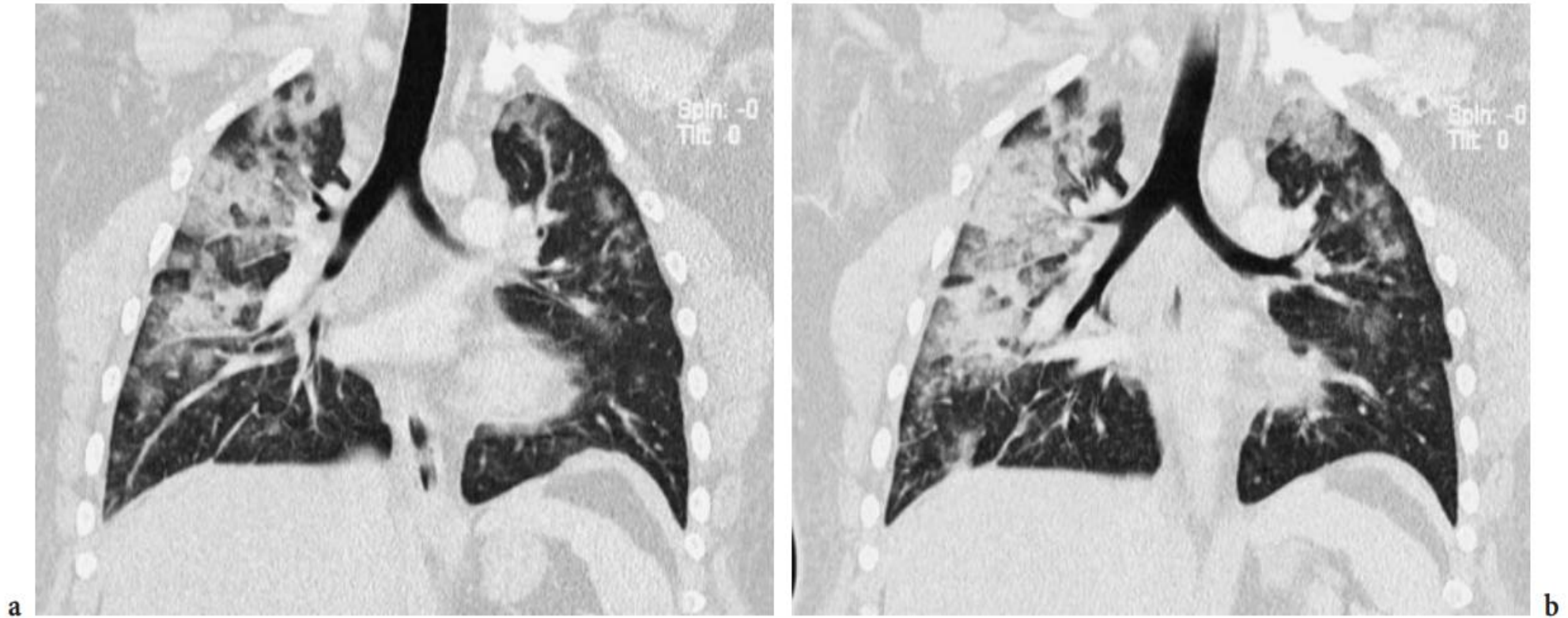
- Organising pneumonia
- Bronchioloalveolar carcinoma
- Lymphoma
- Eosinophilic pneumonia (chronic)
- Vasculitis (Churg-Strauss syndrome)
- Lipoid pneumonia
- Usual interstitial pneumonia [UIP]: idiopathic pulmonary fibrosis [IPF] and disease associated UIP
- Nonspecific interstitial pneumonia [NSIP]
- Hypersensitivity pneumonitis
- Sarcoidosis
- Lymphocytic interstitial pneumonia [LIP] (Sjögren syndrome, AIDS)

# Empedrado loco

- The crazy-paving pattern is created when ground-glass opacity is associated with the presence of a linear pattern. This linear pattern is caused by thickening of the interlobular septa, thickening of the intralobular septa and interstitium or by an airspace filling process that has preponderance at the periphery of the lobules and acini.

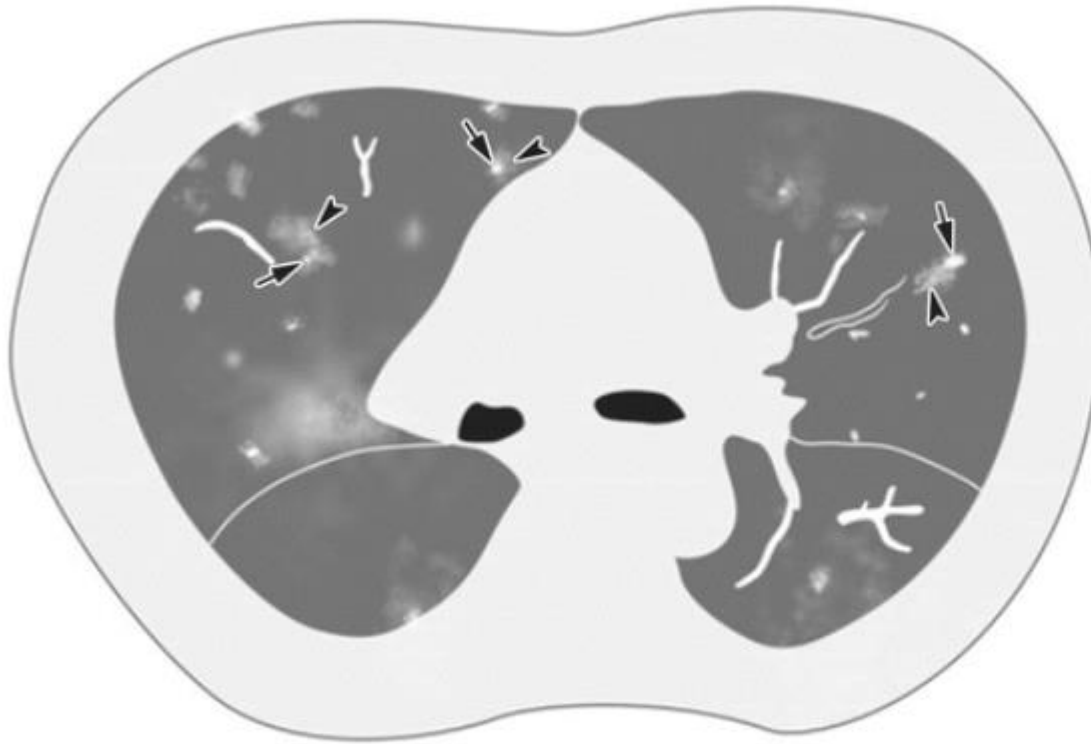


**Fig. 3.13.** The combination of ground-glass opacity and intra- and interlobular lines creates the crazy-paving pattern



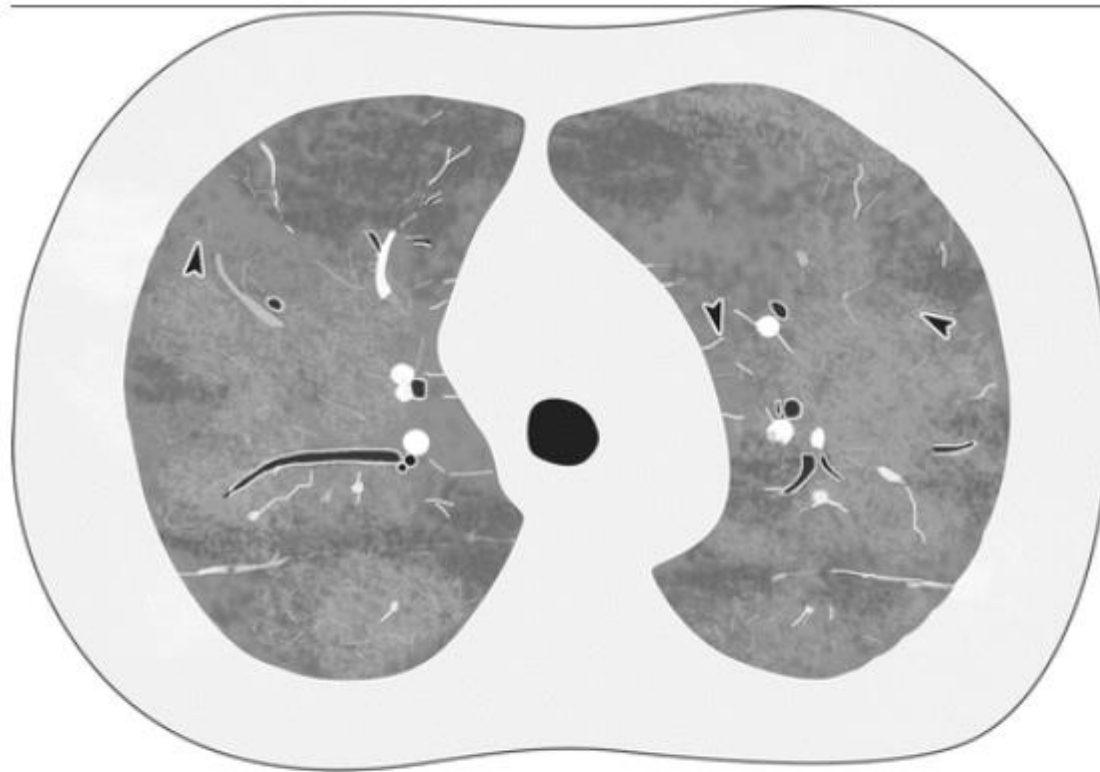
**Fig. 3.12a,b.** In this patient with overwhelming pneumonia, areas of ground-glass opacity and lung consolidation are seen together with ill-defined nodules and linear opacities caused by septal thickening and thickening of the bronchial walls

# Neumonías virales - patrones TC típicos



**Figure 1a.** Schemas show typical CT patterns of viral pneumonia. **(a)** Pneumonia due to varicella-zoster virus shows multifocal 1–10-mm well-defined or ill-defined nodular opacity (arrows) with a surrounding halo or patchy GGO (arrowheads) in both lungs.

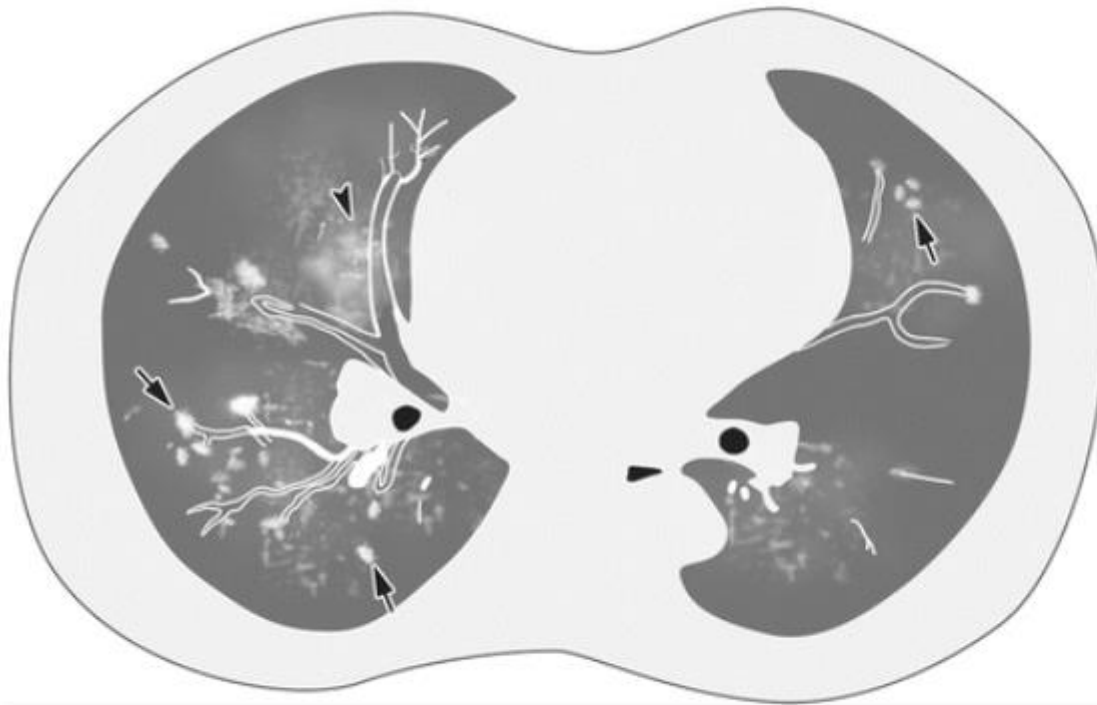
# Neumonías virales - patrones TC típicos



**(b)** Pneumonia due to CMV shows diffuse ill-defined patchy GGO with interlobular septal thickening (arrowheads) in both lungs.



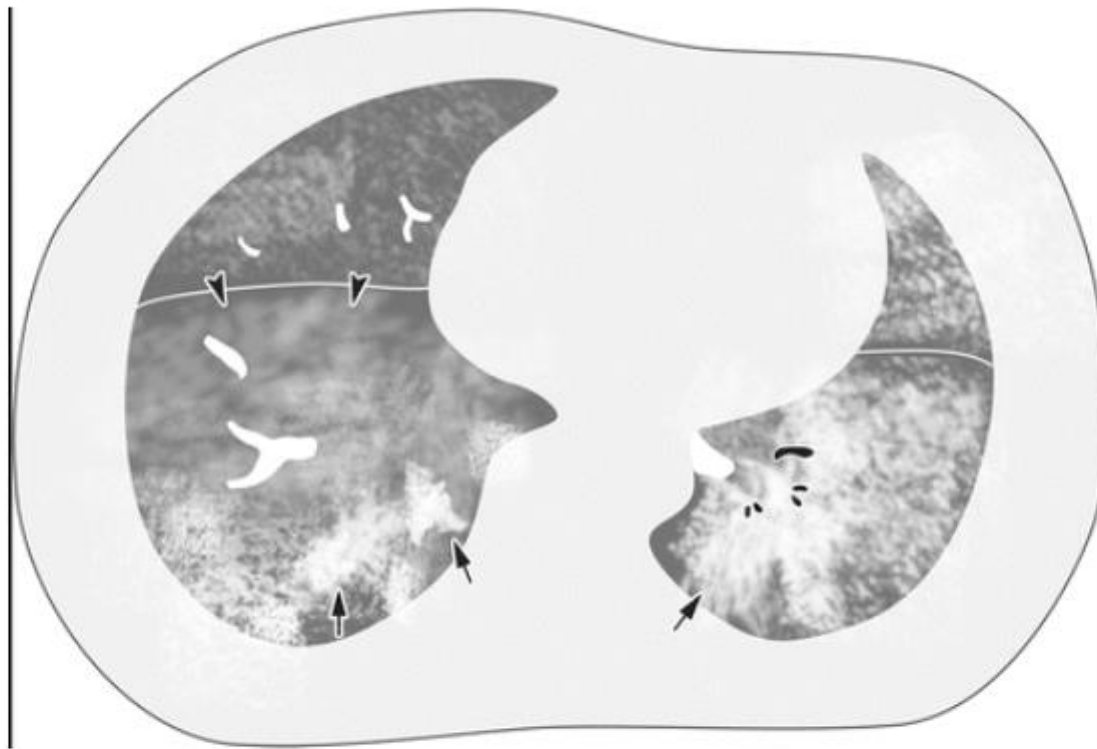
# Neumonías virales - patrones TC típicos



(c) Pneumonia due to HMPV shows multiple ill-defined nodules (arrows) or GGO (arrowhead) along the bronchovascular bundles in both lungs. These findings are similar to those of HPIV pneumonia, which belongs to the same viridae.

**human metapneumovirus**  
**human parainfluenza virus**

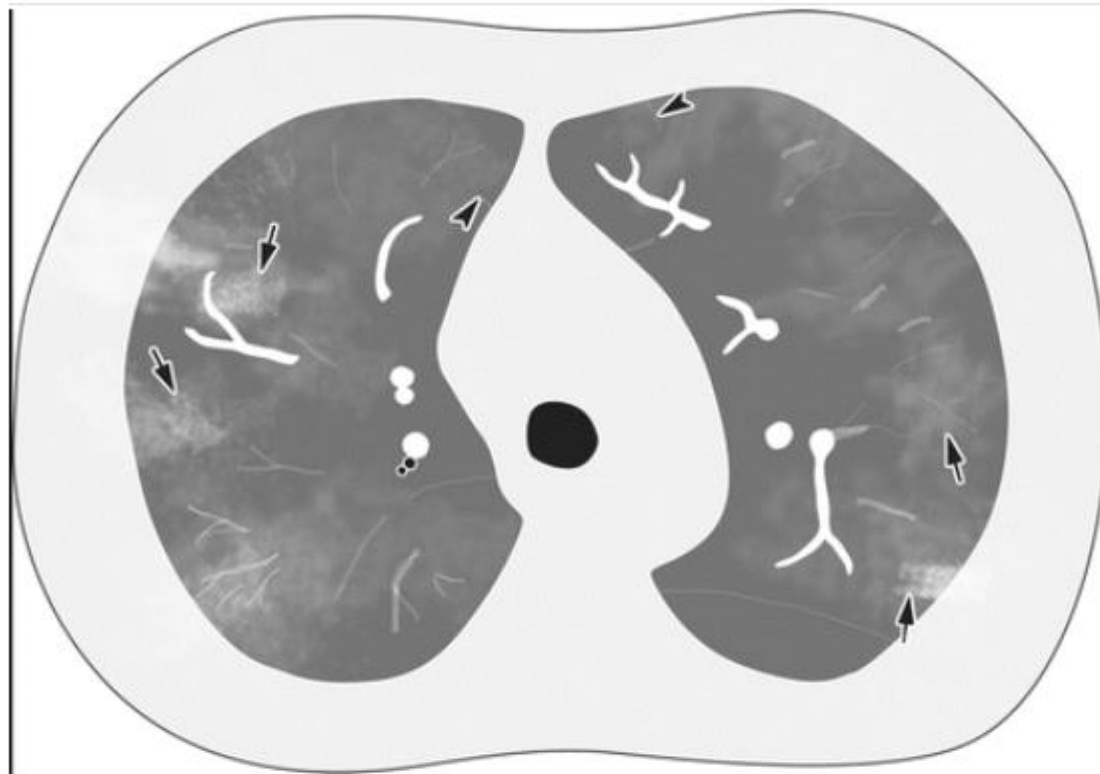
# Neumonías virales - patrones TC típicos



- (d) Pneumonia due to influenza A virus shows multiple irregular areas of consolidation (arrows) along the bronchovascular bundles and diffuse GGO (arrowheads) with interlobular septal thickening in both lungs.



# Neumonías virales - patrones TC típicos



**(e)** Pneumonia due to rhinovirus shows multiple ill-defined patchy areas of GGO (arrows) with interlobular septal thickening (arrowheads) in both lungs.

Increased lung attenuation  
Lung consolidation

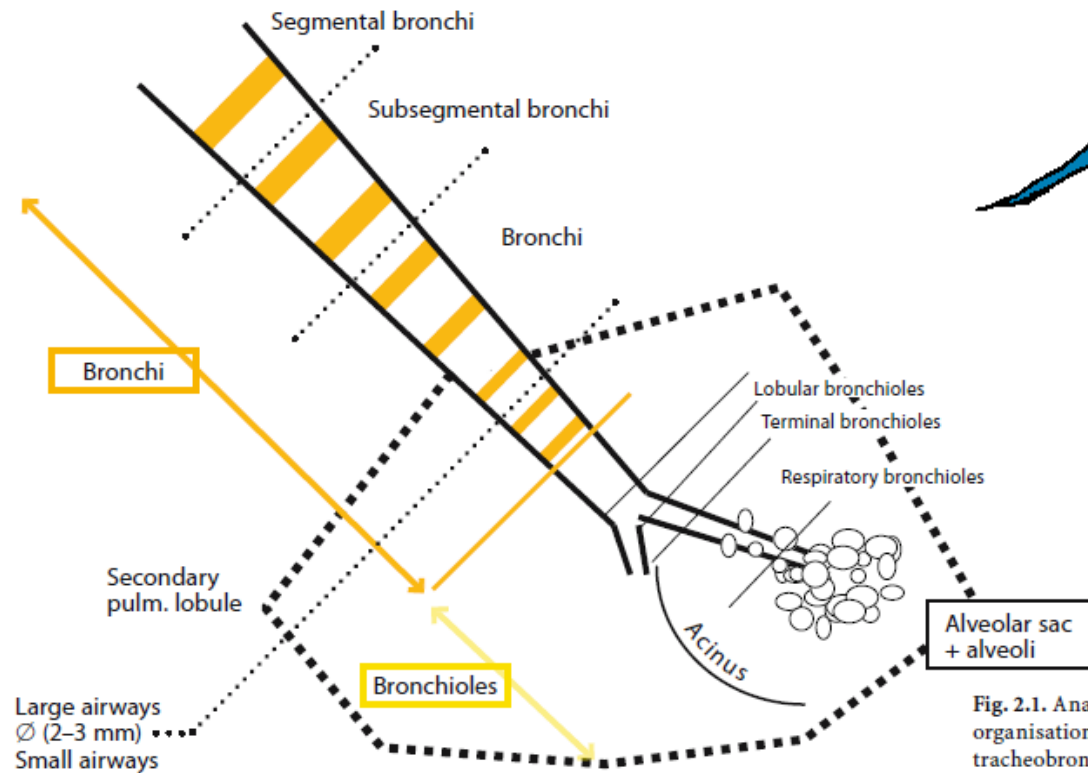
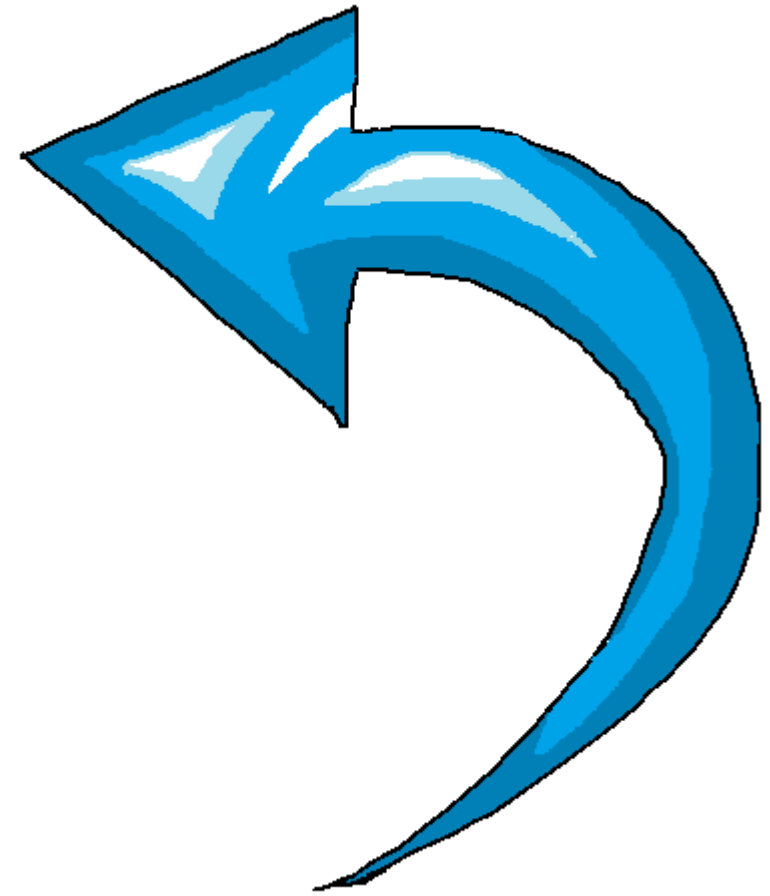
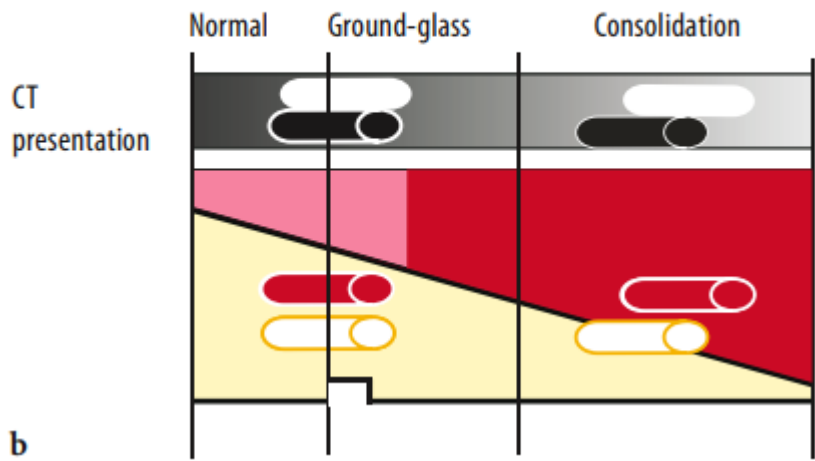


Fig. 2.1. Anatomic organisation of the tracheobronchial tree

# Bibliografía

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Smithuis R, Van Delden O, Schaefer-Prokop C. HRCT: Basic Interpretation. Radiology Department of the Rijnland Hospital, Leiderdorp and the Academical Medical Centre, Amsterdam, los Países Bajos. Publicado en línea el 24 de diciembre del 2006. Disponible en:  
<https://radiologyassistant.nl/chest/hrct/basic-interpretation>

Koo HJ, Lim S, Choe J, Choi SH, Sung H, Do KH. Radiographic and CT Features of Viral Pneumonia. RadioGraphics 2018; 38:719-739. Disponible en línea en: <https://pubs.rsna.org/doi/10.1148/rg.2018170048>