

# COVID-19 CT scan findings

Presented by

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# Introduction



- PCR test very specific, but:
  1. has a lower sensitivity of 65-95%,
  2. can take more than 24 hours
  
- CT has a higher sensitivity(93% to 97%) but lower specificity(25% to 53%),
- ✓ In the first four days after the presentation of the complaints, the CT is not sensitive as initial test as (50%)
- ✓ **overlap** with other pulmonary infections(influenza H1N1) and pulmonary inflammatory processes(adverse drug reactions, connective tissue disease, vasculitis)

# Possible role of CT

1. Triage of patients
  - no COVID-19
  - possible or most likely COVID-19
  - severity of the disease
2. Prediction of worsening
3. Prediction of improvement
4. Problem solver





# Chest CT Abnormalities

## ► High Incidence (>70%)

1. Ground glass opacity
2. Vascular dilatation
3. bilateral abnormalities, lower lobe involvement, and posterior predilection

## ► Intermediate Incidence (10%–70%)

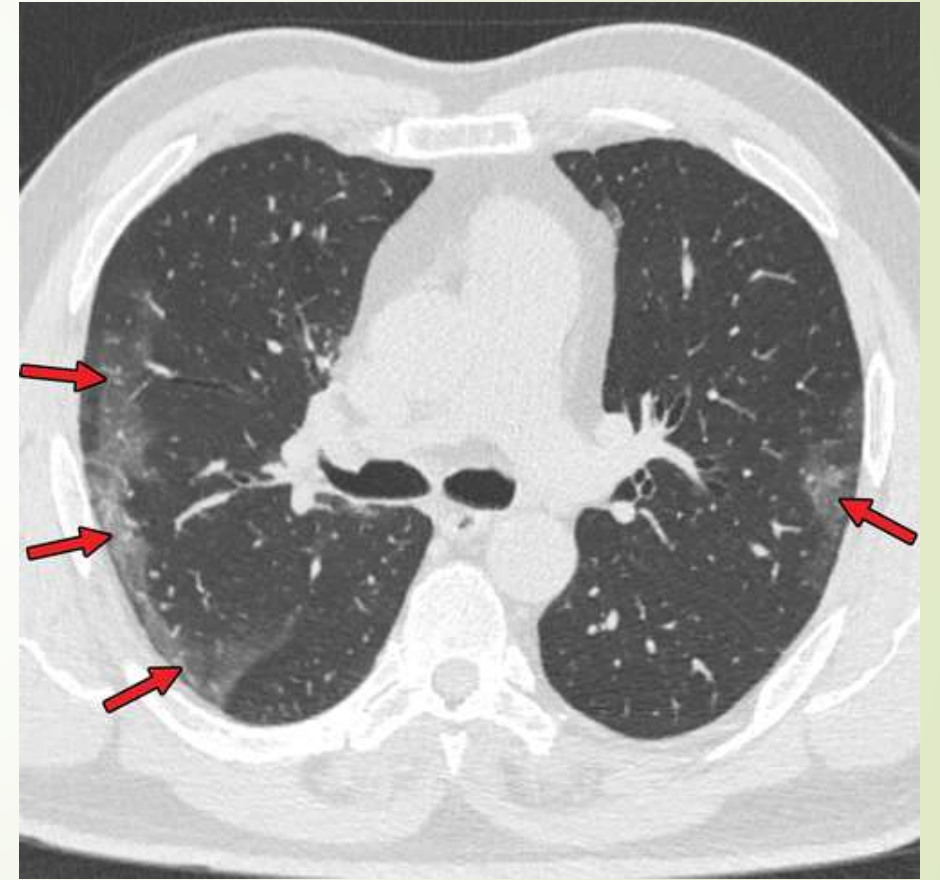
1. consolidation
2. Crazy paving
3. Traction Bronchiectasis
4. Subpleural bands and Architectural distortion
5. Halo/Reverse Halo sign
6. Nodule

## ► Low Incidence (<10%)

- pleural effusion, lymphadenopathy, tree-in-bud sign, central lesion distribution, pericardial effusion, and cavitating lung lesions

# Ground Glass Opacity

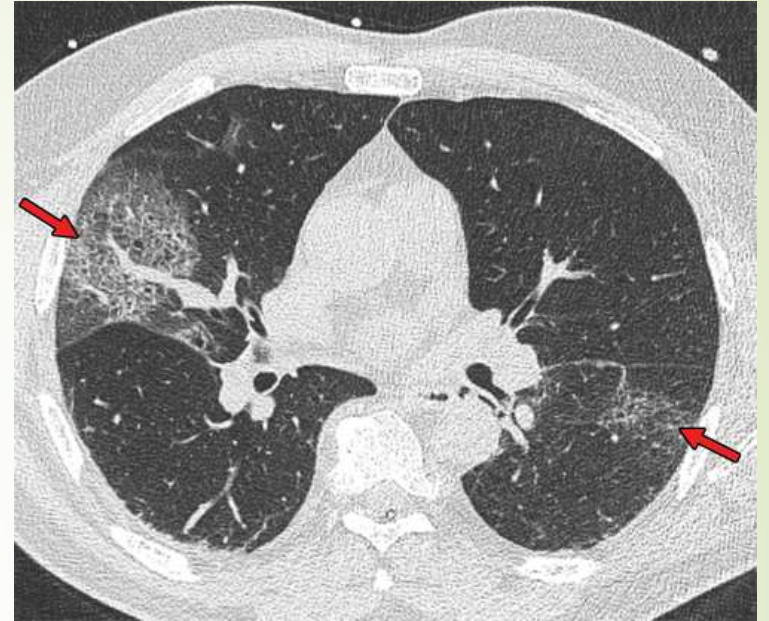
- most common finding
- ✓ multifocal
- ✓ Bilateral
- ✓ peripheral
- but in the early phase of the disease the GGO may present as a **unifocal** lesion, most commonly located in the inferior lobe of the right lung



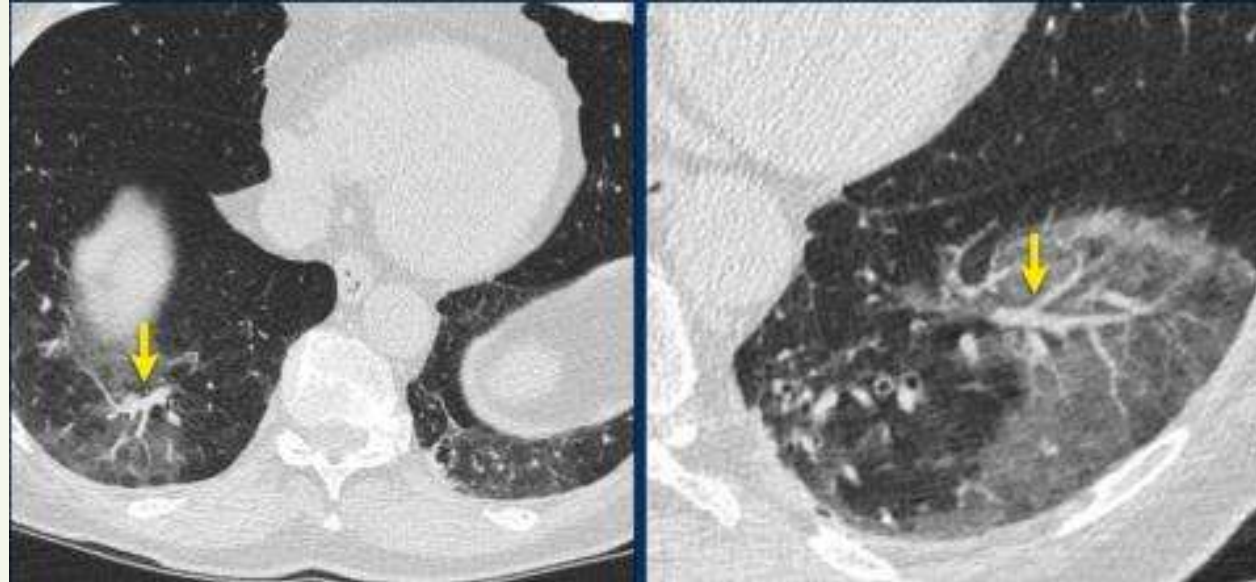


# Crazy Paving

- ▶ thickened interlobular and intralobular lines + ground glass pattern.
- ▶ later stage

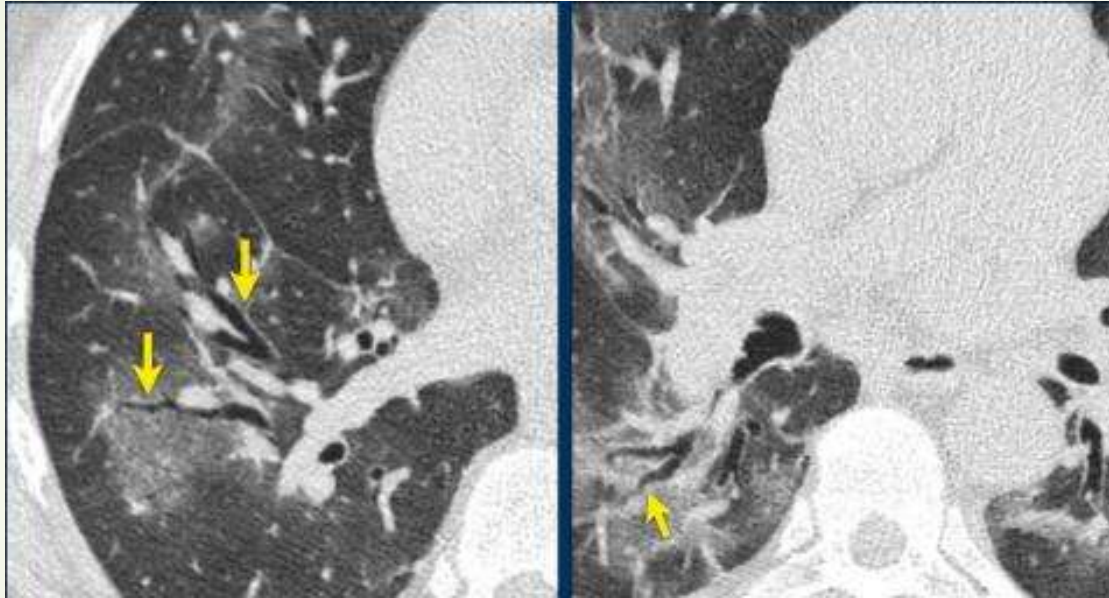


# Vascular Dilatation



- A typical finding in the area of ground glass is widening of the vessels (arrow)

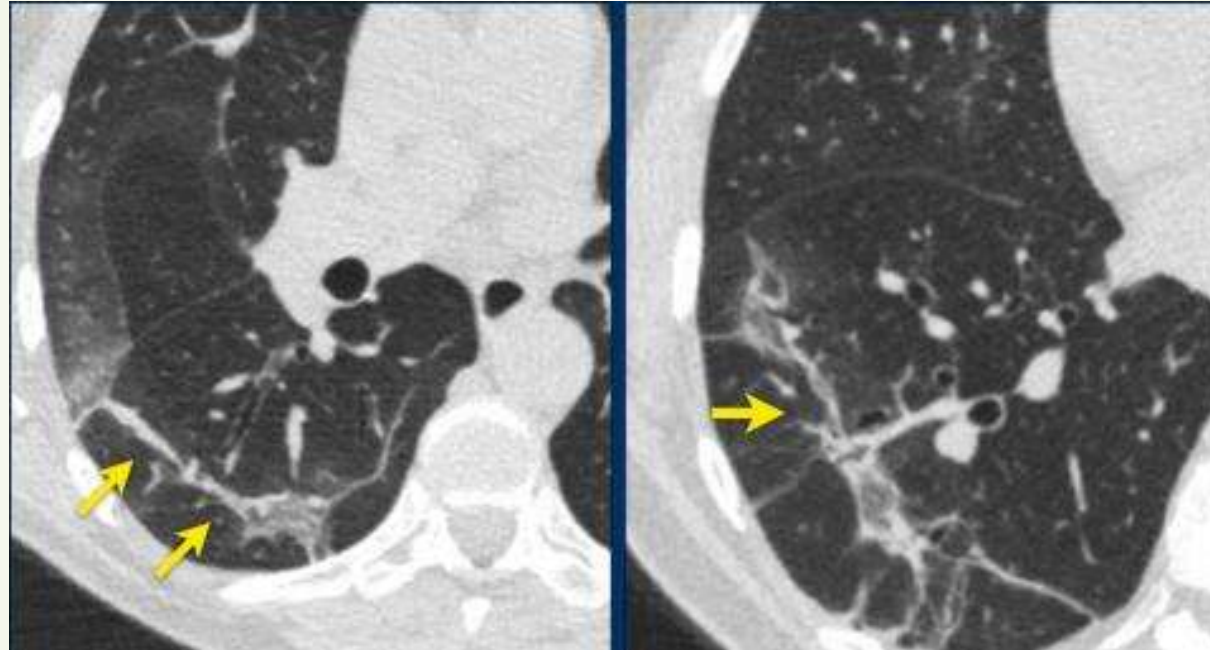
# Traction Bronchiectasis



- Another common finding in the areas of ground glass is traction bronchiectasis

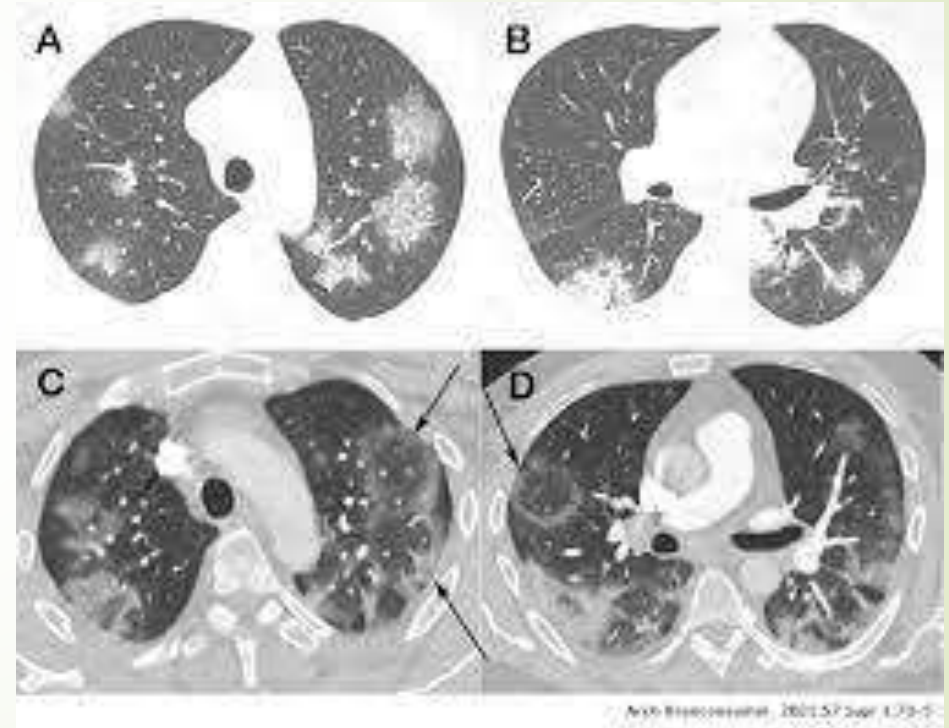
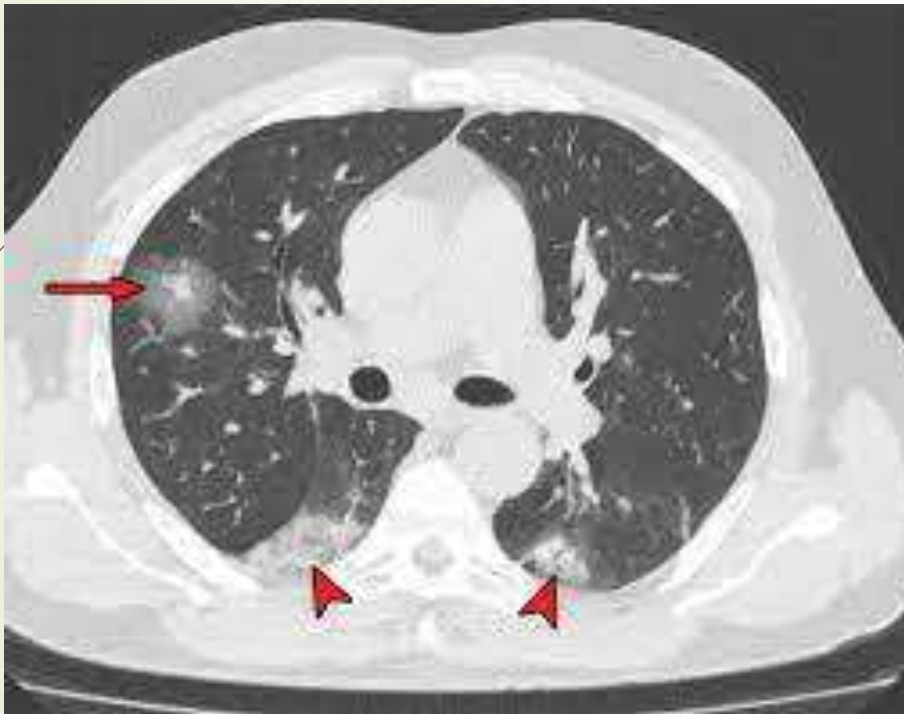


# Subpleural bands and Architectural distortion



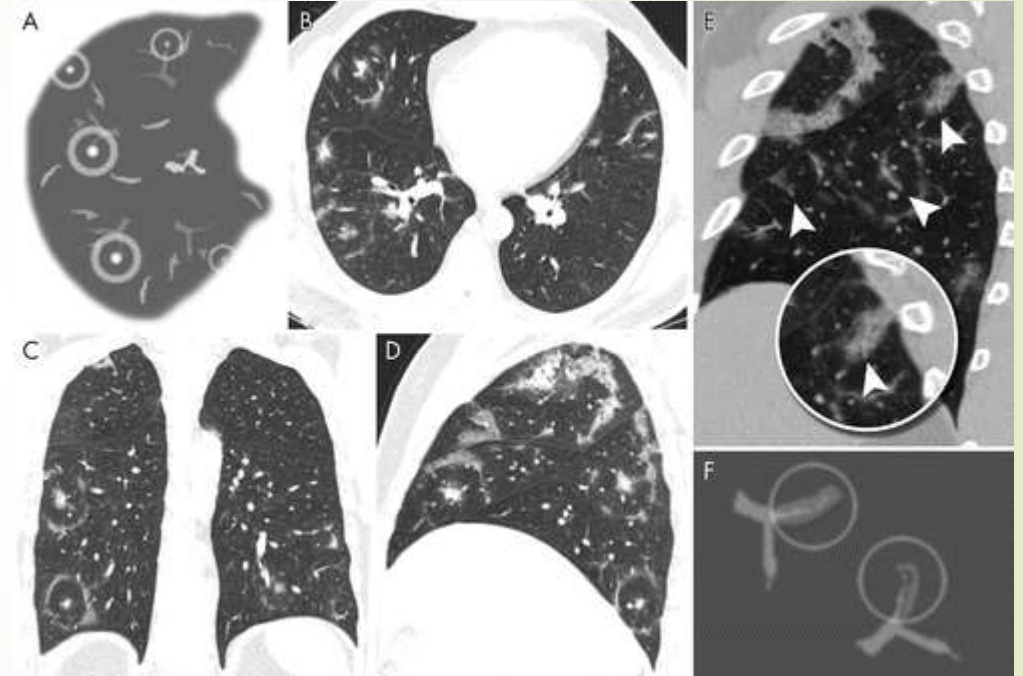
- In some case there is architectural distortion with the formation of subpleural bands.

# Halo sign/Reverse Halo sign

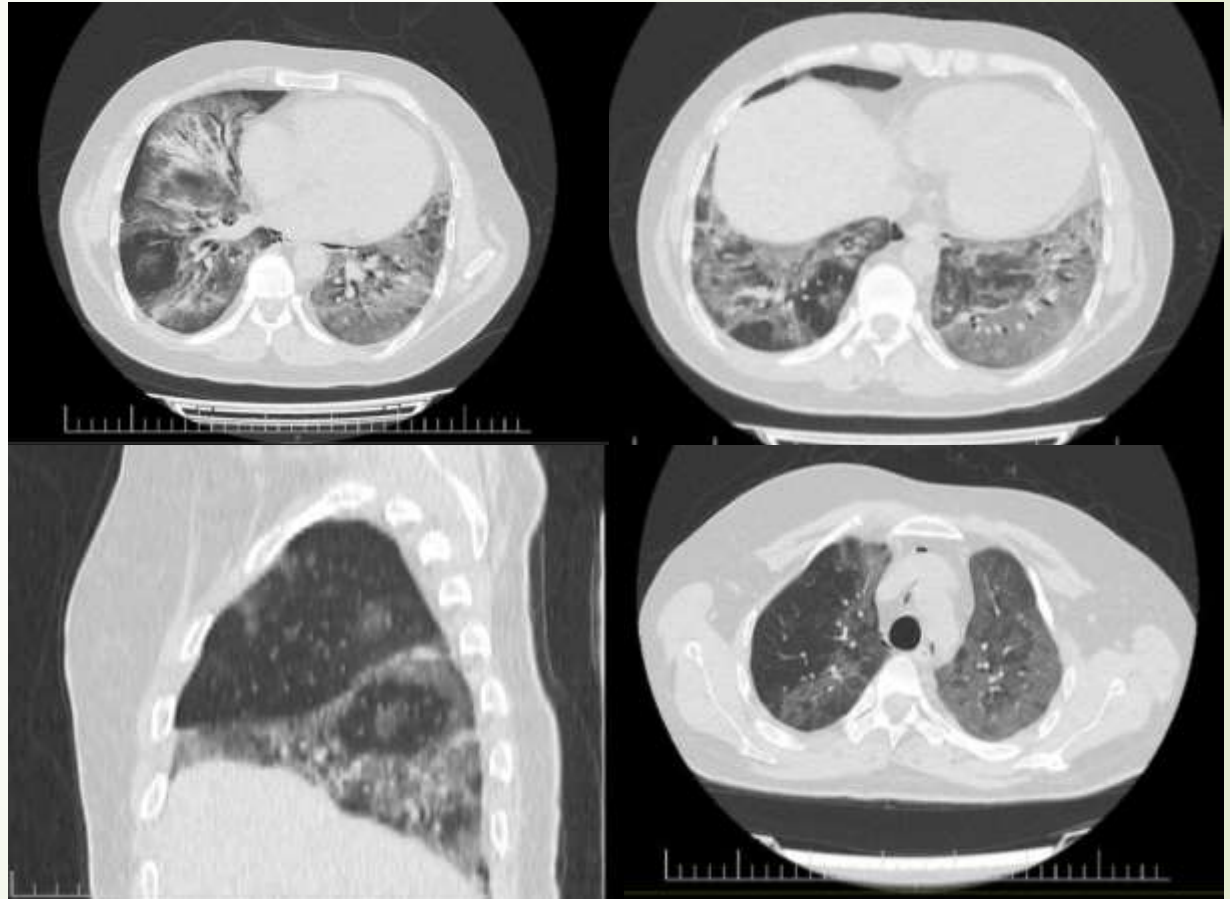
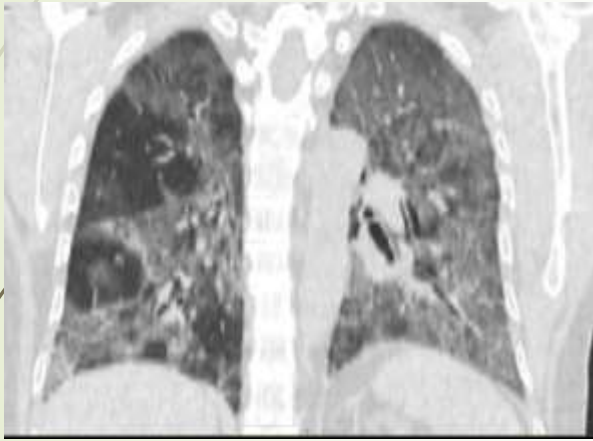


# The Target Sign

- nodular opacity in the center of a ring-like opacity
- 2020 muller et al.
- Specific/pathognomonic?



# Case: The Target Sign

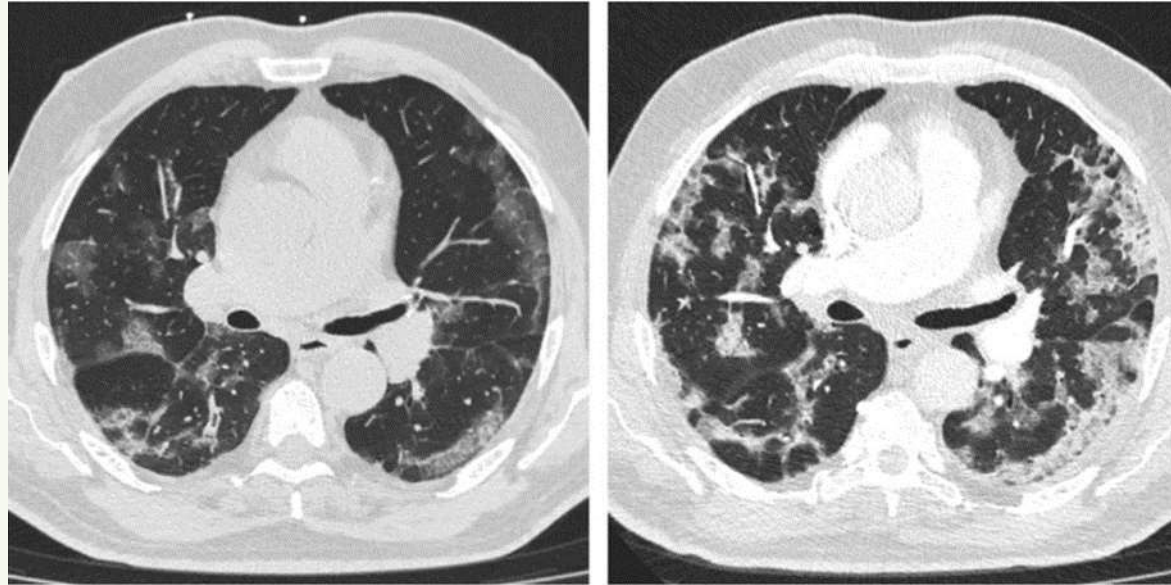




# CT changes over time

<b>Early stage</b>	0-4 days	GGO, partial crazy paving, lower number of involved lobes
<b>Progressive stage</b>	5-8 days	Progressive (5-8 days): Extension of GGO, increased crazy paving pattern
<b>Peak stage</b>	10-13 days	Consolidation
<b>Absorption stage</b>	≥14 days	Gradual resolution

# Transition from progressive stage to peak stage



- Transition from progressive stage to peak stage in a 69-year-old man with COVID-19.

# CT-Findings category

## ❑ Initial findings:

- bilateral, multilobar GGO with a peripheral or posterior distribution, mainly in the lower lobes and less frequently in the middle lobe
- Consolidation superimposed on GGO as the initial imaging; **mainly in the elderly** population

## ❑ The later stages:

- ✓ Septal thickening
- ✓ bronchiectasis
- ✓ pleural thickening
- ✓ subpleural band

- ❑ some of the **uncommon but possible** findings seen with disease progression. :

Pleural effusion, pericardial effusion, lymphadenopathy, cavitation, CT halo sign, and pneumothorax

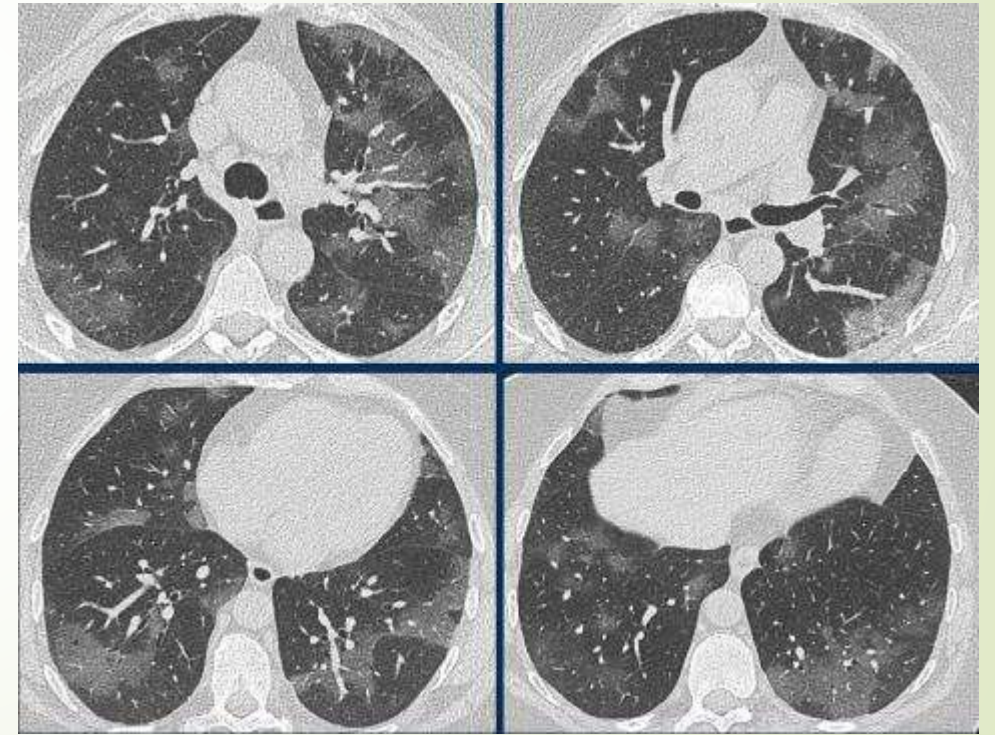
## initial CT-patterns in COVID-19

Ground-glass opacification	88%
Bilateral involvement	88%
Posterior distribution	80%
Multilobar involvement	79%
Peripheral distribution	76%
Consolidation	32%



# Case 1: Early Phase

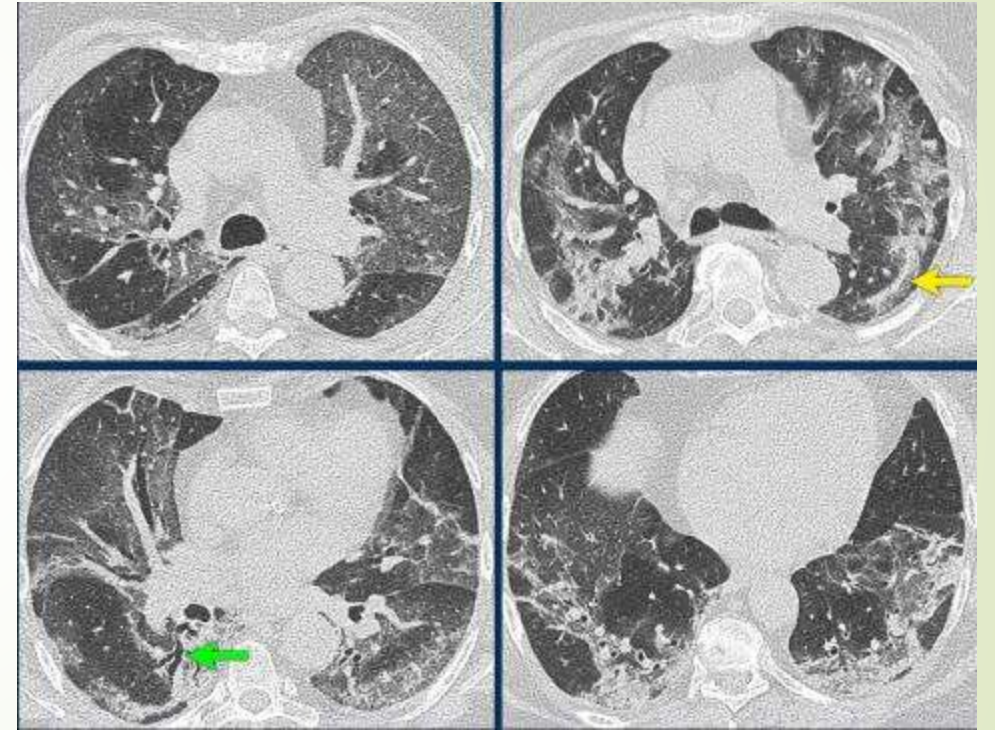
- 59 year old female had a history of ten days of fever and five days of coughing.
- ✓ There are widespread GGO's without consolidation.
- ✓ No architectural distortion.



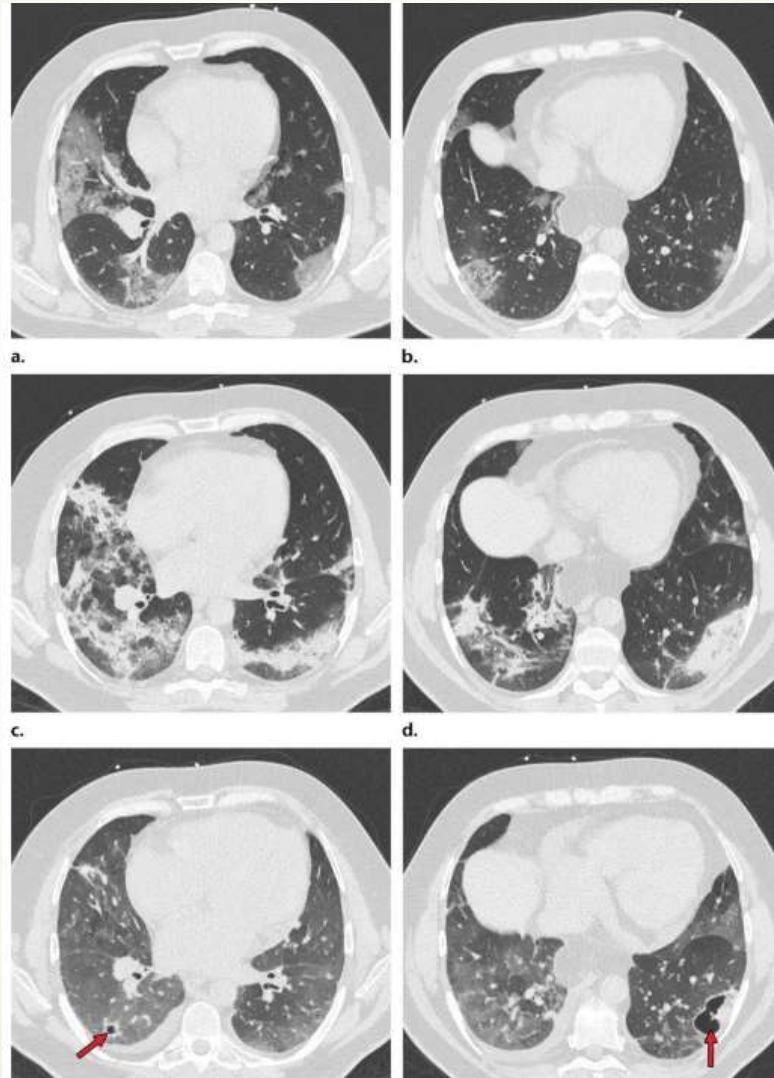


## Case 2: late Phase

- ✓ Bilateral sub-pleural GGO's
- ✓ Consolidation in right lower lobe with traction bronchiectasis (green arrow).
- ✓ Fibrous bands (yellow arrow).



## Case 3: CT changes over time





Thank you for  
your attention

