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SARS COV2: CT

BS NGUYỄN TẤN DŨNG

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2. The S protein and its mutations in different genetic variants.
3. CT in SARS COV2.
4. Presented 2 clinical case.
5. 2 SARS COV2 drugs for treatment.

SARS COV2 structure

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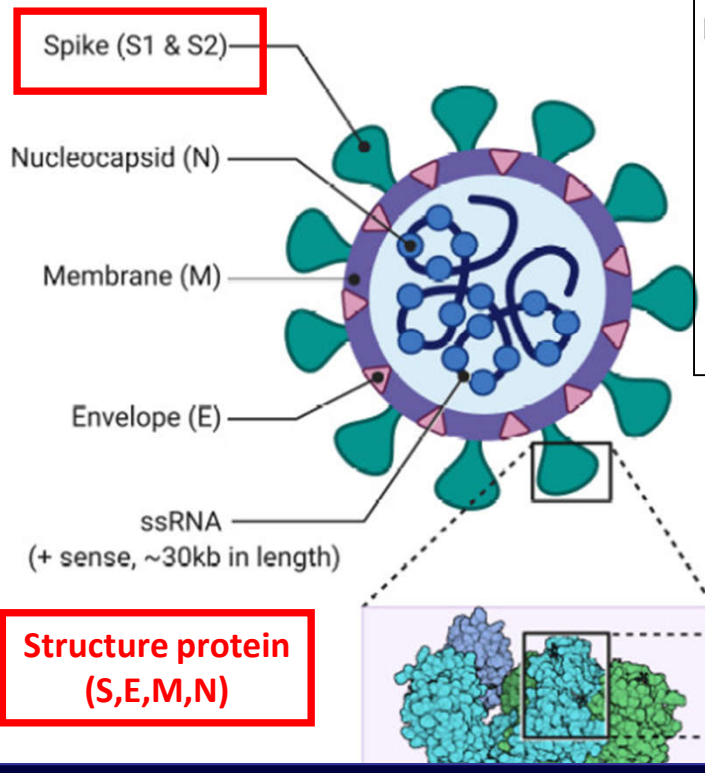
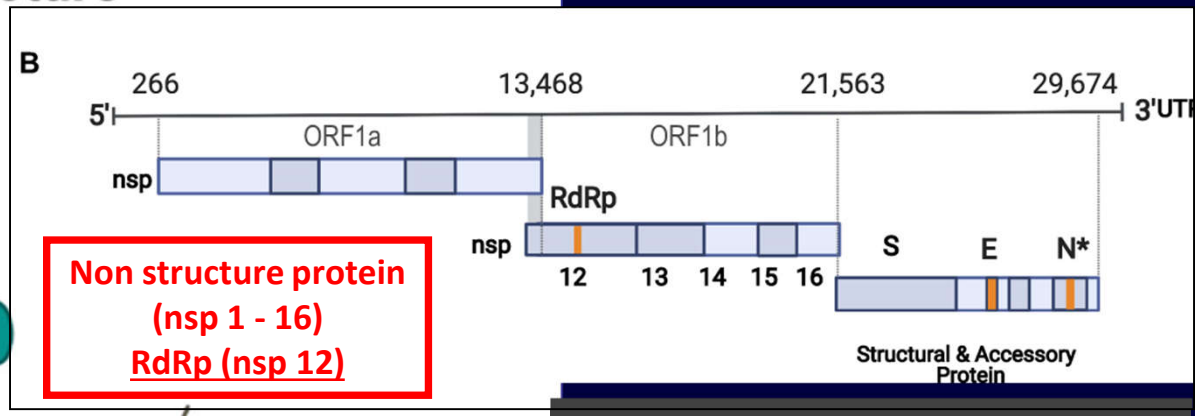
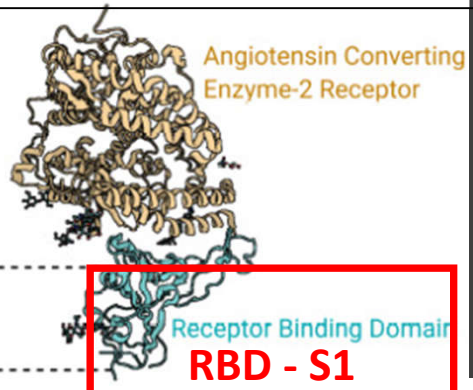
SARS-CoV 2 Structure



Structure protein (S,E,M,N)

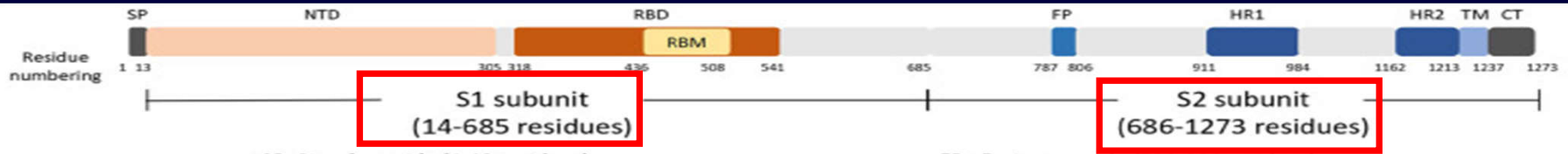


Non structure protein (nsp 1 - 16)
RdRp (nsp 12)



RBD - S1

The RNA-dependent RNA polymerase **(RdRp).** The nsp12 RdRp is the major machinery of transcription/translation. Coronavirus RNA transcription occurs in the host cytoplasm via the catalytic subunit RdRp



SP: Signal peptide (1-13 residues)
NTD: N-terminal domain (14-305 residues)
RBD: Receptor-binding domain (319-541 residues)

FP: Fusion peptide (788-806 residues)
HR1: Heptapeptide repeat sequence 1 (912-984 residues)
HR2: Heptapeptide repeat sequence 2 (1163-1213 residues)

https://www.ncbi.nlm.nih.gov/books/NBK554776/figure/article-52171.image.f3/

https://cen.acs.org/analytical-chemistry/structural-biology/Structure-SARS-CoV-2-RNA/98/i15

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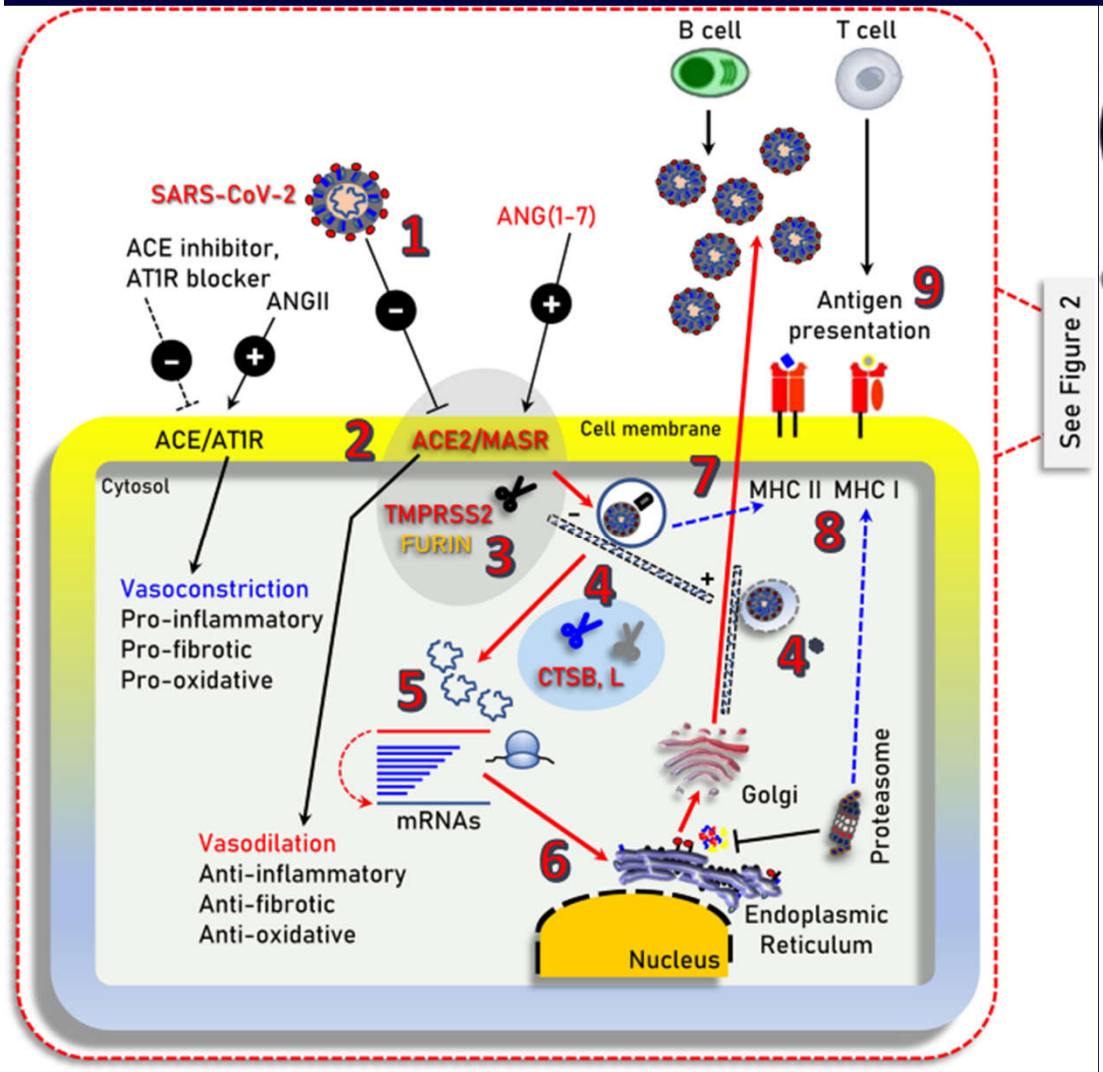
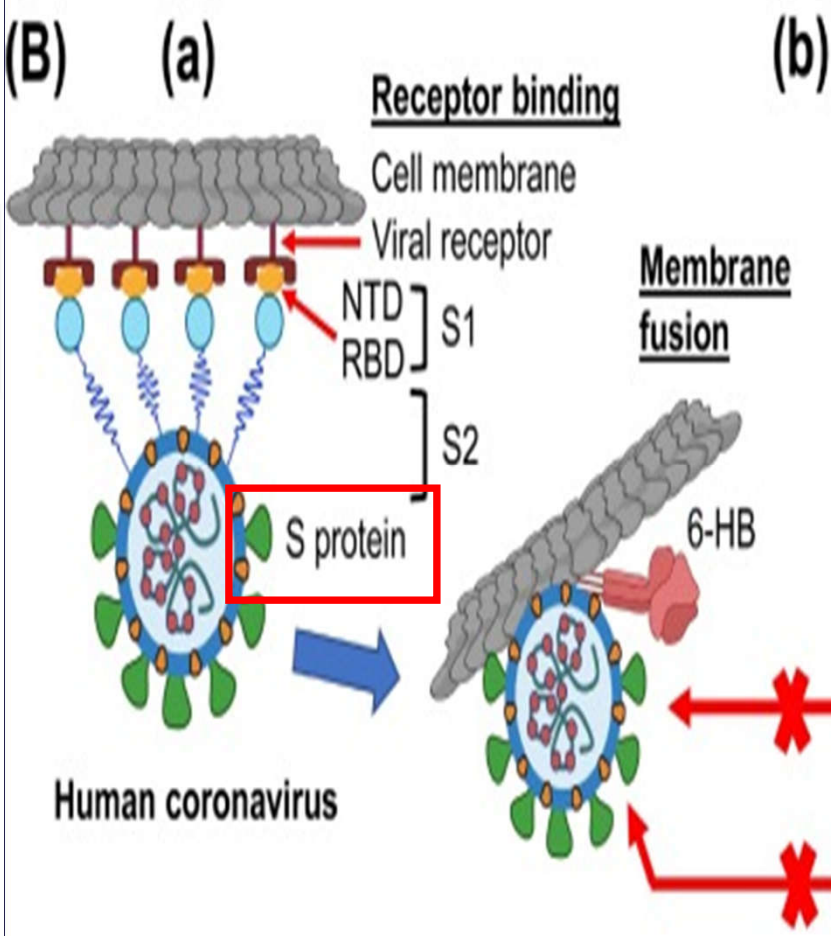
SARS COV2 pathologies.



See Figure 2



https://jbiomedsci.biomedcentral.com/articles/10.1186/s12929-020-00703-5#Fig2

Major severe COVID-19 pathologies and infection routes

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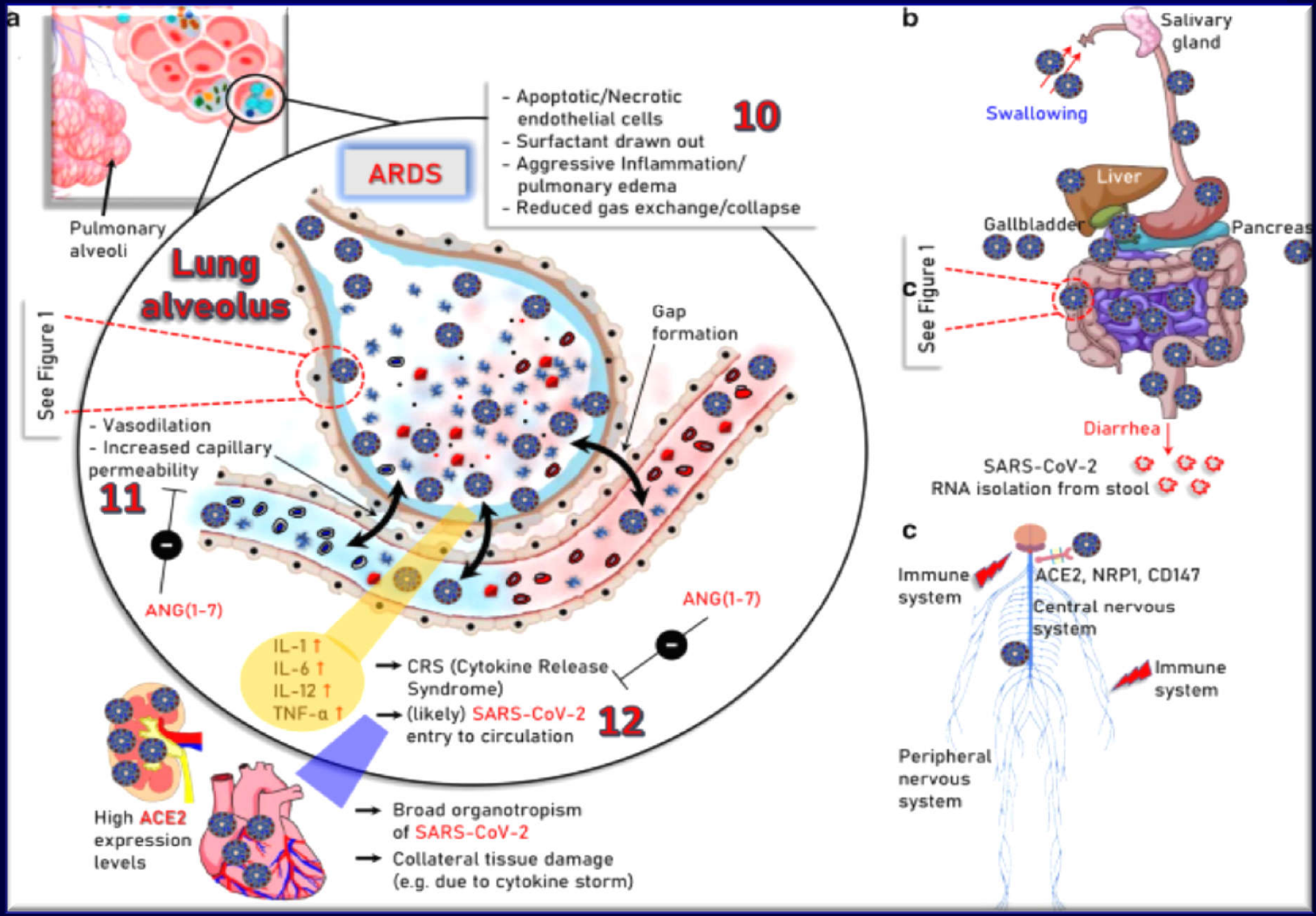

https://jbiomedsci.biomedcentral.com/articles/10.1186/s12929-020-00703-5/figures/2

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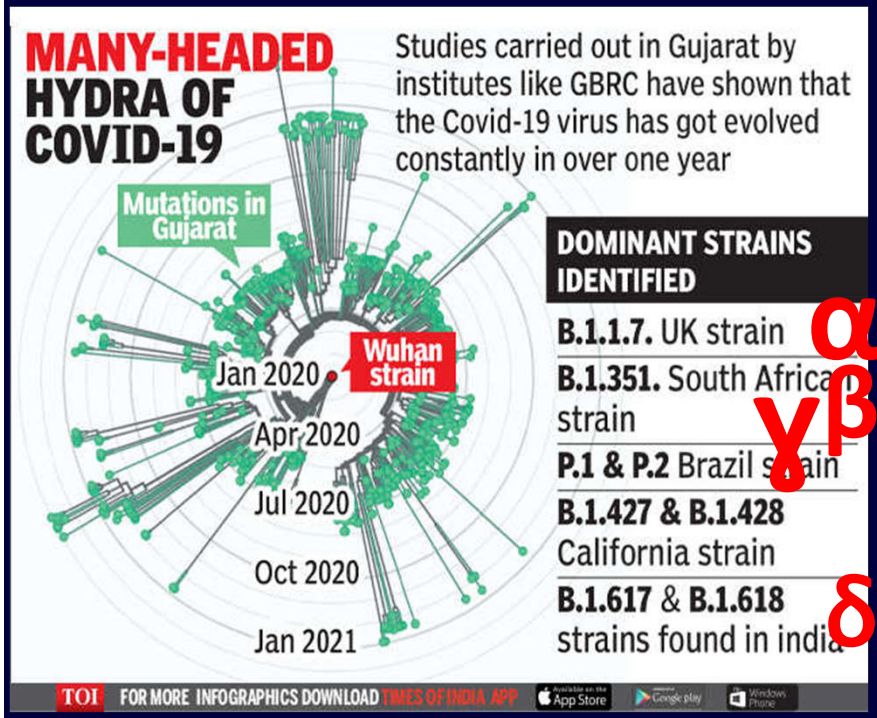
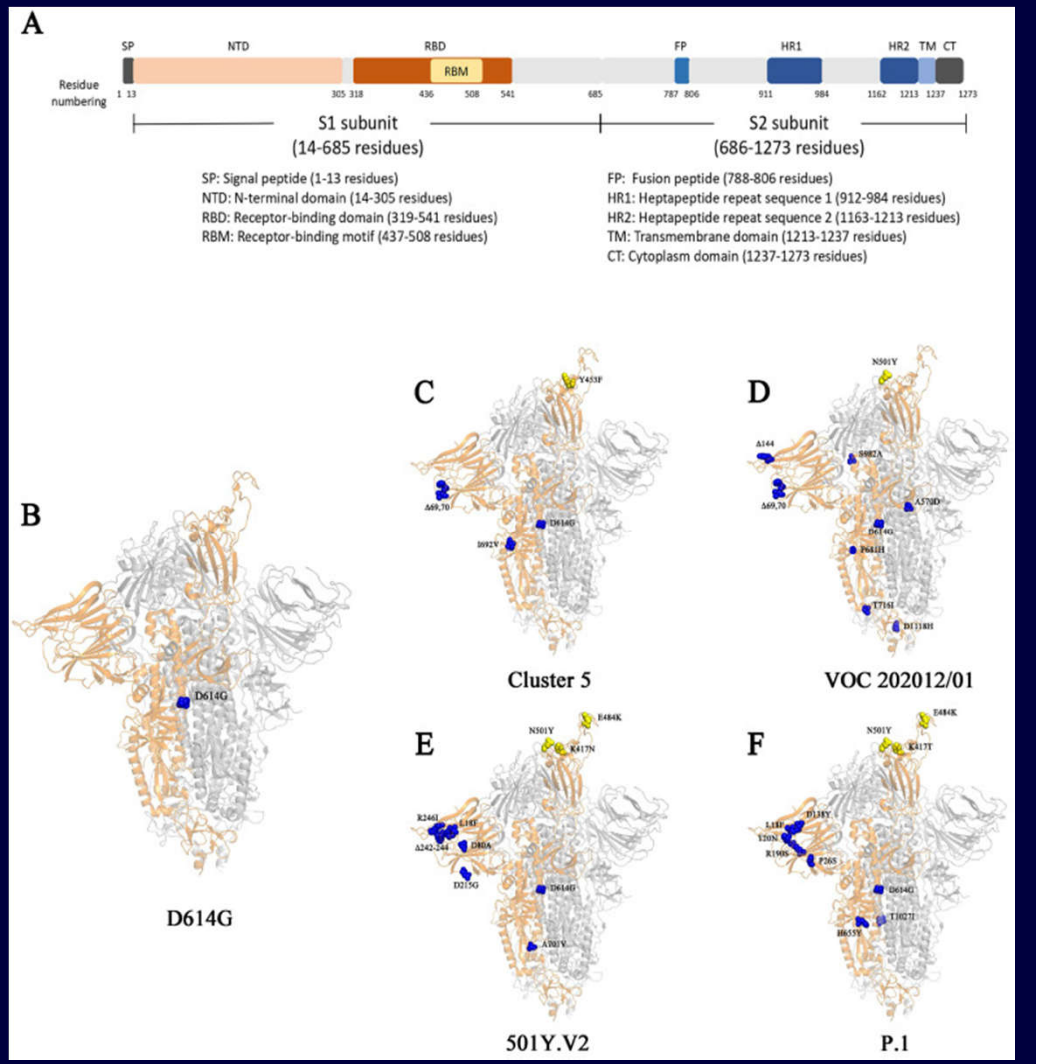
The S protein and its mutations in different genetic variants.



https://timesofindia.indiatimes.com/city/ahmedabad/double-mutant-variant-b-1-617-behind-deadly-surge-in-gujarat/articleshow/82474667.cms



Int J Biol Sci. 2021; 17(6): 1476–1485.
Published online 2021 Apr 10. doi: 10.7150/ijbs.59137

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The S protein and its mutations in different genetic variants.

Table 1

Summary of mutations on S proteins in the five SARS-CoV-2 variants

Amino acid position in S protein	Wuhan-Hu-1	D614G	Cluster 5	VOC 202012/01	501Y.V2	P.1	Note
			Residues in S protein				
18	L	*	*	*	F	F	NTD
20	T	*	*	*	*	N	
26	P	*	*	*	*	S	
69,70	H, V	*	Delete	Delete	*	*	
570	A	*	*	D	*	*	
614	D	G	G	G	G	G	
655	H	*	*	*	*	Y	
681	P	*	*	H	*	*	
692	I	*	V	*	*	*	
701	A	*	*	*	V	*	
716	T	*	*	I	*	*	
982	S	*	*	A	*	*	Heptad repeat 1
1027	T	*	*	*	*	I	
1118	D	*	*	H	*	*	
1229	M	*	I	*	*	*	Transmembrane doma

Int J Biol Sci. 2021; 17(6): 1476–1485. Published online 2021 Apr 10. doi: 10.7150/ijbs.59137

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The summary of notable genetic variants

SARS-CoV-2 Variants of Concern (VOCs)

- **Alpha (B.1.1.7 lineage)** α
- **Beta (B.1.351 lineage)** β
- **Gamma(P.1 lineage)** γ
- **Delta (B.1.617.2 lineage)** δ

SARS-CoV-2 Variants of Interest (VOIs)

Epsilon (B.1.427 and B.1.429);

Zeta (P.2); **Eta**(B.1.525);

Theta (P.3); Iota (B.1.526);

Kappa(B.1.617.1)

and **Lambda**(C.37).

The CDC has designated the epsilon variants as VOC and zeta, theta ….as VOIs.

Transmissibility or virulence, reduction in neutralization by antibodies obtained through natural infection or vaccination, the ability to evade detection, or a decrease in the effectiveness of therapeutics or vaccination

https://www.ncbi.nlm.nih.gov/books/NBK554776/

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Chest CT in SARS COV2

Robert M. Kwee **Author Affiliations**. **Published Online:**Oct 23 2020https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

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Chest CT Protocol

Patients

- A surgical mask and placed in an isolation room. A strong case need distance of 2 m in combination with wearing a face mask.
- Non–CE chest CT, unless detect pulmonary embolism (PE).
- Patients of all ages infected with SARS-CoV-2 and minimize radiation **ALARA** (*as low as reasonably achievable*) principle.

Robert M. Kwee **Author Affiliations**
Published Online: Oct 23 2020 https://doi.org/10.1148/rg.2020200159
Thomas C. Kwee ,

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Chest CT Protocol

CT personnel

- Should use appropriate PPE, including face masks, eye protection, gown, and gloves. Increasing the air-exchange per hour or using high-efficiency particulate air (HEPA) filtration in CT examination rooms.
- Deep cleaning of the CT room is necessary before imaging the next patient. All material coming into or near contact with a patient with (suspected) COVID-19 should be disinfected.
- After chest CT is performed, the CT examination room downtime may be between 30 minutes to 1 hour to allow for room decontamination and passive air exchange, according to a policy implemented by the University of Washington. As a result, patient throughput will be limited.

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

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Normal Chest CT

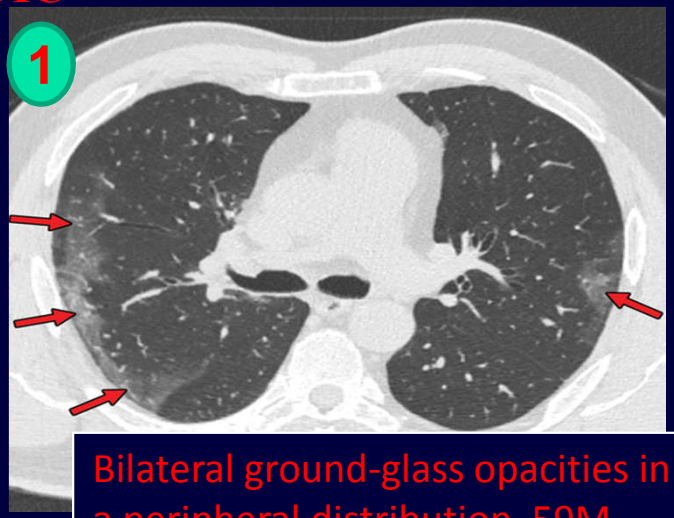
The incidence of normal chest CT findings in symptomatic patients with COVID-19 is estimated at about 10.6% (95% CI: 7.6%, 13.7%)

+ During the first 4–5 days after symptom onset (in 13.9%–33.3% of patients).
+ During the later stage of the infection (in 1.2%–4.0% of patients).
+ In asymptomatic patients with COVID-19 is considerably high (an estimated 46% of patients).

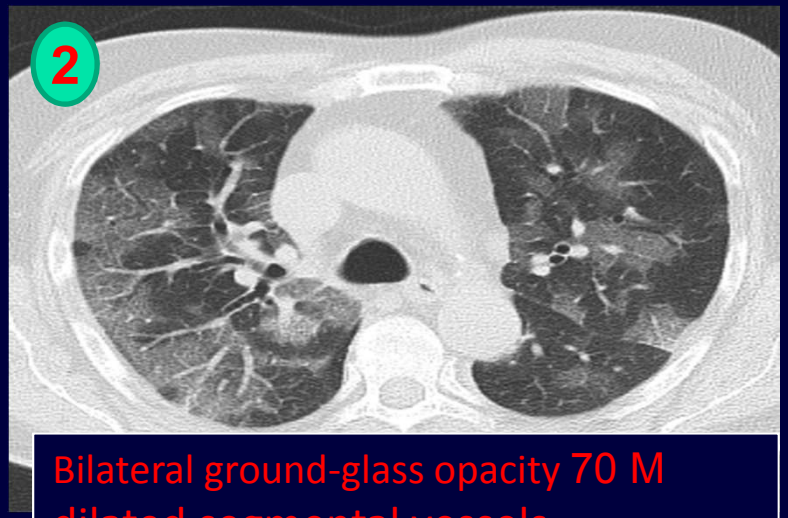
Low viral loads, confinement to the upper respiratory tract and likely host factors that lead to false-negative chest CT findings.

Robert M. Kwee **Author Affiliations**. **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

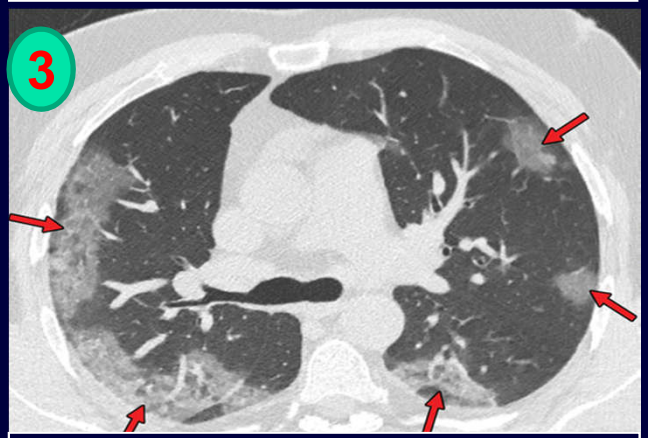
Chest CT Abnormalities with High Incidence (>70%)



Bilateral ground-glass opacities in a peripheral distribution, 59M



Bilateral ground-glass opacity 70 M dilated segmental vessels

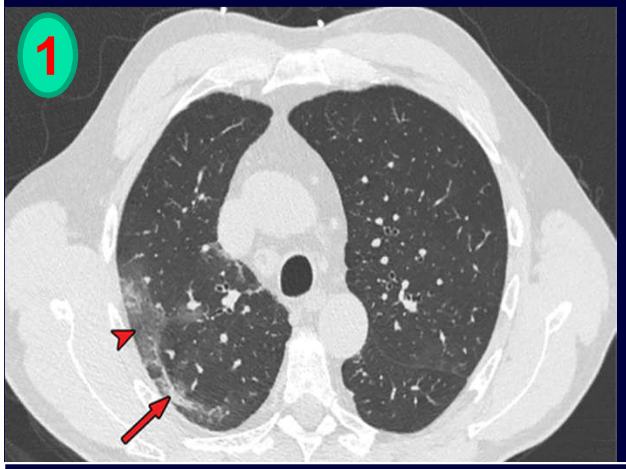


Bilateral ground-glass opacities in a peripheral distribution, 59M

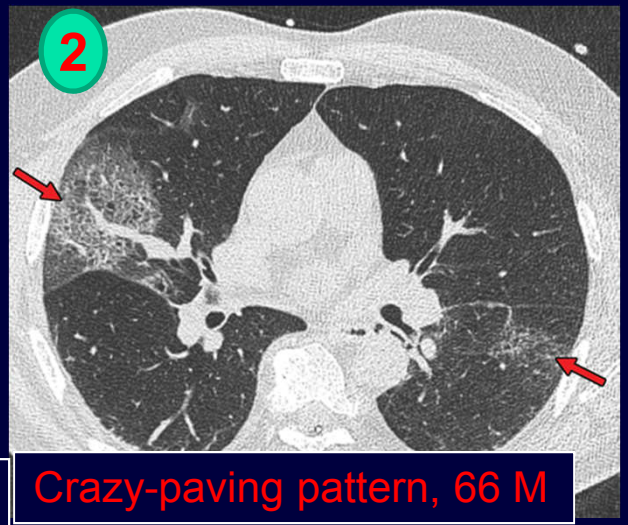
Including ground-glass opacities, vascular enlargement, bilateral abnormalities, lower lobe involvement, and posterior predilection.

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

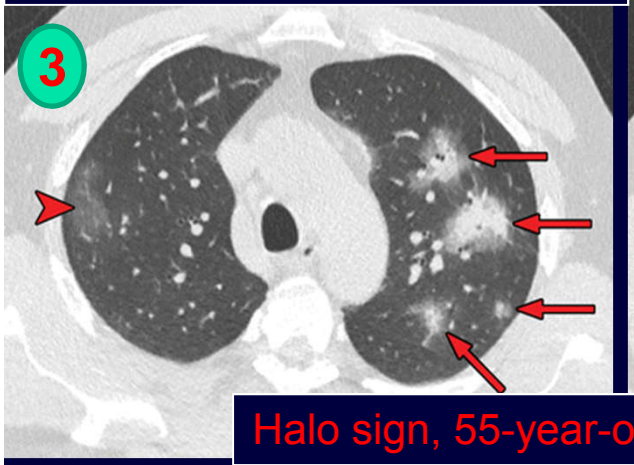
Chest CT Abnormalities with Intermediate Incidence (10%–70%)

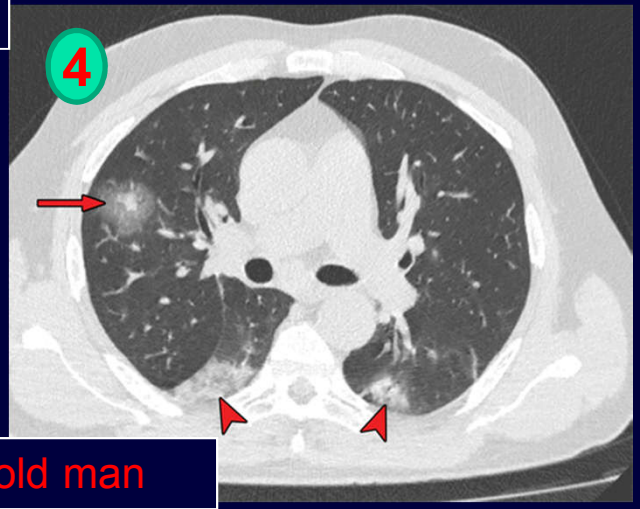


Ground-glass opacity 63 M
a subpleural curvilinear opacity



Crazy-paving pattern, 66 M





Halo sign, 55-year-old man

consolidation (51.5%), linear opacity (40.7%), septal thickening and/or reticulation (49.6%), crazy-paving pattern (34.9%), air bronchogram (40.2%), pleural thickening (34.7%), halo sign (34.5%), bronchiectasis (24.2%), nodules (19.8%), bronchial wall thickening (14.3%), and reversed halo sign (11.1%). unilateral (15.0%), multifocal (63.2%), diffuse (26.4%), single and/or focal (10.5%), middle or upper lobe involvement (49.3%–55.4%), peripheral location (59.0%), and central and peripheral location (36.2%)

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

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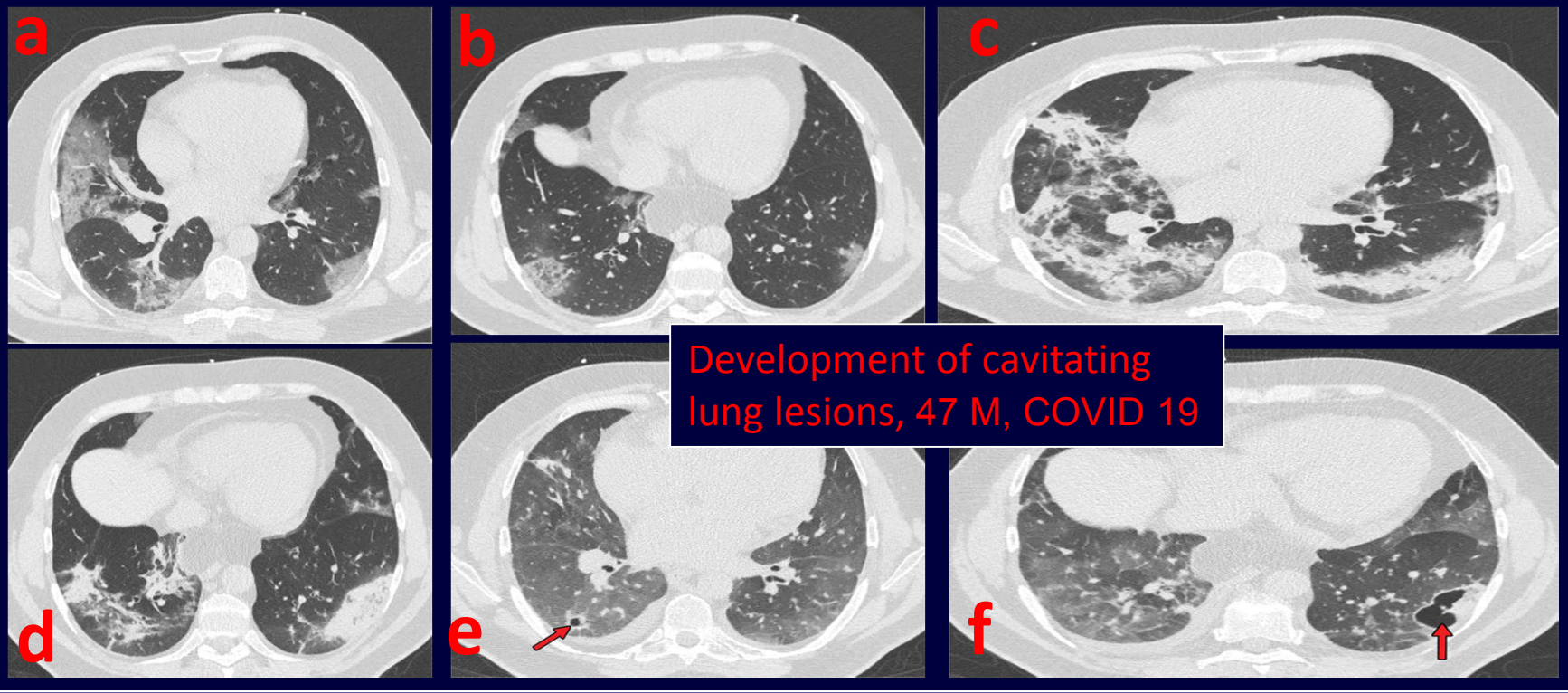
Chest CT Abnormalities with low incidence (10%).

Several chest CT findings have been reported to be uncommon in RT-PCR test–proven COVID-19 cases, and these include pleural effusion (5.2%), lymphadenopathy (5.1%), tree-in-bud sign (4.1%), central lesion distribution (3.6%), pericardial effusion (2.7%), and cavitating lung lesions (0.7%)

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

Development of cavitating lung lesions with COVID-19



(a, b) Axial nonenhanced CT images (lung window) obtained at hospital admission show ground-glass opacities in both lungs (early progressive stage). **(c, d)** Axial nonenhanced CT images (lung window) obtained after 10 days show progressive organizing consolidation (peak stage). **(e, f)** Axial nonenhanced CT images (lung window) obtained 40 days after the baseline CT images **(a, b)** show cavitating lesions in both lower lobes (arrow) (late stage).

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Imaging Classification and CT Features of COVID-19 Pneumonia

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Table 2: Imaging Classification and CT Features of COVID-19 Pneumonia

Imaging Classification	Rationale	CT Features
Typical appearance	Commonly reported imaging features of greater specificity for COVID-19 pneumonia	Peripheral, bilateral, ground-glass opacities with or without consolidation or visible intralobular lines ("crazy-paving" pattern) Multifocal ground-glass opacities of rounded morphology with or without consolidation or visible intralobular lines (crazy-paving pattern) Reverse halo sign or other findings of organizing pneumonia (seen later in the disease)
Indeterminate appearance	Nonspecific imaging features of COVID-19 pneumonia	Absence of typical features AND the presence of the following features: multifocal, diffuse, perihilar, or unilateral ground-glass opacity with or without consolidation lacking a specific distribution and that are nonrounded or nonperipheral Few small ground-glass opacities, with a nonrounded and nonperipheral distribution
Atypical appearance	Uncommonly or not reported features of COVID-19 pneumonia	Absence of typical or indeterminate features AND the presence of the following features: isolated lobar or segmental consolidation without ground-glass opacities; discrete small nodules (centrilobular, "tree-in-bud" appearance); lung cavitation; smooth interlobular septal thickening with pleural effusion
Negative for pneumonia	No features of pneumonia	No CT features to suggest pneumonia.

Source.—Adapted and reprinted under a CCBY 4.0 license from reference 51.

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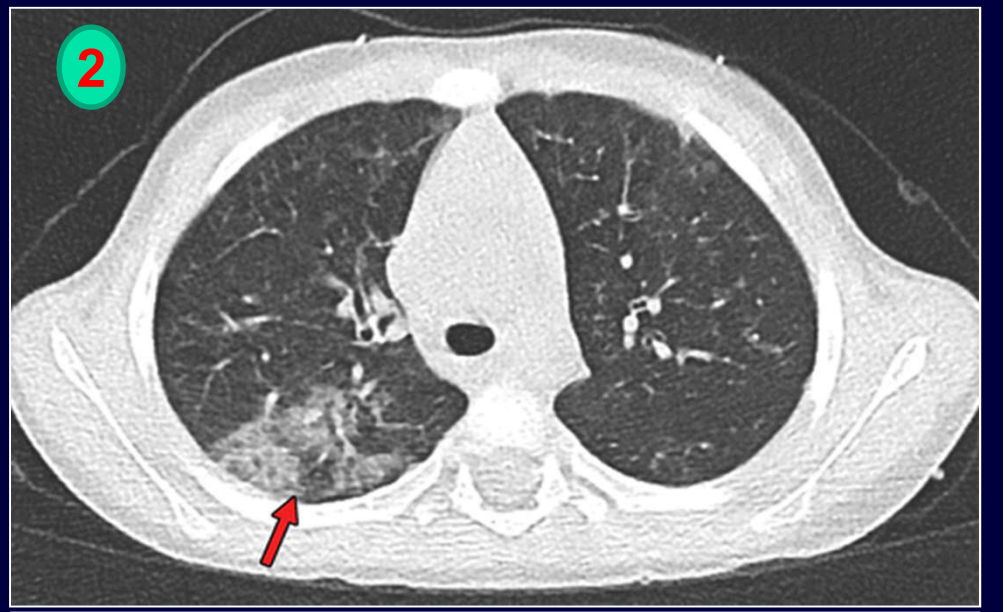
Findings classified as indeterminate appearance of COVID-19 pneumonia

Findings classified as indeterminate appearance of COVID-19 pneumonia in a 26-year-old woman. Axial nonenhanced chest CT image (lung window) shows an area of ground-glass opacity (arrow) in the posterior basal segment of the left lower lobe. No other lung abnormalities were visualized. The RT-PCR test results were positive for SARS-CoV-2.



Findings classified as indeterminate appearance of COVID-19 pneumonia according to the RSNA chest CT classification system in a 24-year-old woman. Axial nonenhanced chest CT image (lung window) shows ground-glass opacities (arrow) in the right upper lobe. In addition, there are discrete centrilobular opacities in the upper lobes. The RT-PCR test results were negative for SARS-CoV-2 but positive for influenza type A.

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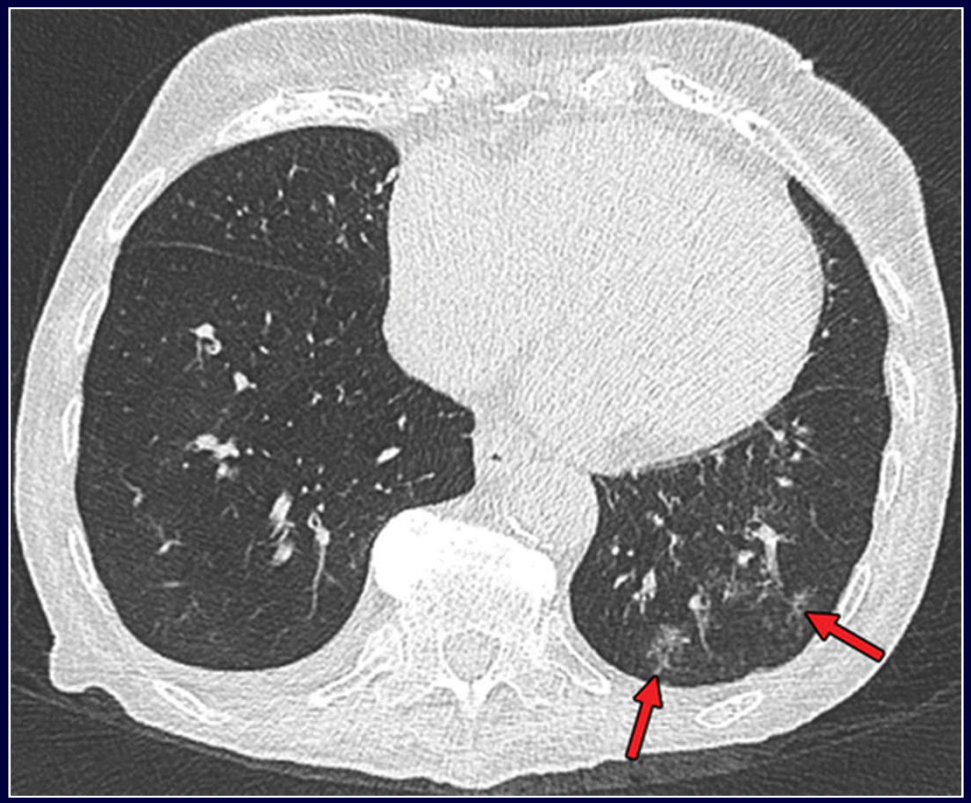
Imaging Classification and CT Features of atypical COVID-19 Pneumonia



Findings classified as atypical appearance of COVID-19 pneumonia in a 94-year-old woman. Axial nonenhanced chest CT image (lung window) shows subtle centrilobular tree-in-bud opacities (arrows) in the left lower lobe. The RT-PCR test results were negative for SARS-CoV-2 but positive for influenza type A.

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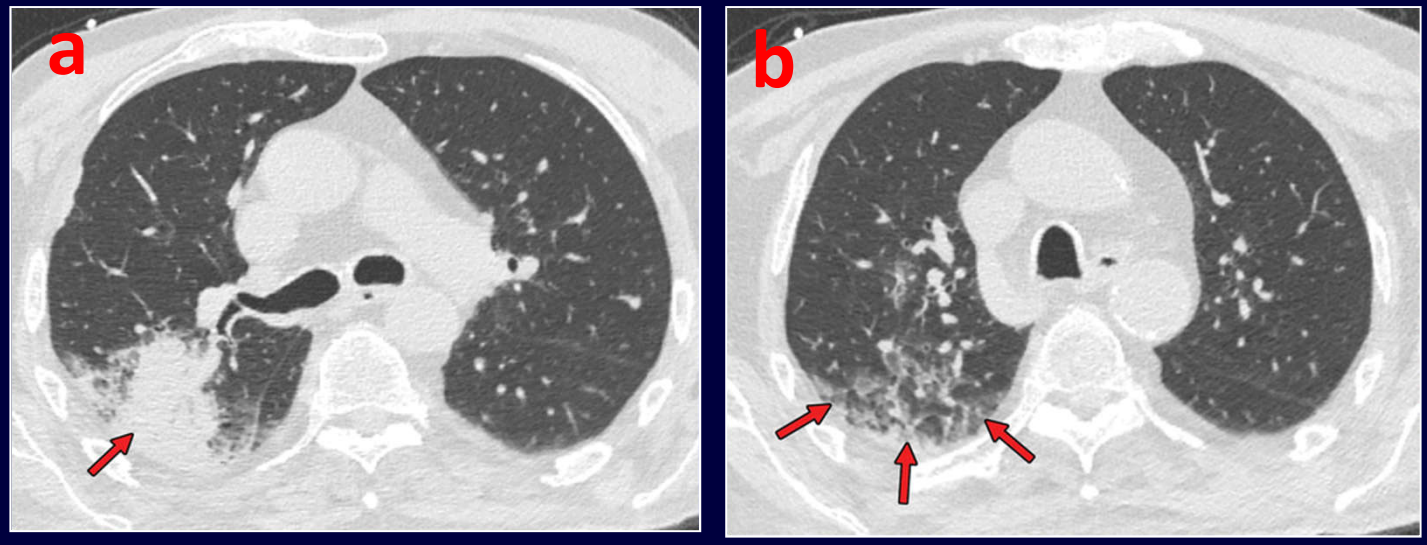
Mixed chest CT findings



Mixed chest CT findings in an 86-year-old man. **(a)** Axial nonenhanced CT image (lung window) obtained at hospital admission shows sublobar consolidation (arrow) in the posterior segment of the right upper lobe, a finding more consistent with lobar pneumonia than COVID-19. **(b)** Axial CT image obtained at a more superior level shows the presence of ground-glass opacities (arrows). Altogether, the findings were classified as indeterminate for COVID-19 pneumonia, according to the RSNA chest CT classification system. The RT-PCR test results were positive for SARS-CoV-2.

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Chest CT of COVID-19 Complications

In cases of clinical worsening, chest imaging is advised to assess for COVID-19 progression or secondary cardiopulmonary complications such as acute respiratory distress syndrome (ARDS), PE, superimposed pneumonia, or heart failure that can potentially be secondary to COVID-19–induced cardiac injury

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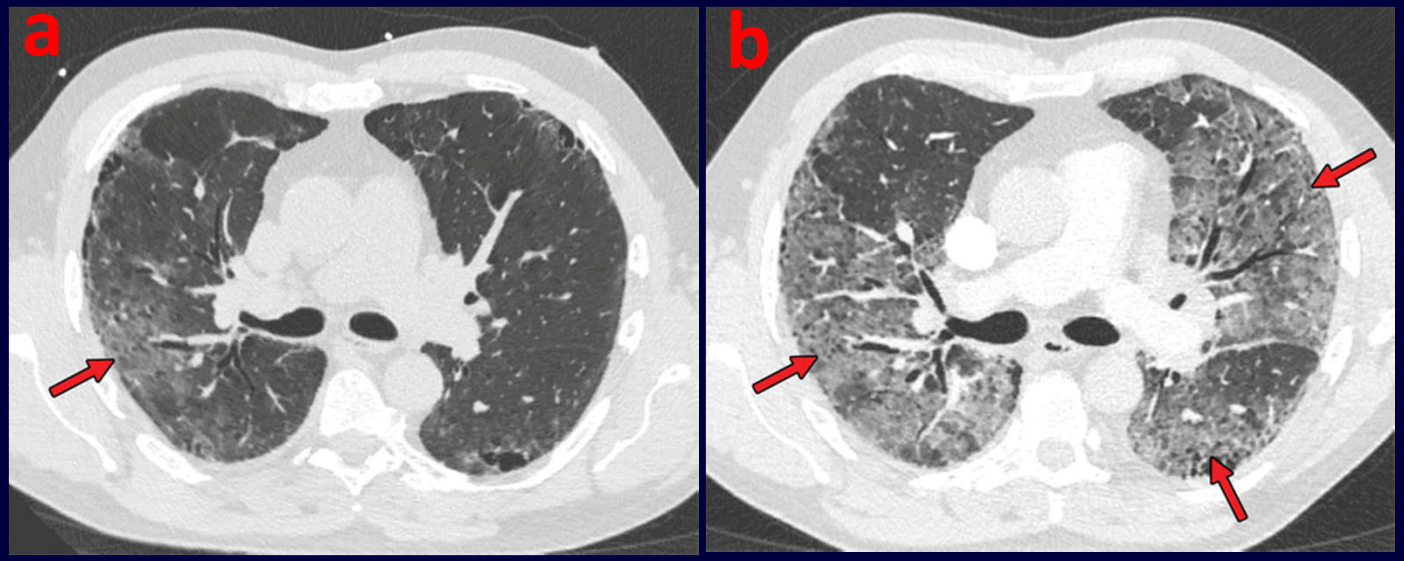
Acute Respiratory Distress Syndrome



Development of ARDS in a 60-year-old man with COVID-19. **(a)** Axial nonenhanced CT image (lung window) obtained at hospital admission shows peripherally located ground-glass opacities (arrow), mainly in the right lung. Note the preexisting centrilobular and paraseptal emphysema. **(b)** Axial contrast-enhanced CT image (lung window) obtained after 3 days shows a marked progression of lung abnormalities (arrows).

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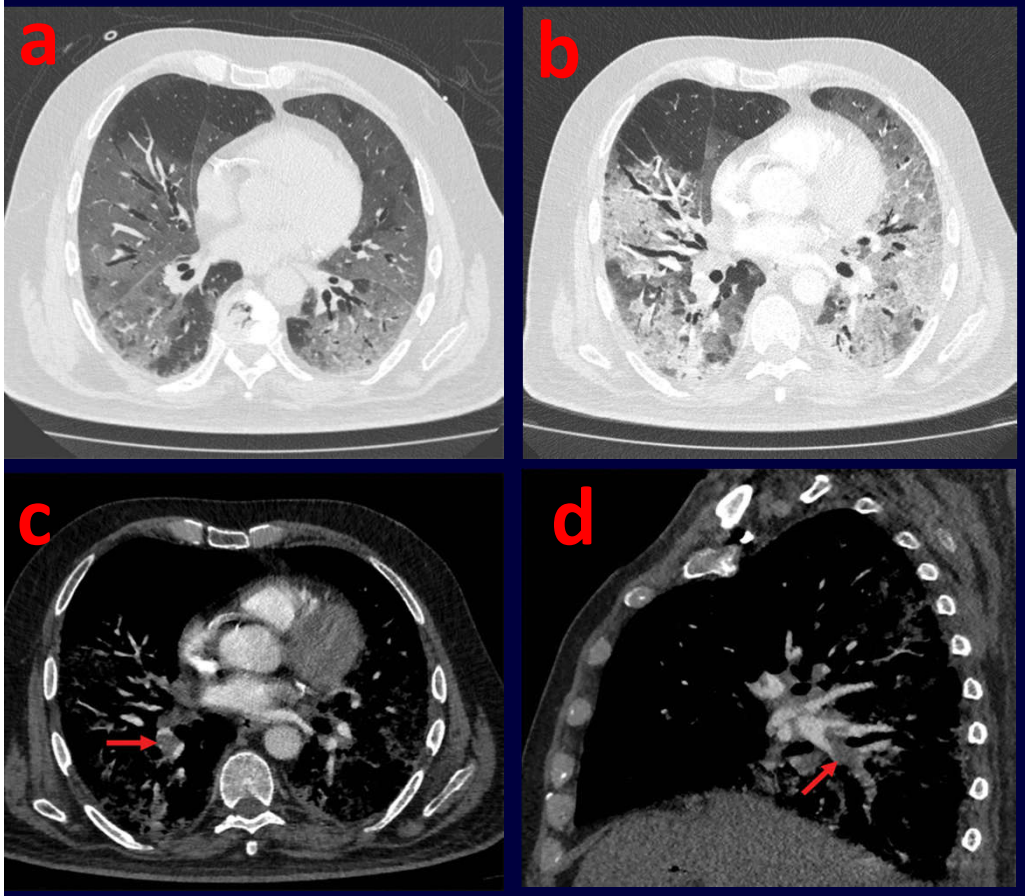
Pulmonary Embolism



PE in a 73-year-old man with COVID-19. **(a)** Axial nonenhanced CT image (lung window) at baseline shows peripherally diffuse ground-glass opacities in both lungs. **(b)** Axial contrast-enhanced CT image (lung window) obtained after 10 days shows increased consolidation in both lungs. Note the bronchial dilatation within involved portions of the lungs. **(c, d)** Axial contrast-enhanced CT image (mediastinal window) **(c)** and sagittal reconstruction **(d)** obtained 10 days after the baseline images show a filling defect (arrow) in a segmental pulmonary artery branch in the right lower lobe, consistent with PE.

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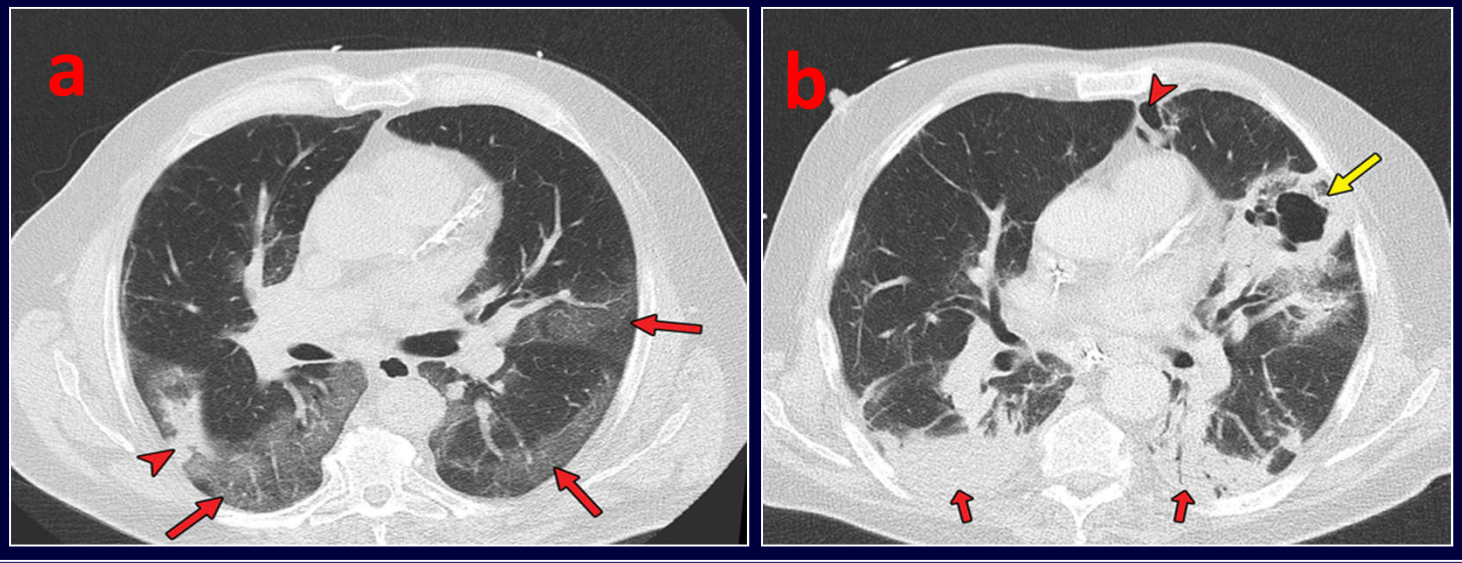
Superimposed Pneumonia



Superimposed pneumonia in a 69-year-old man with COVID-19. **(a)** Axial nonenhanced CT image (lung window) at baseline shows ground-glass opacities (arrows) posteriorly located in the left upper lobe and both lower lobes and an area of consolidation (arrowhead) in the right lower lobe. **(b)** Axial contrast-enhanced CT image (lung window) obtained after 22 days shows increased consolidation in both lower lobes (red arrows) and consolidation with central cavitation in the left upper lobe (yellow arrow). The culture of puslike bronchial fluid was positive for *Staphylococcus aureus*. Note the presence of pneumomediastinum (arrowhead), which is probably due to long-lasting positive-pressure ventilation.

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

Cardiac Injury

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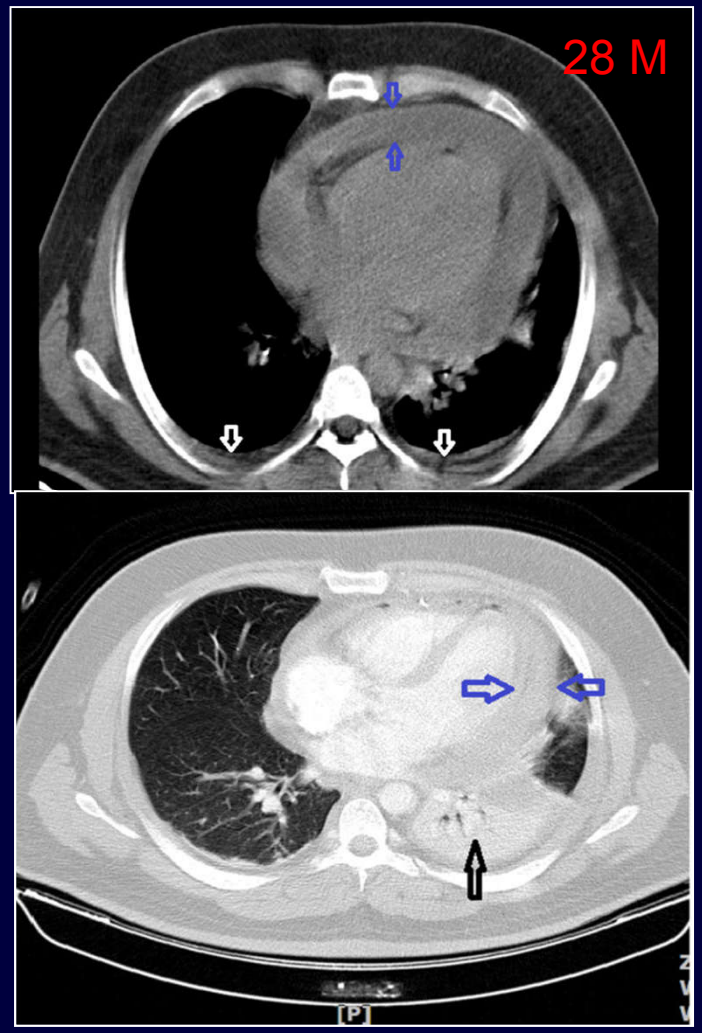

Cardiac injury occurs in 12.5%–19.7% of hospitalized patients with COVID-19 and is an independent risk factor for in-hospital mortality. Pericardial effusion manifests in an estimated 5.2% of patients with COVID-19, with a higher incidence in those with severe or critical illness. Pericardial effusion may also be a sign of cardiac injury in COVID-19. Although pericardial effusion is a nonspecific finding, radiologists should suggest the possibility of COVID-19–related cardiac injury when pericardial effusion is depicted on chest CT images.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7927542/

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Abdoninal CT of SARS COV2

Abdominal CT in COVID-19 patients: incidence, indications, and findings

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Erica B. Stein, Katherine Bojicic, Bamidele Otemuyiwa, Dharshan Vummidi, Aamer Chughtai, and James H. Ellis
Author information Article notes Copyright and License information Disclaimer

Purpose

The purpose of this study was to evaluate the frequency, indications, and findings of abdominal CTs ordered in the initial evaluation of patients who had a positive COVID-19 test performed in our institution.

Methods

Retrospective chart review was performed on all patients who had a positive test for COVID-19 performed at a single quaternary care center from 1/20/2020 through 5/8/2020. In a subset of patients undergoing abdominal CT as part of the initial evaluation, the demographics, suspected COVID-19 status at the time of scan, presenting complaints, and abdominal CT findings were recorded. Cardiothoracic radiologists reviewed and scored the visualized lung bases for the likelihood of COVID-19.

Results

Only 43 (4.1%) of 1057 COVID-19 patients presented with abdominal complaints sufficient to warrant an abdominal CT. Of these 43 patients, the vast majority (39, 91%) were known or suspected to have COVID-19 at the time of the scan. Most (27/43, 63%) scans showed no acute abdominal abnormality, and those that were positive did not share a discernable pattern of abnormalities. Lung base abnormalities were common, and there was moderate inter-reviewer reliability.

Conclusion

A minority of COVID-19 patients present with abdominal complaints sufficient to warrant a dedicated CT of the abdomen, and most of these studies will be negative or have abdominal findings not associated with COVID-19. Appropriate lung base findings are a more consistent indication of COVID-19 infection than abdominal findings.

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Diagnostic Accuracy of Chest CT

A meta-analysis, which included six studies comprising a total of 1431 patients who were mainly symptomatic and at high risk for COVID-19, reported a chest CT pooled sensitivity of 94.6% (95% CI: 91.9%, 96.4%) and a pooled specificity of 46.0% (95% CI: 31.9%, 60.7%) in the detection of COVID-19.

- A negative chest CT examination result certainly does not exclude COVID-19. The proportion of false-positive chest CT examination results is substantial and due to overlapping imaging features with numerous other diseases, including other viral pneumonias
- It is important to realize that CT is not the standard for the diagnosis of COVID-19, but its findings help suggest the diagnosis in the appropriate setting. It is crucial to correlate chest CT findings with epidemiologic history, clinical presentation, and RT-PCR test results.

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

Additional Chest CT in Patients Who Undergo CT of Other Body Regions

This scenario was not addressed in the Fleischner Society consensus statement. CT is widely used in the emergency department, with the head and abdomen being among the most commonly imaged body regions . In COVID-19 endemic areas, additional chest CT may be performed to help detect COVID-19 in patients who undergo extrathoracic CT.

- The results of several studies in COVID-19 endemic regions have shown that incidental chest CT findings suggestive of COVID-19 pneumonia can be detected in the visualized lung parenchyma in patients who underwent CT of other body regions, such as CT angiography of the head and neck, CT of the cervical or thoracic spine, and CT of the abdomen. These patients should undergo subsequent RT-PCR tests before the diagnosis of COVID-19 can be confirmed

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

Role of Chest CT in Diagnostic Decision Making

According to the Fleischner Society consensus statement

Asymptomatic Patients and Patients with Mild Respiratory Symptoms

chest imaging is not indicated as a screening test for COVID-19 in asymptomatic patients or in patients with mild respiratory symptoms of COVID-19 (ie, absence of significant pulmonary dysfunction or damage)

Patients with Moderate to Severe Respiratory Symptoms

chest imaging is indicated in patients with moderate to severe respiratory symptoms (ie, presence of significant pulmonary dysfunction or damage) and any pretest probability of COVID-19 infection, when RT-PCR test results are negative, and in any patient for whom an RT-PCR test is not performed or not readily available

Robert M. Kwee **Author Affiliations** **Published Online:** Oct 23 2020 https://doi.org/10.1148/rg.2020200159 Thomas C. Kwee ,

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Guideline of classify COVID 19

The National Institutes of Health (NIH) issued guidelines that classify COVID-19 into five distinct types

Asymptome or Presymptome:
Individuals with positive SARS-CoV-2 test without any clinical symptoms consistent with COVID-19.

Mild illness:
- COVID 19 clinic but without shortness of breath
- or abnormal chest imaging

Moderate illness:
- Clinical symptoms or radiologic evidence of lower respiratory tract disease.
- And who have oxygen saturation (SpO2) ≥ 94% on room air

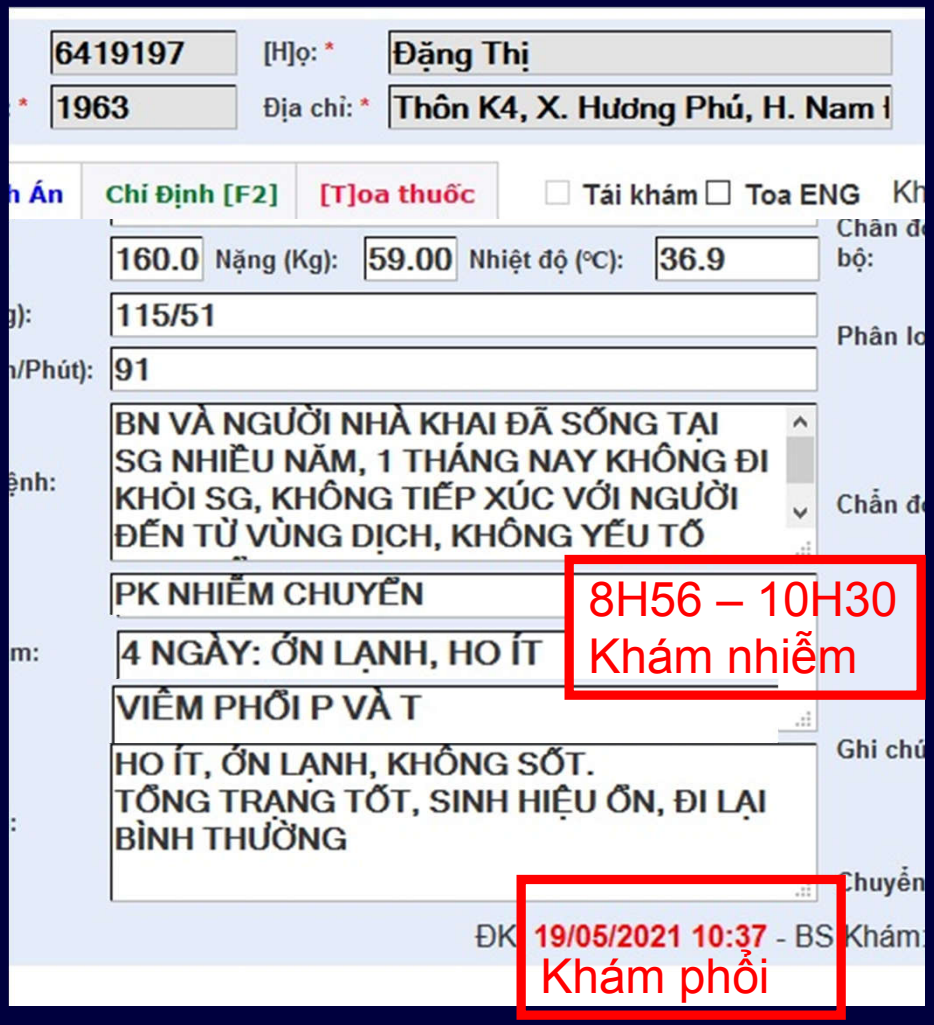
Severe illness:
- (SpO2) ≤ 94% on room air; a ratio of (PaO2/FiO2) <300
- with marked tachypnea, respiratory frequency >30 breaths/min or lung infiltrates >50%.

Critical illness:
- Acute respiratory failure, septic shock, and/or multiple organ dysfunction. Patients.
- Development of (ARDS) approximately one week after the onset of symptoms.

When PaO2 is not available, a ratio of SpO2/FiO2 ≤ 315 is suggestive of ARDS.

Clinical case at MEDIC

Case 1



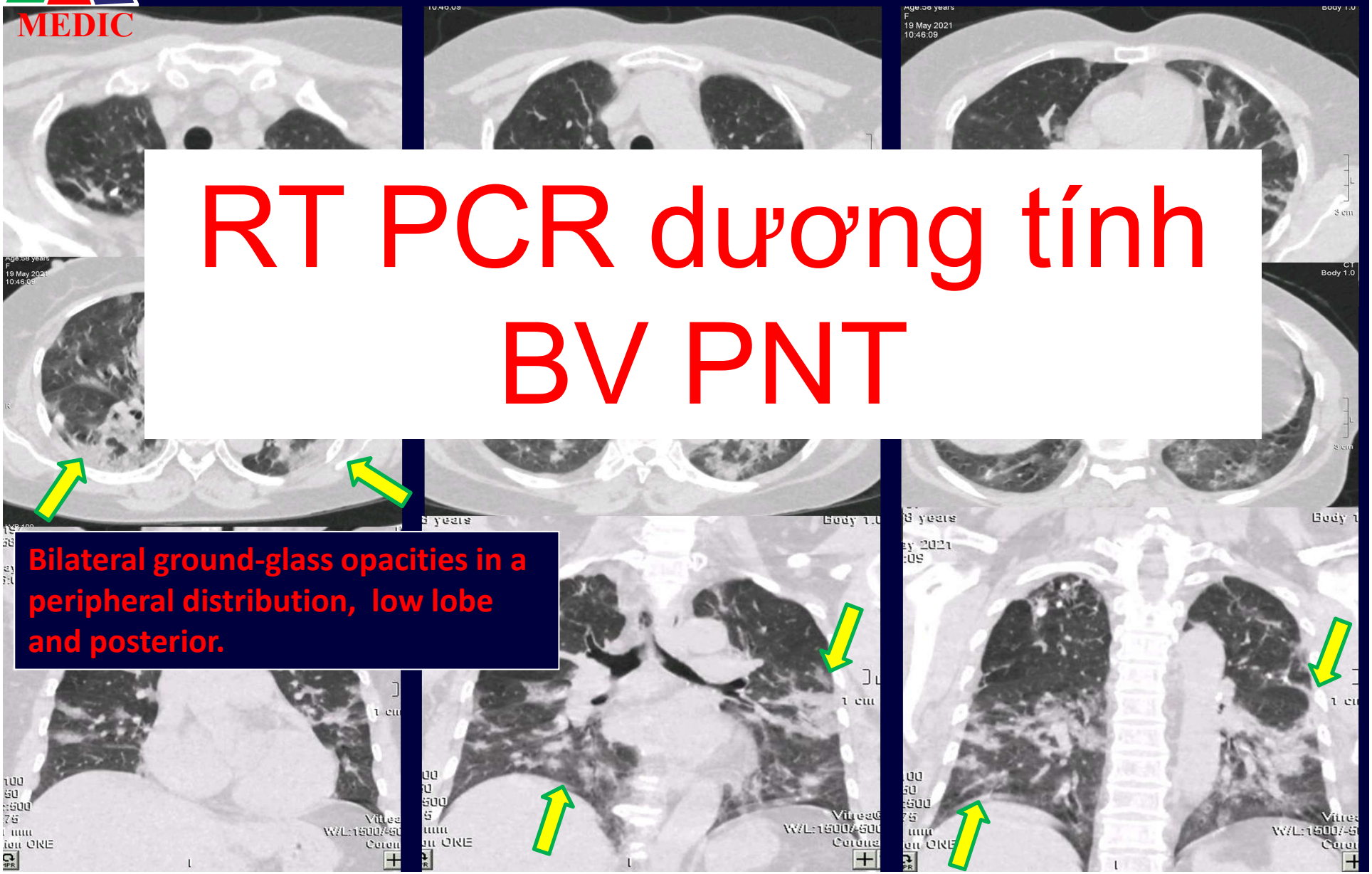
LUNG CT

Clinic case at MEDIC

MEDIC

RT PCR dương tính

BV PNT



Bilateral ground-glass opacities in a peripheral distribution, low lobe and posterior.

MEDIC

Case 2

Clinical case at MEDIC

*	5882999	[H]ọ: *	Đặng Thị	Tên: *	[redacted]	Nữ	THU PHÍ
h: *	1971	Địa chỉ: *	70 Ấp 3, X. Phước Kiểng, H. Nhà	Điện thoại:	0708885232	Nghề nghiệp:	nội trợ

nh Án | Chỉ Định [F2] | [T]oa thuốc | Tái khám | Toa ENG | Khám: 01/07/2021 08:49

định:		Chẩn đoán sơ bộ:	
n):	158.0 Nặng (Kg): 56.00 Nhiệt độ (°C): 36.5		
Hg):	125/78	Phân loại:	Nhấn F3
ần/Phút):	110		
bệnh:	VIÊM GAN SIÊU VI B MẠN TRỊ BV NHIỆT ĐỚI K CỔ TỬ CUNG PT VÀ XẠ TRỊ 25 TIA BVUB 2020	Chẩn đoán:	TỔN THƯƠNG PHỔI/ CT/ TEST NHANH COVID ÂM TÍNH
ám:	ỚN LẠNH KÉO DÀI, KHÔNG HO, KHÔNG KHÓ THỞ, KHÔNG ĐAU NGỰC, KHÔNG MẤT MÙI - VỊ, BN KHÁM [redacted] CHỈ ĐỊNH CT PHỔI CÓ TỔN THƯƠNG ĐA		
		Ghi chú BS:	BV NGUYỄN TRI PHƯƠNG
ng:	TẦM SOÁT COVID BẰNG PCR, ỚN LẠNH KÉO DÀI, KHÔNG HO, KHÔNG ĐAU HỌNG, CÓ TỔN THƯƠNG PHỔI ĐA NỐT VÙNG NGOẠI VI HAI BÊN/ CT		
		Chuyển khoa:	Nhấn F3

ĐK: 01/07/2021 07:54 - BS Khám [redacted]

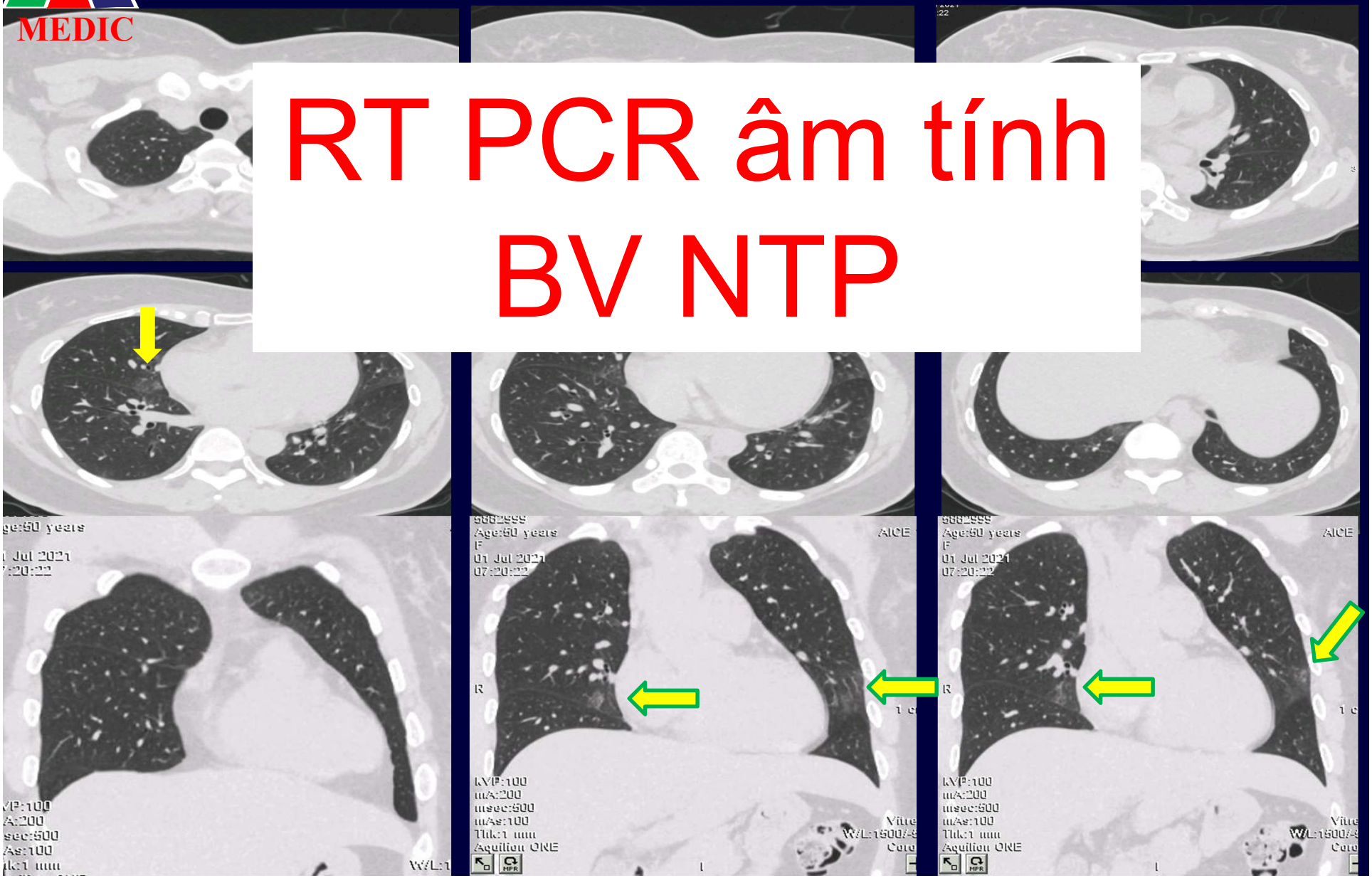
Ngày 01/07/2021 (Đã đủ kết quả)

TÊN XÉT NGHIỆM	KẾT QUẢ	KHOẢNG THAM CHIẾU	MÃ QT
I. MIỄN DỊCH - IMMUNOLOGY			
XN nhanh kháng nguyên SARS CoV-2	Âm tính	Negative	
(Dịch tỵ hầu)	.		

Clinical case at MEDIC

MEDIC

RT PCR âm tính
BV NTP



Clinical case at MEDIC

MEDIC

Tên: * Hòa

Phước Kiểng, H. Nhà | Điện thoại: 0708885

Tái khám ☐ Toa ENG Khám: 21/07/2021 09:06

ổng Quát / bs ng

(°C): 37

Chẩn đoán sơ bộ:

Phân loại: Nhấn F3

THEO DÕI K GIÁP (ĐÃ FNA)

K cổ tử cung đã mổ và xạ trí 25 tia tại bv ung bướu năm 2020/ viêm gan siêu vi B đang điều trị ở bv Nhiệt đới tphcm/ mới xuất viện ở bv Nguyễn tri phương do viêm nhiễm hô hấp nhẹ.

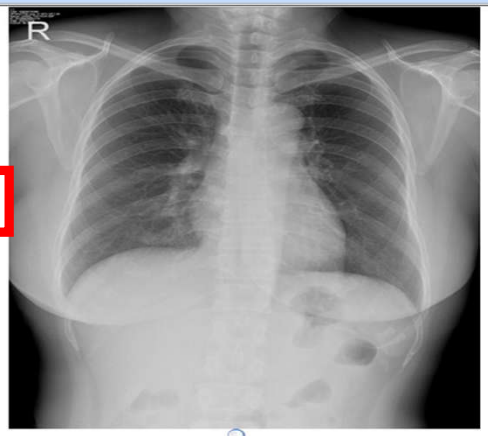
ớn lạnh, mệt mỏi cơ thể

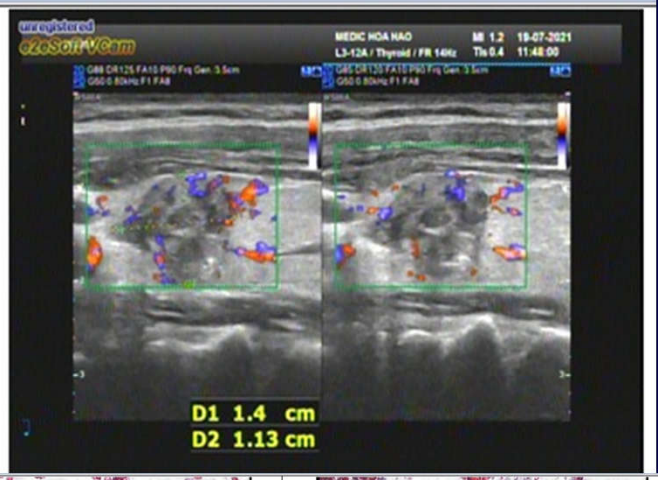
ic được bs
âm và là làm
nghi ngờ
ú (gs Nguyễn

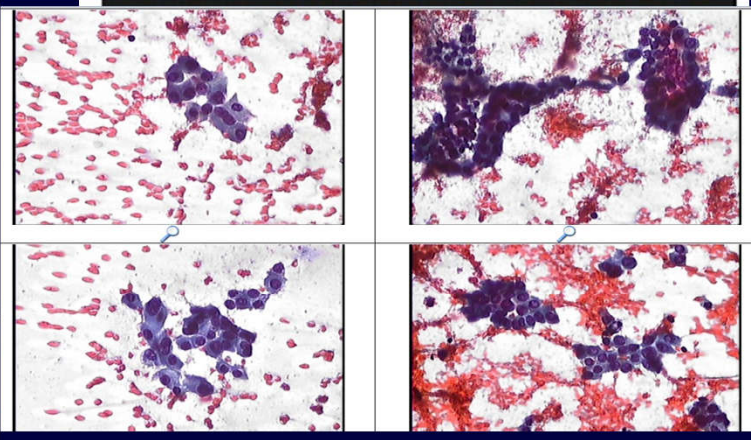
Ghi chú BS: GPB: NGHI NGỜ CARCINOME TUYẾN DẠNG NHÚ
TƯ VẤN BỆNH NHÂN VỀ CHỈ ĐỊNH PH THUẬT

Chuyển khoa: Nhấn F3

BN đã được chuyển từ khoa Tổng Quát







GS BS. Nguyễn Sào Trung

Vùng: Tế Bào Chọc Hút FNAC
KL: NGHI NGỜ CARCINÔM TUYẾN GIÁP DẠNG NHÚ
PHÂN LOẠI THEO HỆ THỐNG BETHESDA: NHÓM V

Treatment drugs of SARS COV2

MEDIC

FDA Approves First Treatment for COVID-19

For Immediate Release:
October 22, 2020
Español

Today, the U.S. Food and Drug Administration approved the antiviral drug Veklury (remdesivir) for use in adult and pediatric patients 12 years

Remdesivir is administered by intravenous infusion over a period of 30–120 minutes once daily for 5 days, with a maximum total treatment duration of 10 days if there is no clinical improvement.[1]

https://www.fda.gov/news-events/press-announcements/fda-approves-first-treatment-covid-19

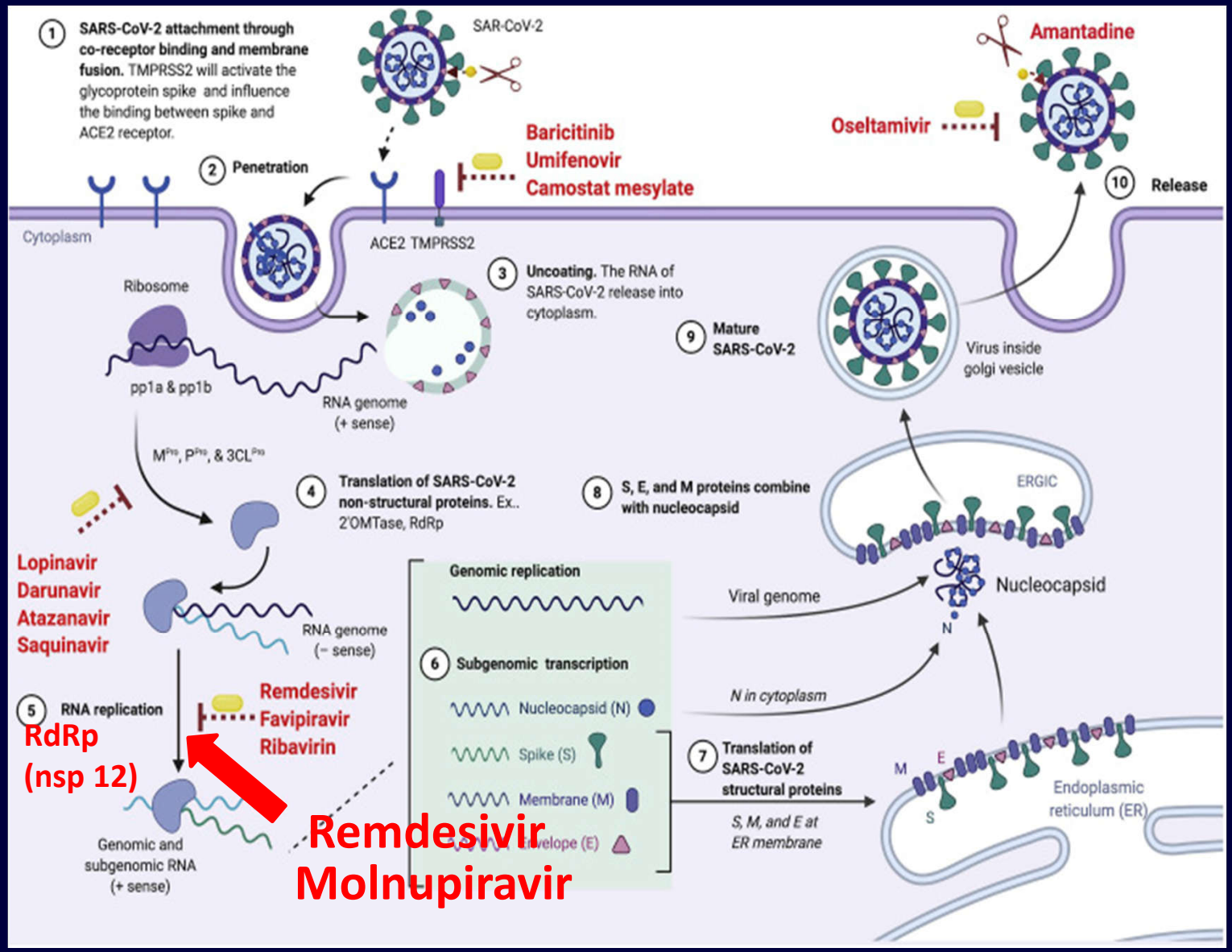
Molnupiravir Shows Promise for Treatment of Moderate COVID-19 in Phase 2/3 Trial

Part 1, 302 participants, symptom onset within 7 days, receive either 200 mg, 400 mg or 800 mg of molnupiravir or a placebo. No infectious virus could be recovered at study day 5 in any molnupiravir-treated patients.

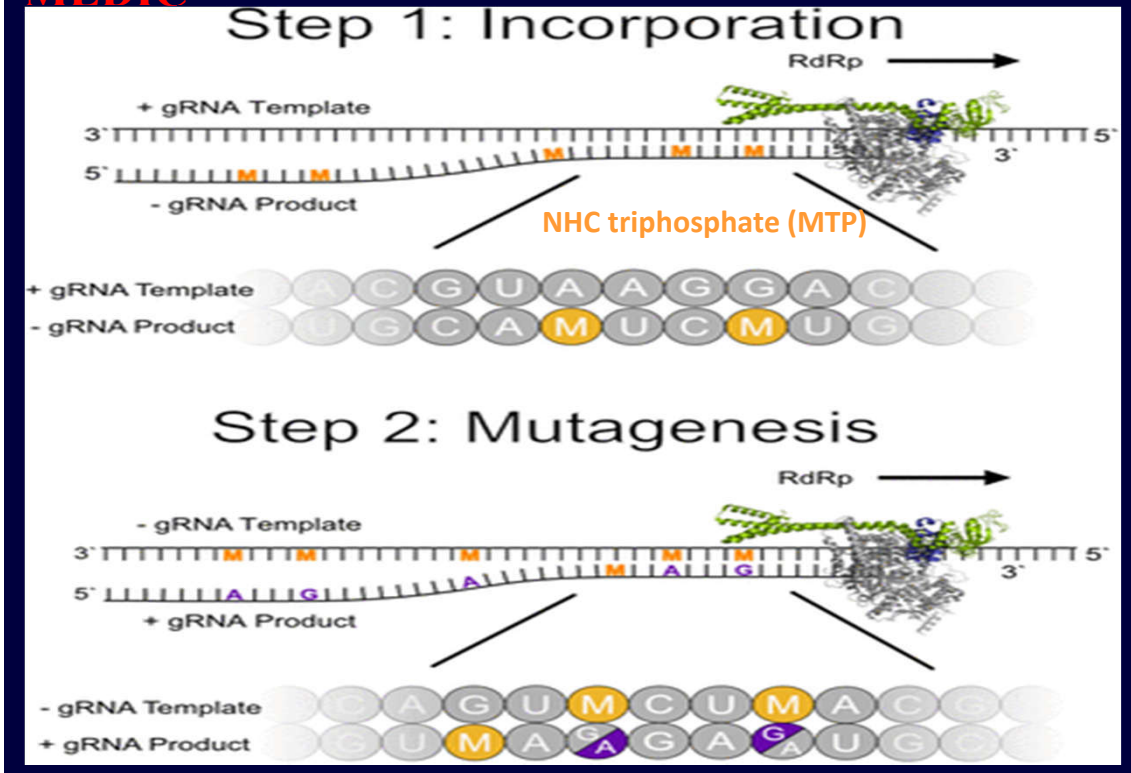
Part 2, evaluate an 800 mg dose of molnupiravir administered twice daily.

Estimated phase 3 in September or October of 2021. F**ive Indian pharma giants to collaborate on clinical trials of Molnupiravir.**

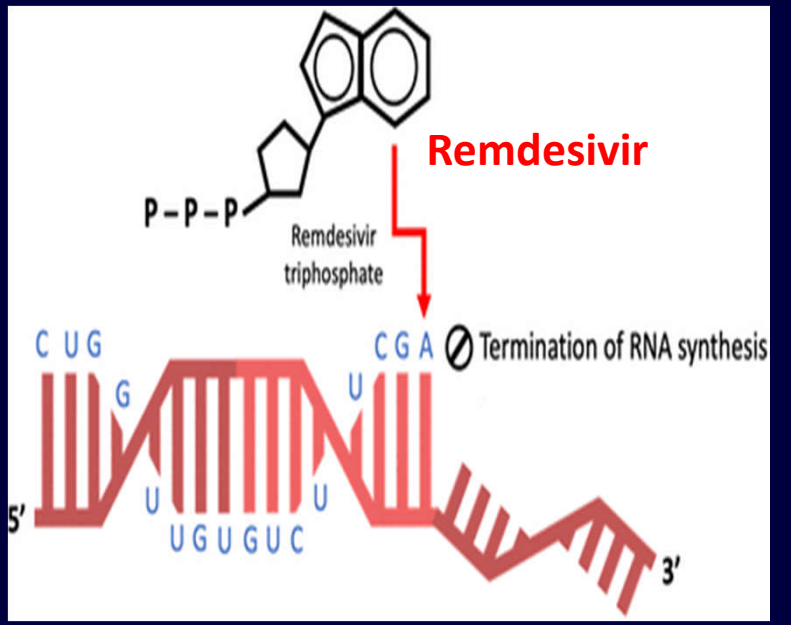
Mechanism of Remdesivir và Molnupiravir



Mechanism of Remdesivir và Molnupiravir



When **molnupiravir** convert to NHC triphosphate (MTP), used by the RdRp of SARS-CoV-2 as a substrate instead of CTP or UTP. Therefore, in a first step, the RdRp is predicted to frequently incorporate M -gRNA (–sgRNA). In a second step, the resulting M-containing RNA can be used as a template for the synthesis of +gRNA or positive strand subgenomic mRNA (+sgmRNA).



Remdesivir triphosphate leads to delayed chain termination after three additional bases have been added.

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Conclusion

- **Typical appearance CT features of COVID**: ground-glass opacities, vascular enlargement, bilateral abnormalities, lower lobe involvement, and posterior predilection. a subpleural curvilinear opacity, crazy-paving pattern, halo sign.
- Atypical appearance CT features of COVID: pleural effusion (5.2%), lymphadenopathy (5.1%), tree-in-bud sign (4.1%), central lesion distribution (3.6%), pericardial effusion (2.7%), and cavitating lung lesions (0.7%).
- Secondary cardiopulmonary complications on CT of COVID such as acute respiratory distress syndrome (ARDS), PE, superimposed pneumonia, or cardiac injury (Pericardial effusion).
- Although CT scan is not a diagnostic and screening tool, **familiarity** with different imaging findings and their differential diagnosis can be helpful in rapid and accurate decision-making.
- FDA Approves first treatment for COVID-19 **(remdesivir 22-10-2020)** and **molnupiravir** shows promise for treatment of moderate COVID-19 in Phase 2/3 Trial (Estimated phase 3 in **September or October of 2021**)

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Thanks for your attention
best regards

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