COVID-19 et atteinte cardiologique

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IMCVO Hôpital privé de Parly 2 — 20èmes RENCONTRES MÉDICO-CHIRURGICALES — Palais des Congrès de VERSAILLES — SAMEDI 4 DÉCEMBRE 2021 — IMCVO Institut des Maladies Cardio-Vasculaires de l'Ouest — Journée Yves Guérin

Physiopathologie

- Le récepteur fonctionnel du SARS-CoV-2 est l'**ACE2**, une **enzyme de contre-régulation du SRAA exprimée dans le myocarde** ;
- Les patients avec **comorbidités vasculaires** représentent une part importante des cohortes infectées dans les premières données publiées et leur présence semble **aggraver la sévérité de la maladie** ;
- Le virus a des **effets cardiaques aigus** avec **souffrance myocardique** ;
- Les virus de la famille des coronavirus sont connus pour avoir des **effets cardiovasculaires chroniques** passant par une **perturbation du métabolisme lipidique** ;
- Médicaments testés initialement possèdent des effets indésirables cardiovasculaires potentiellement graves.

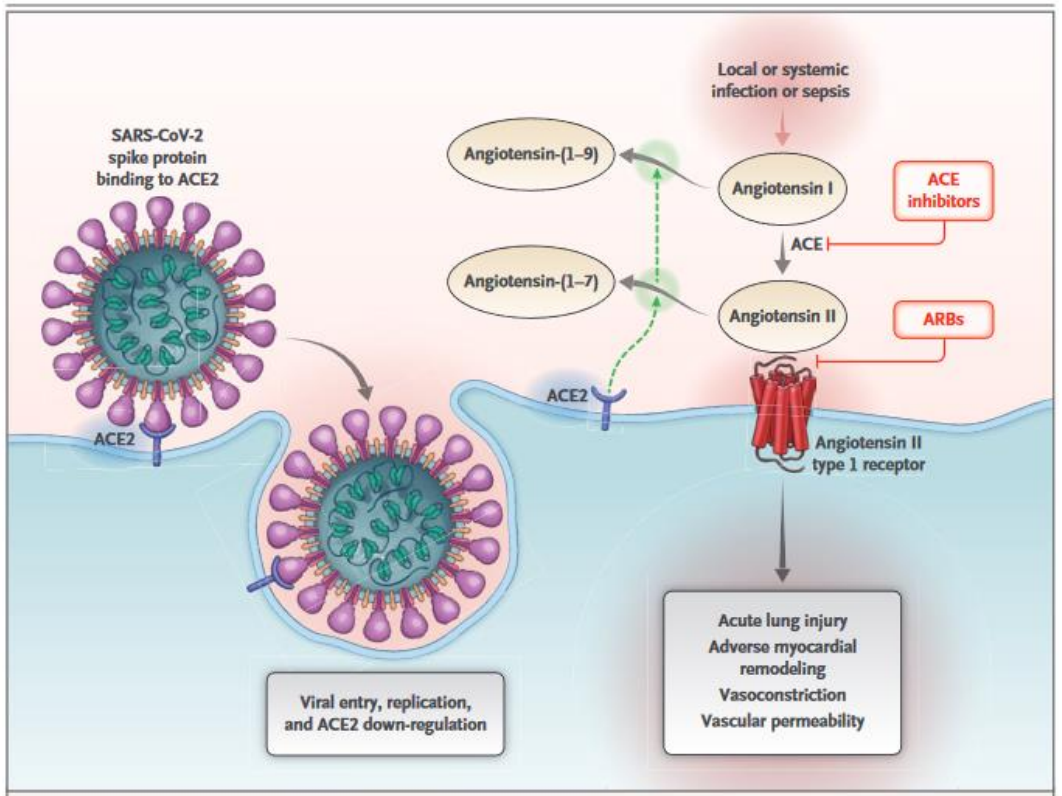


Figure 1. Interaction between SARS-CoV-2 and the Renin–Angiotensin–Aldosterone System.
Shown is the initial entry of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) into cells, primarily type II pneumocytes, after binding to its functional receptor, angiotensin-converting enzyme 2 (ACE2). After endocytosis of the viral complex, surface ACE2 is further down-regulated, resulting in unopposed angiotensin II accumulation. Local activation of the renin–angiotensin–aldosterone system may mediate lung injury responses to viral insults. ACE denotes angiotensin-converting enzyme, and ARB angiotensin-receptor blocker.

Nat Rev Cardiol, 2020.

Comorbidités cardio-vasculaires et COVID

Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study

Nanshan Chen*, Min Zhou*, Xuan Dong*, Jieming Qu*, Fengyun Gong, Yang Han, Yang Qiu, Jingli Wang, Ying Liu, Yuan Wei, Jia'an Xia, Ting Yu, Xinxin Zhang, Li Zhang

JAMA | Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus–Infected Pneumonia in Wuhan, China

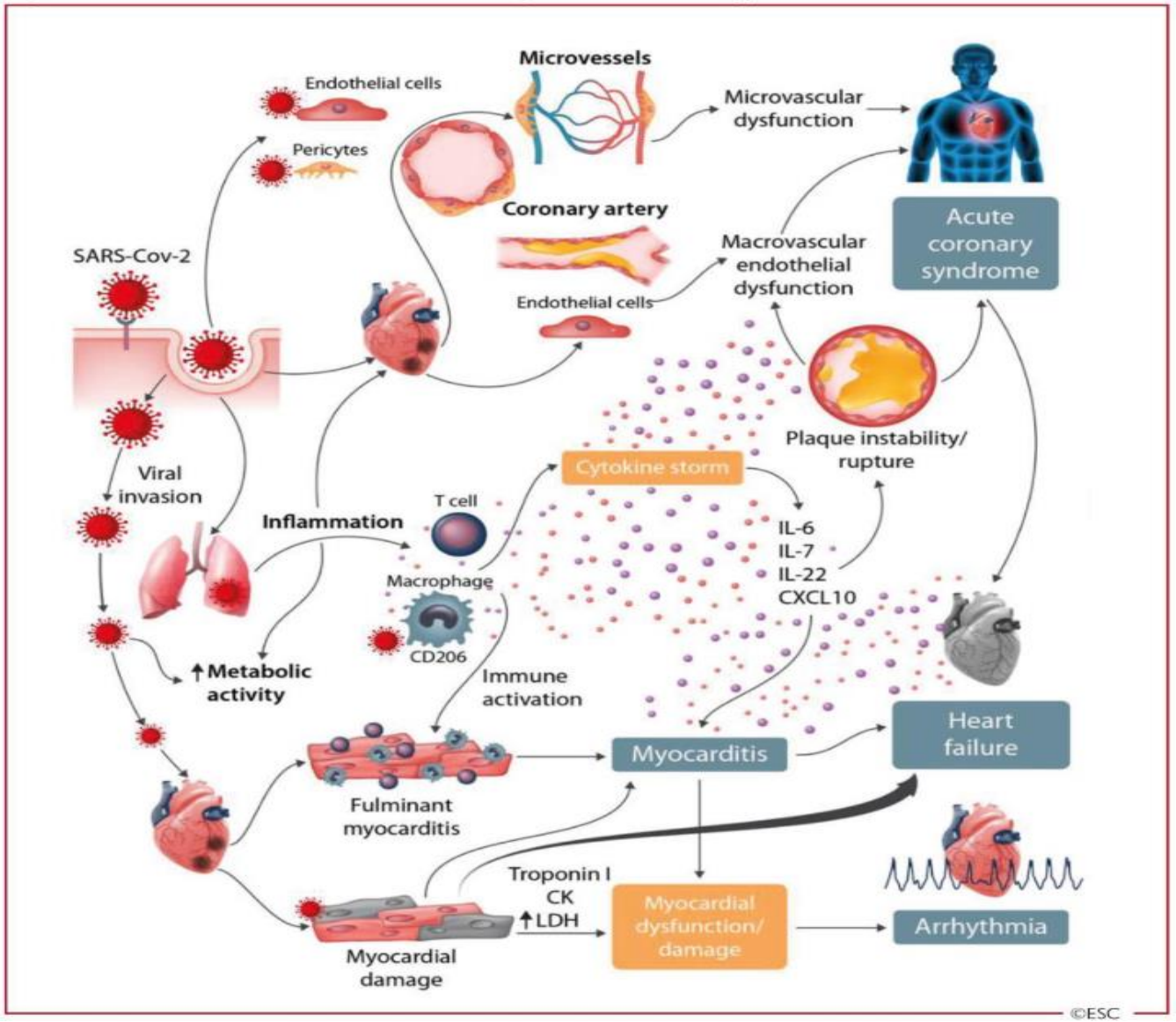
Dawei Wang, MD; Bo Hu, MD; Chang Hu, MD; Fangfang Zhu, MD; Xing Liu, MD; Jing Zhang, MD; Binbin Wang, MD; Hui Xiang, MD; Zhenshun Cheng, MD; Yong Xiong, MD; Yan Zhao, MD; Yirong Li, MD; Xinghuan Wang, MD; Zhiyong Peng, MD

- COVID grave touche préférentiellement les patients CV :
  - HTA
  - Dyslipidémie
  - Obésité
  - diabète
  - IC

Chen et al, Lancet, 2020 ; Wang et al, JAMA, 20 Zhou et al, Lancet, 2020 ; Ssentongro et al, Plos One, 2020 ; inciardi et al, EHJ, 2020.

Atteintes cardiovasculaires aigues du COVID

Figure 3 Cardiovascular involvement in COVID-19 – key manifestations and hypothetical mechanisms

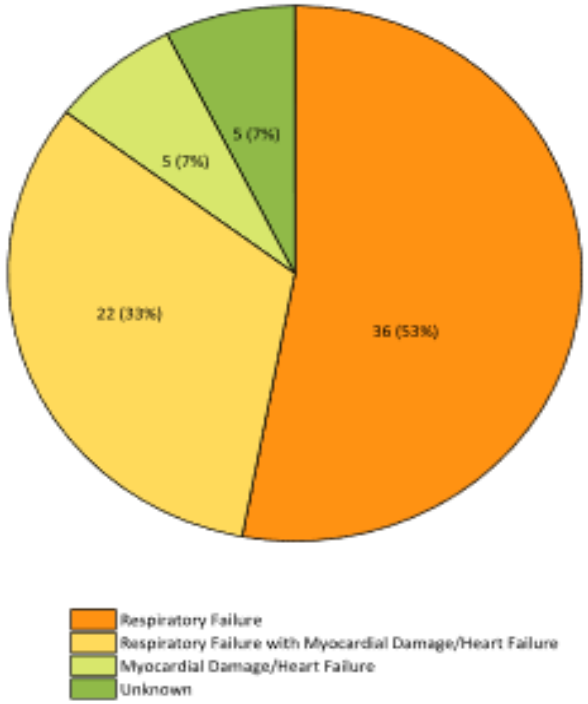


Comorbidités cardio-vasculaires et COVID

LETTER

Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China

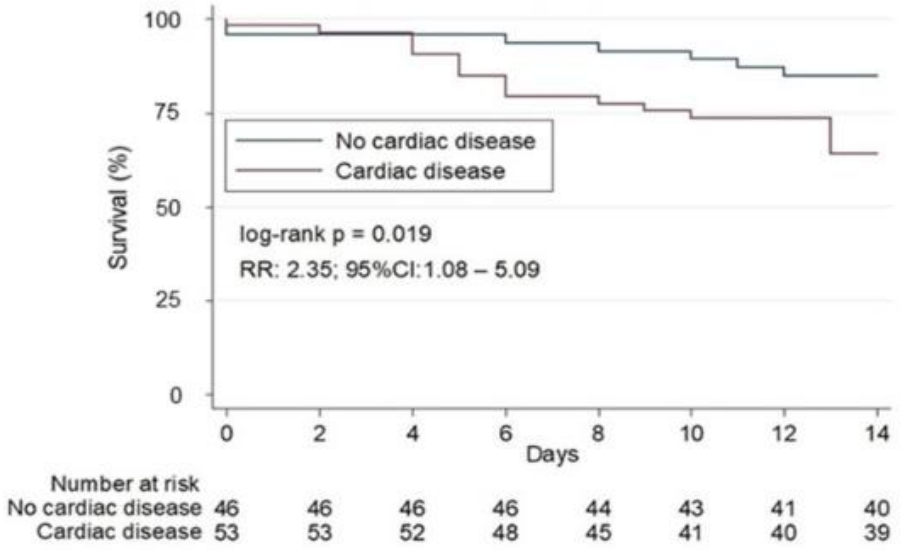
Qiurong Ruan[1,2], Kun Yang[3], Wenxia Wang[4], Lingyu Jiang[5] and Jianxin Song[4*]



ESC European Society of Cardiology
European Heart Journal (2020) 41, 1821–1829
doi:10.1093/eurheartj/ehaa388
FASTTRACK CLINICAL RESEARCH
Prevention and epidemiology

Characteristics and outcomes of patients hospitalized for COVID-19 and cardiac disease in Northern Italy

Riccardo M. Inciardi [1†], Marianna Adamo[1†], Laura Lupi[1†], Dario S. Cani [1], Mattia Di Pasquale[1], Daniela Tomasoni [1], Leonardo Italia[1], Gregorio Zaccone[1], Chiara Tedino[1], Davide Fabbricatore[1], Antonio Curnis[1], Pompilio Faggiano[1], Elio Gorga[1], Carlo M. Lombardi[1], Giuseppe Milesi[1], Enrico Vizzardi[1], Marco Volpini [1], Savina Nodari[1], Claudia Specchia[2], Roberto Maroldi[3], Michela Bezzi[4], and Marco Metra [1*]



Ruan et al, ICM, 2020 ; Inciardi et al, EHJ, 2020.

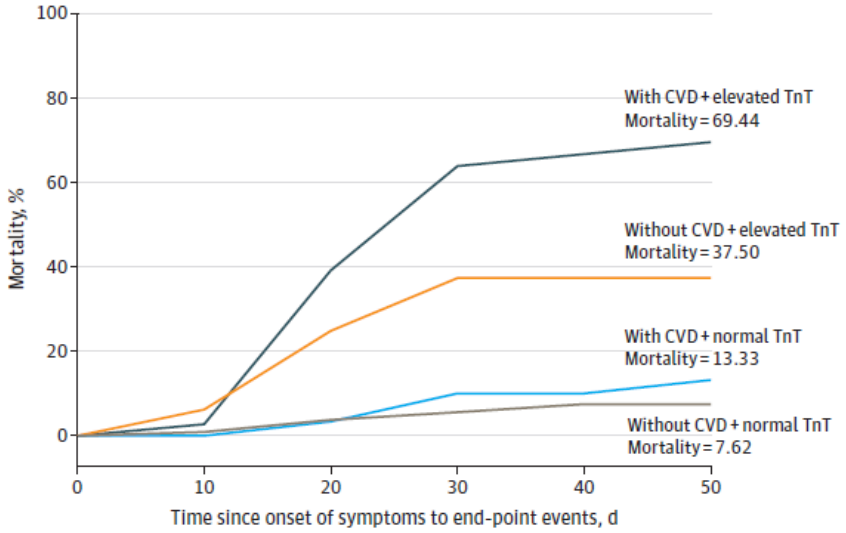
Comorbidités cardio-vasculaires et COVID

JAMA Cardiology | Original Investigation

Cardiovascular Implications of Fatal Outcomes of Patients With Coronavirus Disease 2019 (COVID-19)

Tao Guo, MD; Yongzhen Fan, MD; Ming Chen, MD; Xiaoyan Wu, MD; Lin Zhang, MD; Tao He, MD; Hairong Wang, MD; Jing Wan, MD; Xinghuan Wang, MD; Zhibing Lu, MD

Figure 2. Mortality of Patients With Coronavirus Disease 2019 (COVID-19) With/Without Cardiovascular Disease (CVD) and With/Without Elevated Troponin T (TnT) Levels

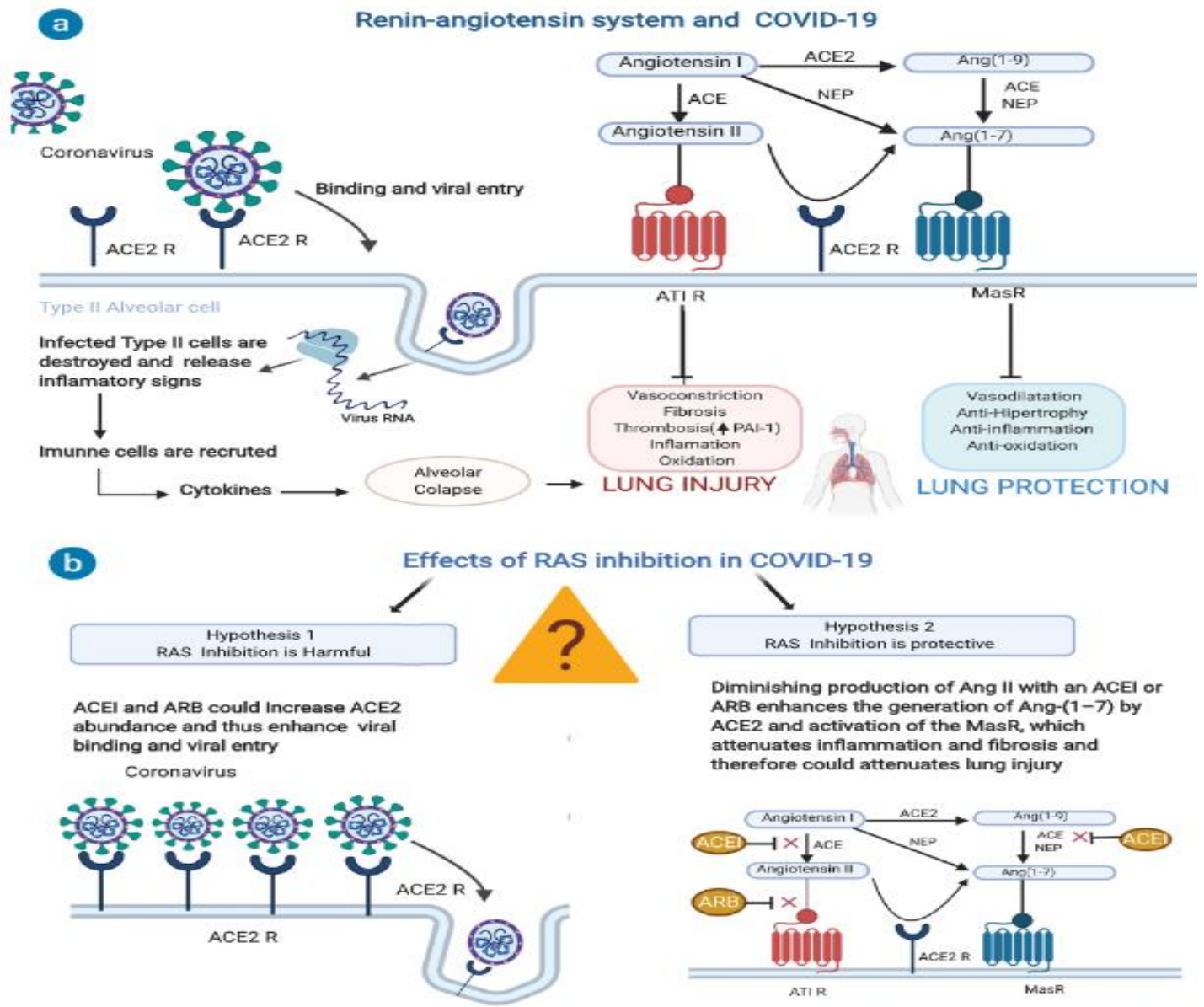


No. at risk

Without CVD + normal TnT (n = 105)	102	86	41	10	0
Without CVD + elevated TnT (n = 16)	15	12	7	1	0
With CVD + normal TnT (n = 30)	29	25	10	4	0
With CVD + elevated TnT (n = 36)	34	20	8	2	0

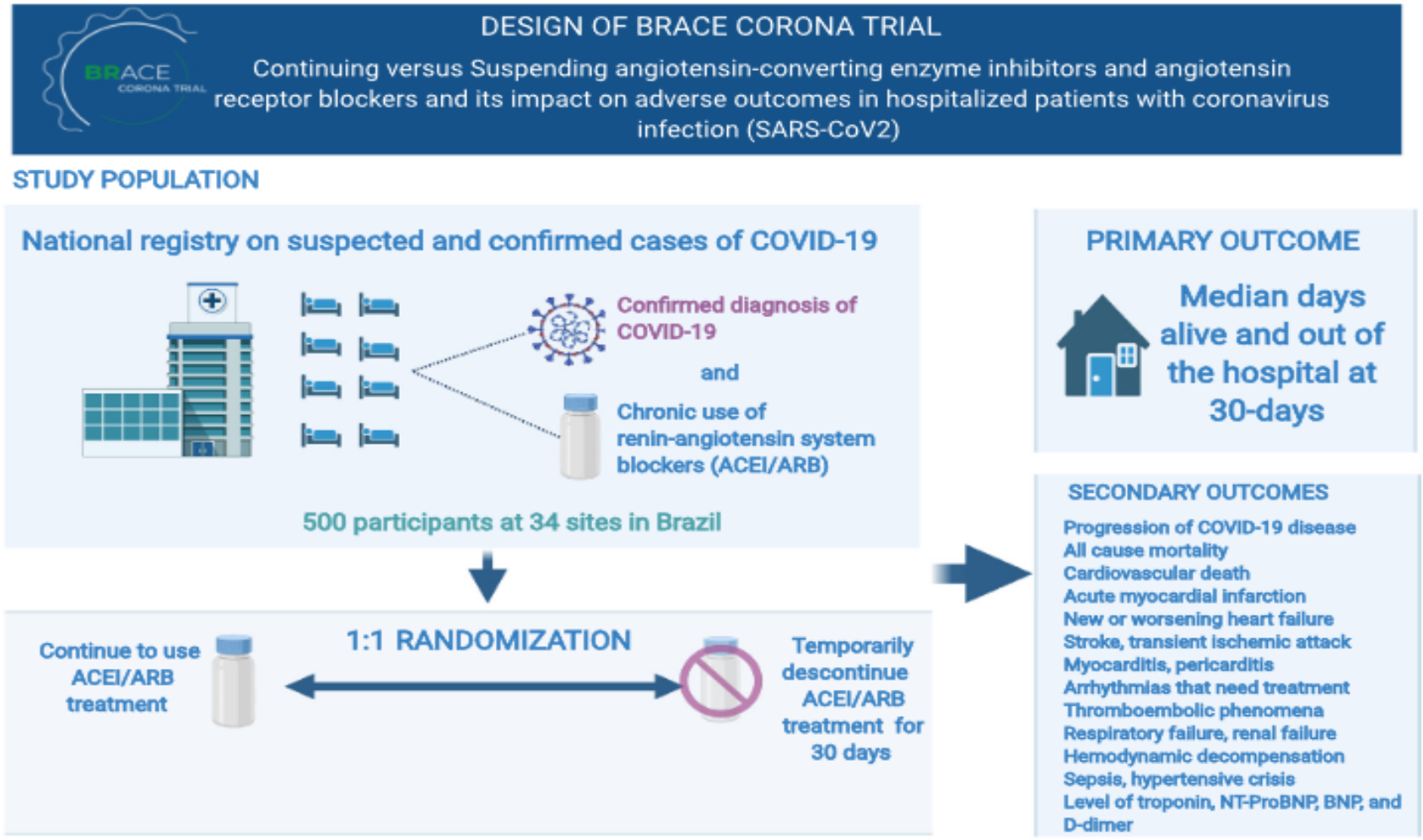
Guo et al, JAMA Cardiol, 2020.

IEC/ARAII et COVID



Lopes et al, AHJ, 2020.

IEC/ARAII et COVID



Design of the BRACE CORONA trial.

Lopes et al, AHJ, 2020.

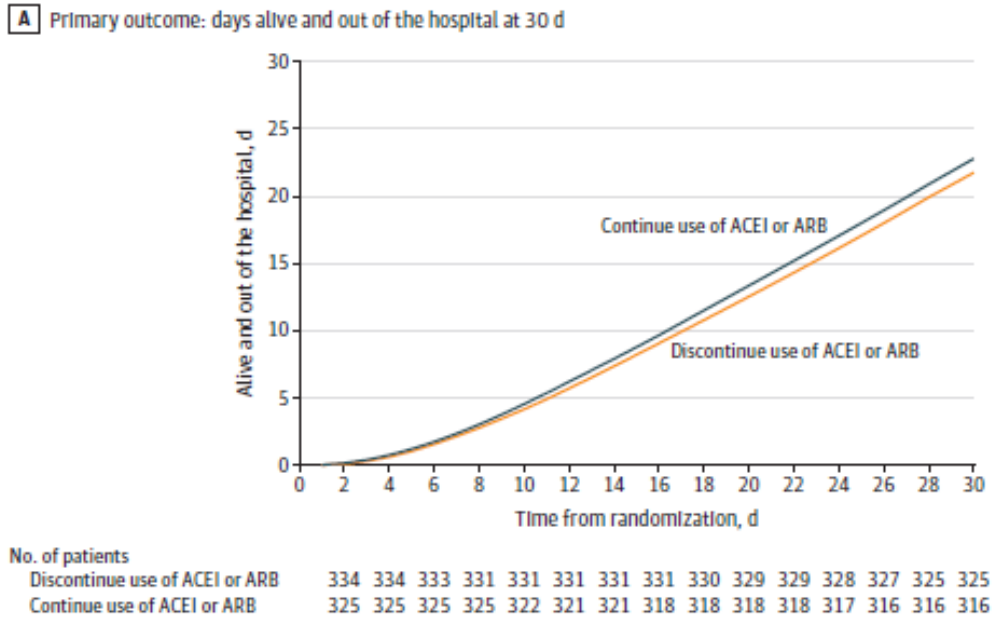
IEC/ARAII et COVID

JAMA | Original Investigation

Effect of Discontinuing vs Continuing Angiotensin-Converting Enzyme Inhibitors and Angiotensin II Receptor Blockers on Days Alive and Out of the Hospital in Patients Admitted With COVID-19

A Randomized Clinical Trial

Renato D. Lopes, MD, PhD; Ariane V. S. Macedo, MD, MSc; Pedro G. M. de Barros E Silva, MD, PhD; Renata J. Moll-Bernardes, MD, PhD; Tiago M. dos Santos, MSc; Lilian Mazza, RT; André Feldman, MD, PhD; Guilherme D'Andréa Saba Arruda, MD; Denílson C. de Albuquerque, MD, PhD; Angelina S. Camiletti, RN, MSc; Andréa S. de Sousa, MD, PhD; Thiago C. de Paula, MD; Karla G. D. Giusti, MD; Rafael A. M. Domiciano, MD; Márcia M. Noya-Rabelo, MD, MHS, PhD; Alan M. Hamilton, MD; Vitor A. Loures, MD; Rodrigo M. Dionísio, MD; Thyago A. B. Furquim, MD; Fábio A. De Luca, MD, MBA, PhD; Ítalo B. dos Santos Sousa, MD; Bruno S. Bandeira, MD; Cleverson N. Zukowski, MD, PhD; Ricardo G. G. de Oliveira, MD; Noara B. Ribeiro, MD; Jeffer L. de Moraes, MD; João L. F. Petriz, MD, MHS, PhD; Adriana M. Pimentel, MD, PhD; Jacqueline S. Miranda, MD; Bárbara E. de Jesus Abufaiad, MD; C. Michael Gibson, MD; Christopher B. Granger, MD; John H. Alexander, MD, MHS; Olga F. de Souza, MD, PhD; for the BRACE CORONA Investigators



Key Points

Question Does discontinuation compared with continuation of angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) change the number of days alive and out of the hospital through 30 days in patients hospitalized with mild to moderate coronavirus disease 2019 (COVID-19)?

Findings In this randomized clinical trial that included 659 patients hospitalized with mild to moderate COVID-19 and who were taking ACEIs or ARBs before hospital admission, the mean number of days alive and out of the hospital for those assigned to discontinue vs continue these medications was 21.9 vs 22.9, respectively, a difference that was not statistically significant.

Meaning These findings do not support routinely discontinuing ACEIs or ARBs among patients hospitalized with mild to moderate COVID-19.

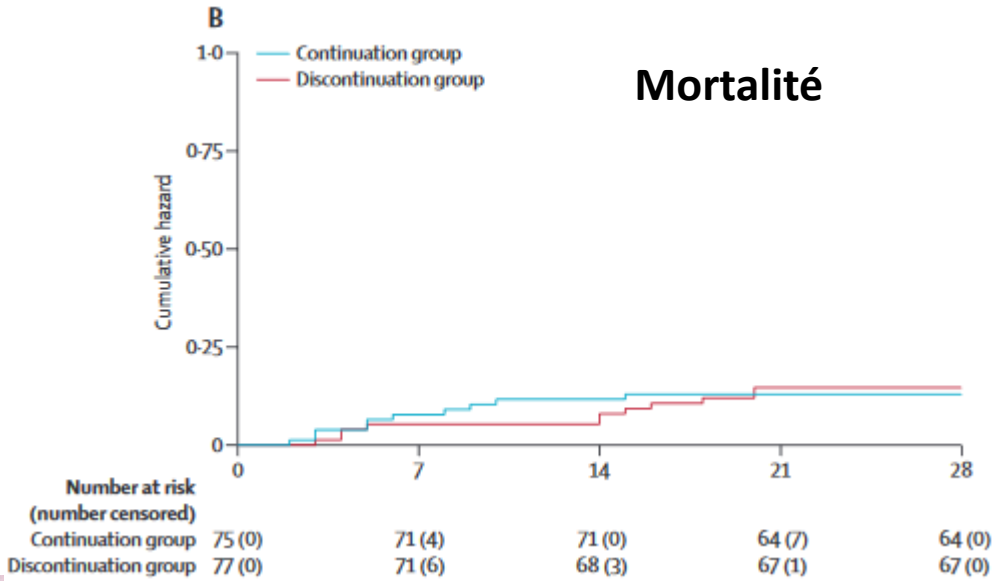
Lopes et al, JAMA, 2021.

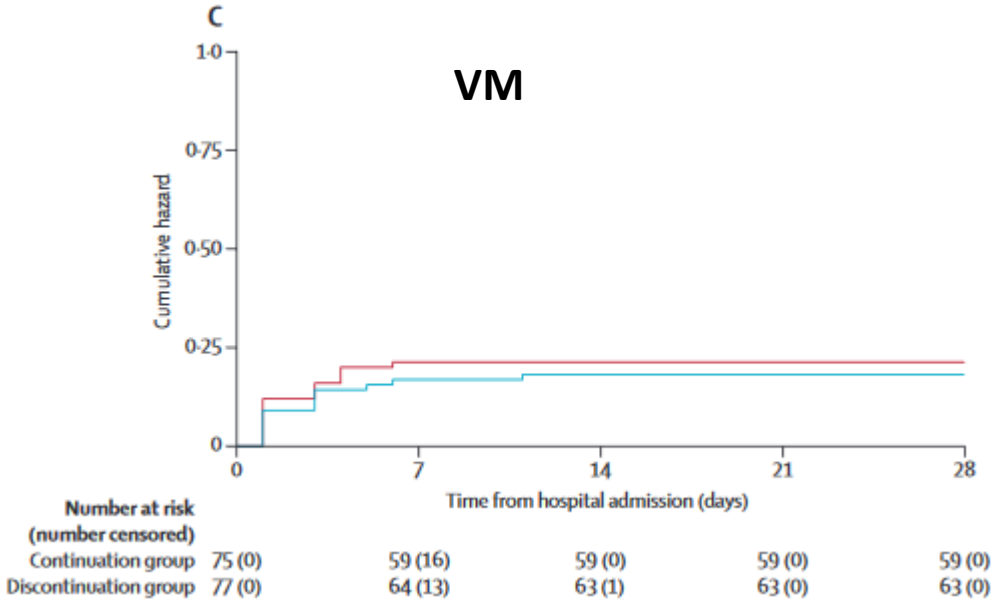
IEC/ARAII et COVID

Continuation versus discontinuation of renin–angiotensin system inhibitors in patients admitted to hospital with COVID-19: a prospective, randomised, open-label trial

Jordana B Cohen, Thomas C Hanff, Preethi William, Nancy Sweitzer, Nelson R Rosado-Santander, Carola Medina, Juan E Rodriguez-Mori, Nicolás Renna, Tara I Chang, Vicente Corrales-Medina, Jaime F Andrade-Villanueva, Alejandro Barbagelata, Roberto Cristodulo-Cortez, Omar A Díaz-Cucho, Jonas Spaak, Carlos E Alfonso, Renzo Valdivia-Vega, Mirko Villavicencio-Carranza, Ricardo J Ayala-García, Carlos A Castro-Callirgos, Luz A González-Hernández, Eduardo F Bernales-Salas, Johanna C Coacalla-Guerra, Cynthia D Salinas-Herrera, Liliana Nicolosi, Mauro Basconcel, James B Byrd, Tiffany Sharkoski, Luis E Bendezú-Huasasquiche, Jesse Chittams, Daniel L Edmonston, Charles R Vasquez, Julio A Chirinos

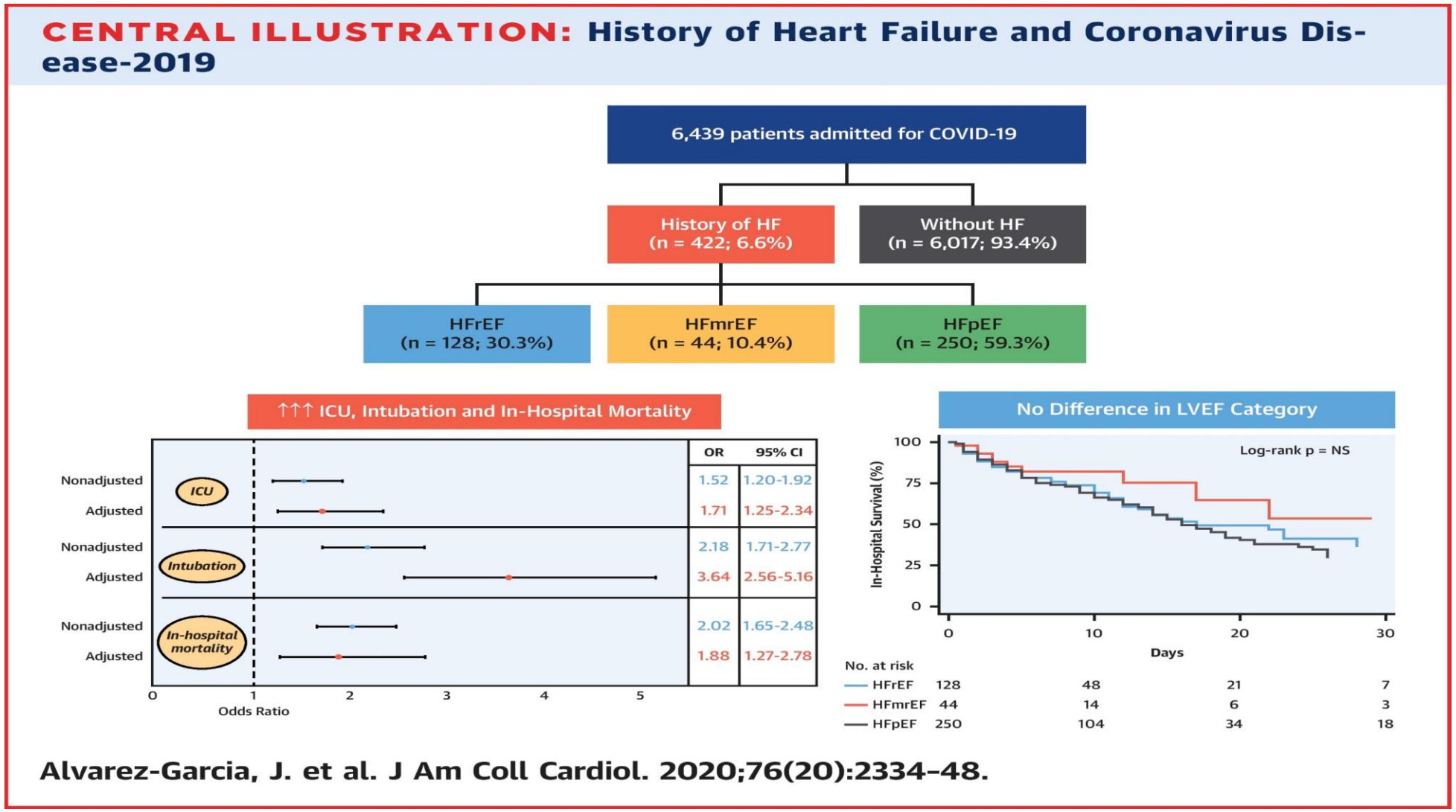
- 152 patients,
- randomisés sur arrêt/continue ttt par IEC/ARAII,
- CJP : décès, durée VM, EER





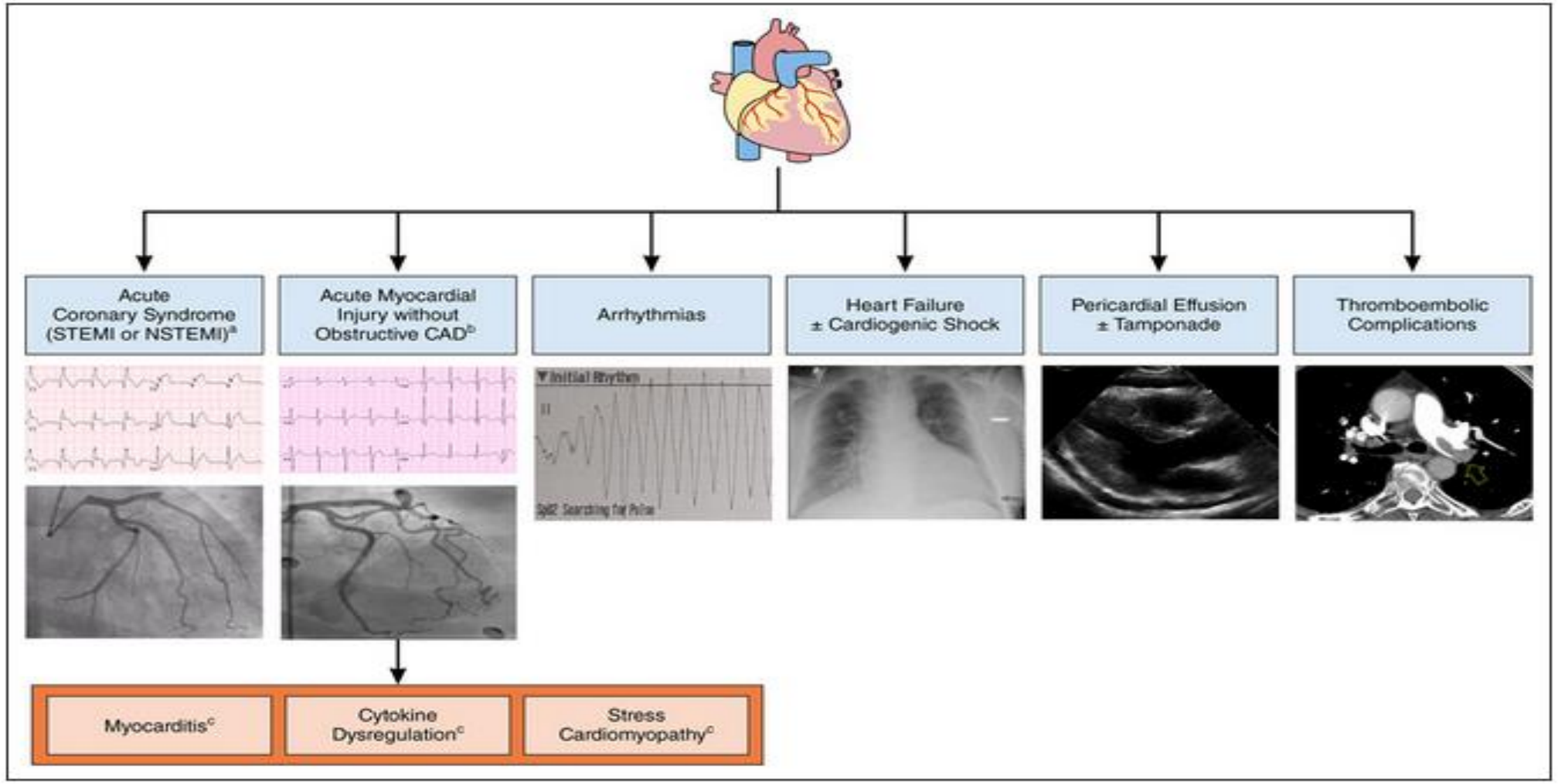
Cohen et al, Lancet Respir Med, 2021.

Insuffisance cardiaque et COVID



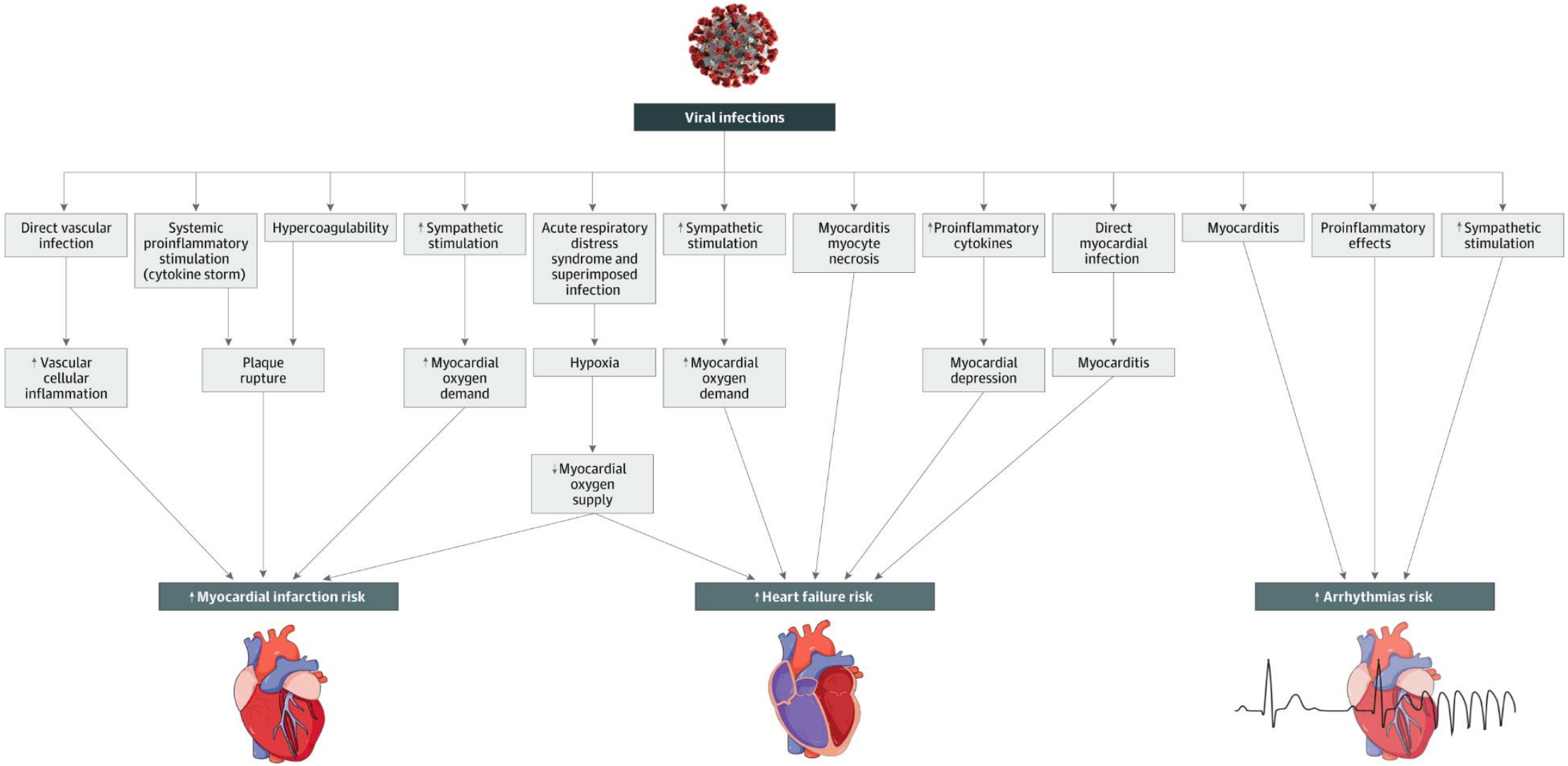
Alvarez-Garcia et al, JACC, 2020.

Atteintes cardiaques et COVID grave



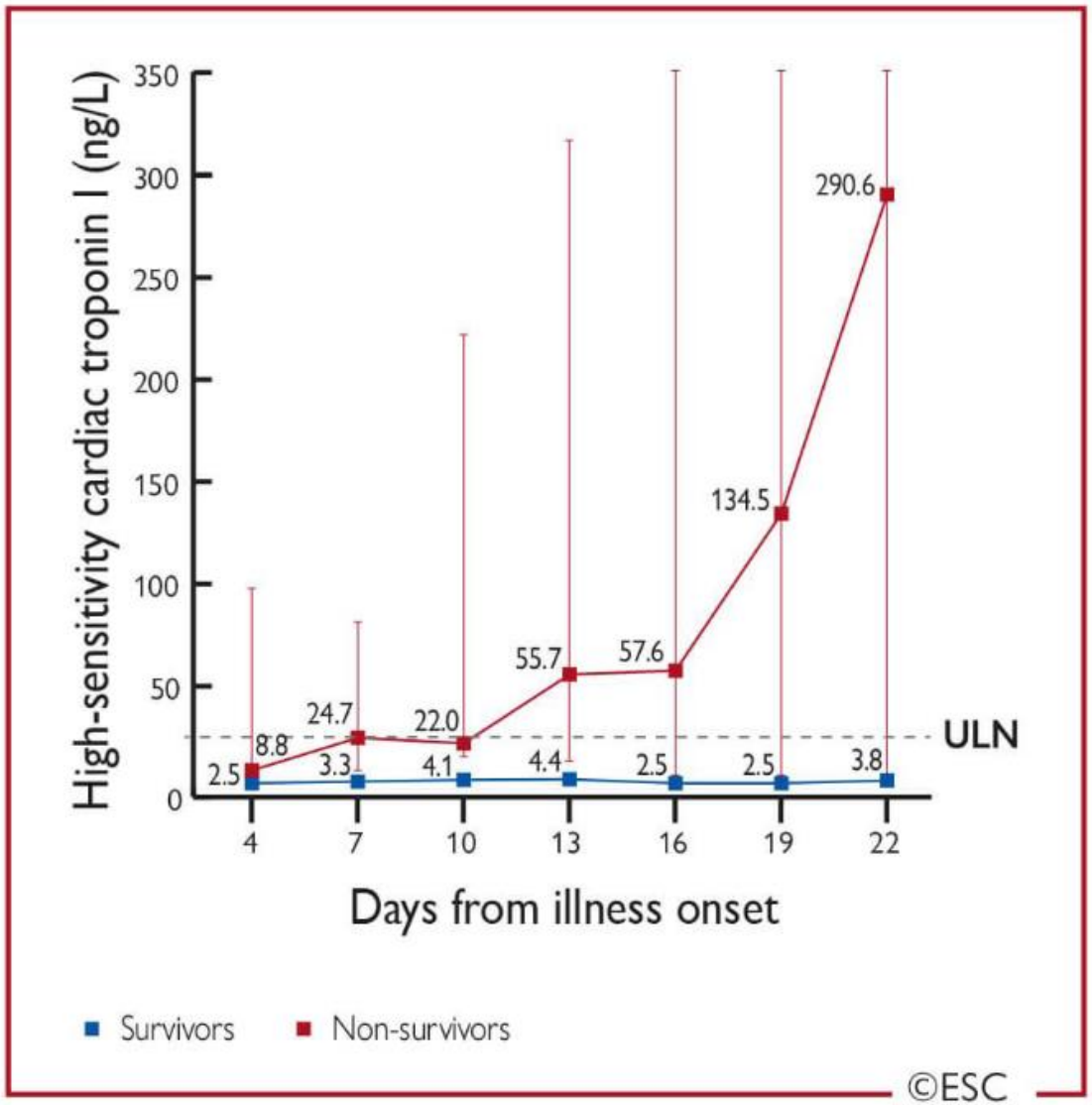
Hendren et al, Circulation, 2020.

Atteintes cardiaques et COVID grave



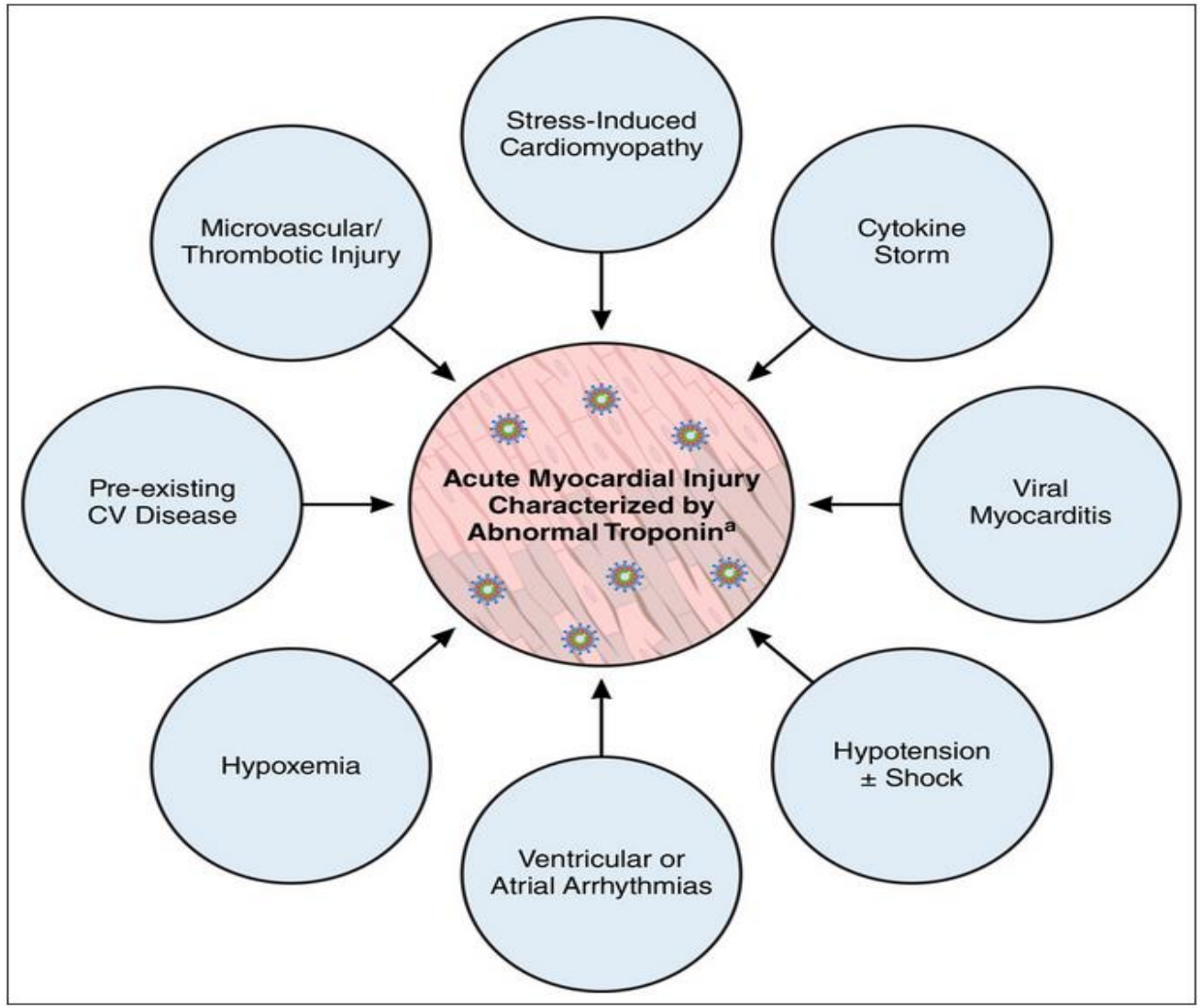
Madjid et al, JAMA Cardiol, 2020.

Dommage myocardique et COVID grave



Zhou et al, Lancet, 2020.

Dommage myocardique et COVID grave



Hendren et al, Circulation, 2020.

Dommage myocardique et COVID grave

Original Investigation

March 25, 2020

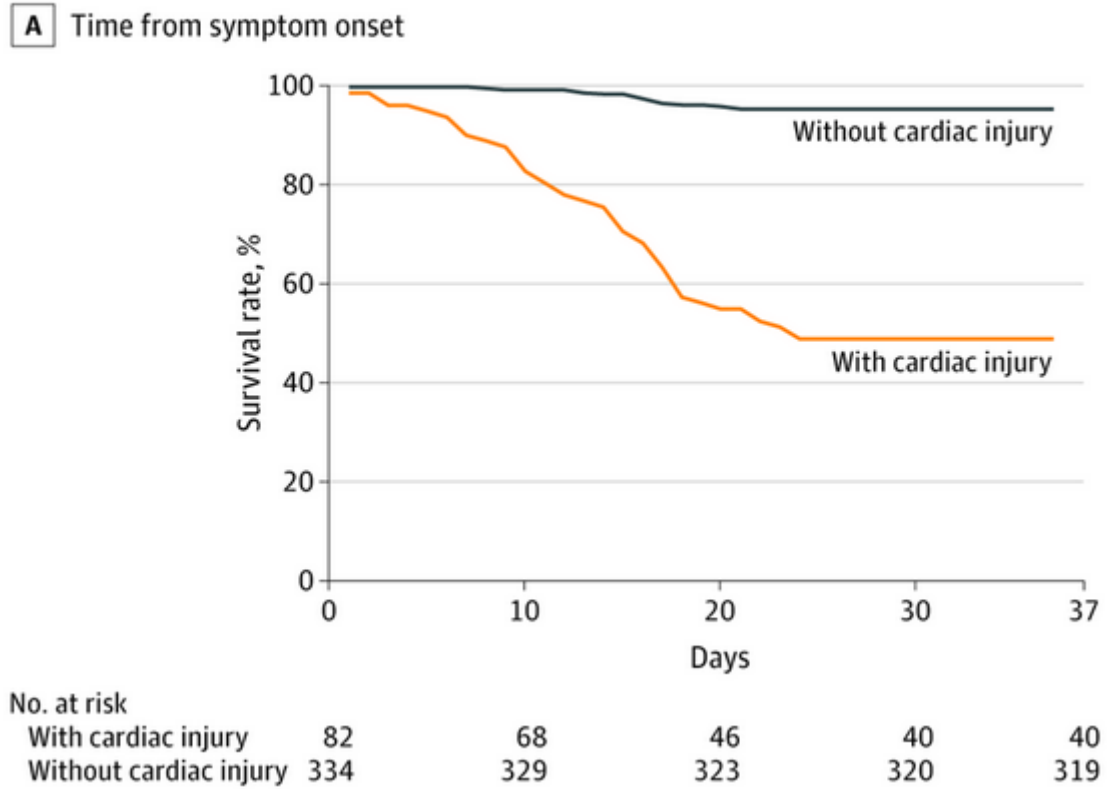
Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China

Shaobo Shi, MD[1,2,3]; Mu Qin, MD[4]; Bo Shen, MD[1,2,3]; et al

» Author Affiliations | Article Information

JAMA Cardiol. 2020;5(7):802-810. doi:10.1001/jamacardio.2020.0950

Figure 2. Mortality During Hospitalization Between Patients With vs Without Cardiac Injury



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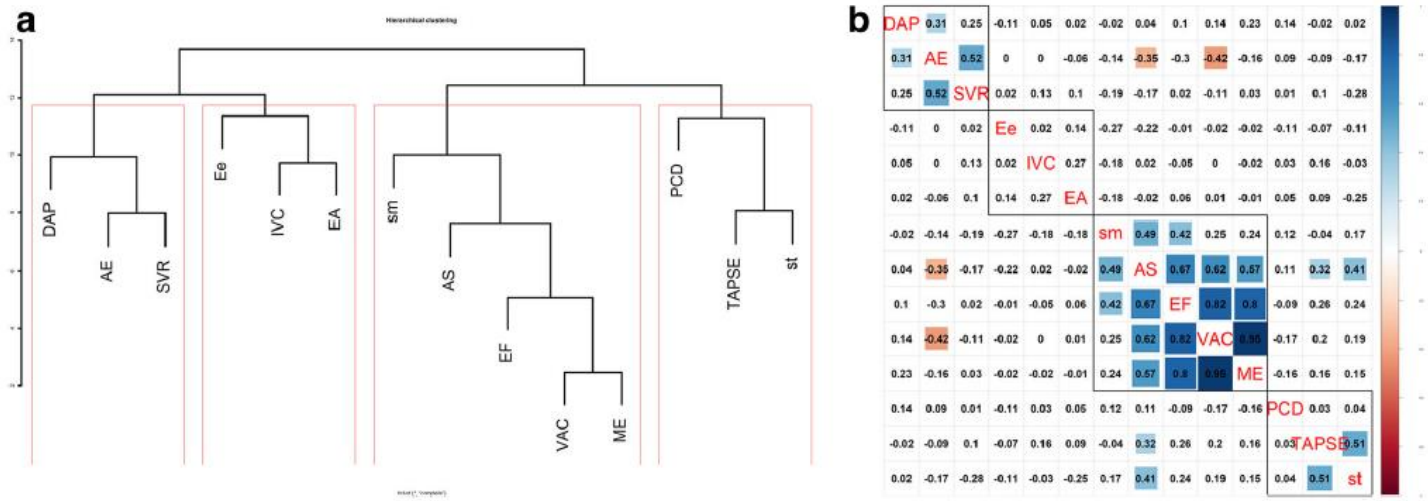
Shi et al, JAMA Cardiol, 2020.

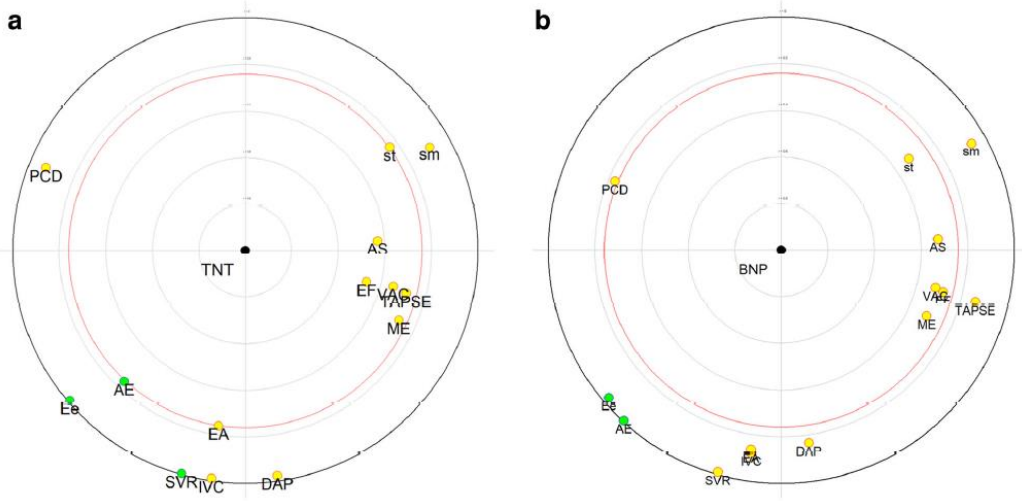
Phénotypes échocardiographiques du COVID grave

RESEARCH Open Access

Advanced echocardiographic phenotyping of critically ill patients with coronavirus-19 sepsis: a prospective cohort study

François Bagate[1,2], Paul Masi[1,2], Thomas d'Humières[3,4], Lara Al-Assaad[3,4], Laure Abou Chakra[3,4], Keyvan Razazi[1,2], Nicolas de Prost[1,2], Guillaume Carteaux[1,2], Genevieve Derumeaux[3,4] and Armand Mekontso Dessap[1,2,4*]





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Bagate et al, JIC, 2021.

Cytokines et atteinte cardiaque au cours du COVID grave

LETTERS TO THE EDITOR Open Access

Serum cytokines profile of critically ill COVID-19 patients with cardiac dysfunction

François Bagate[1,2*], Nicolas Maziers[1], Sophie Hue[3,4], Paul Masi[1,2], Armand Mekontso Dessap[1,2] and Nicolas de Prost[1,2,4]

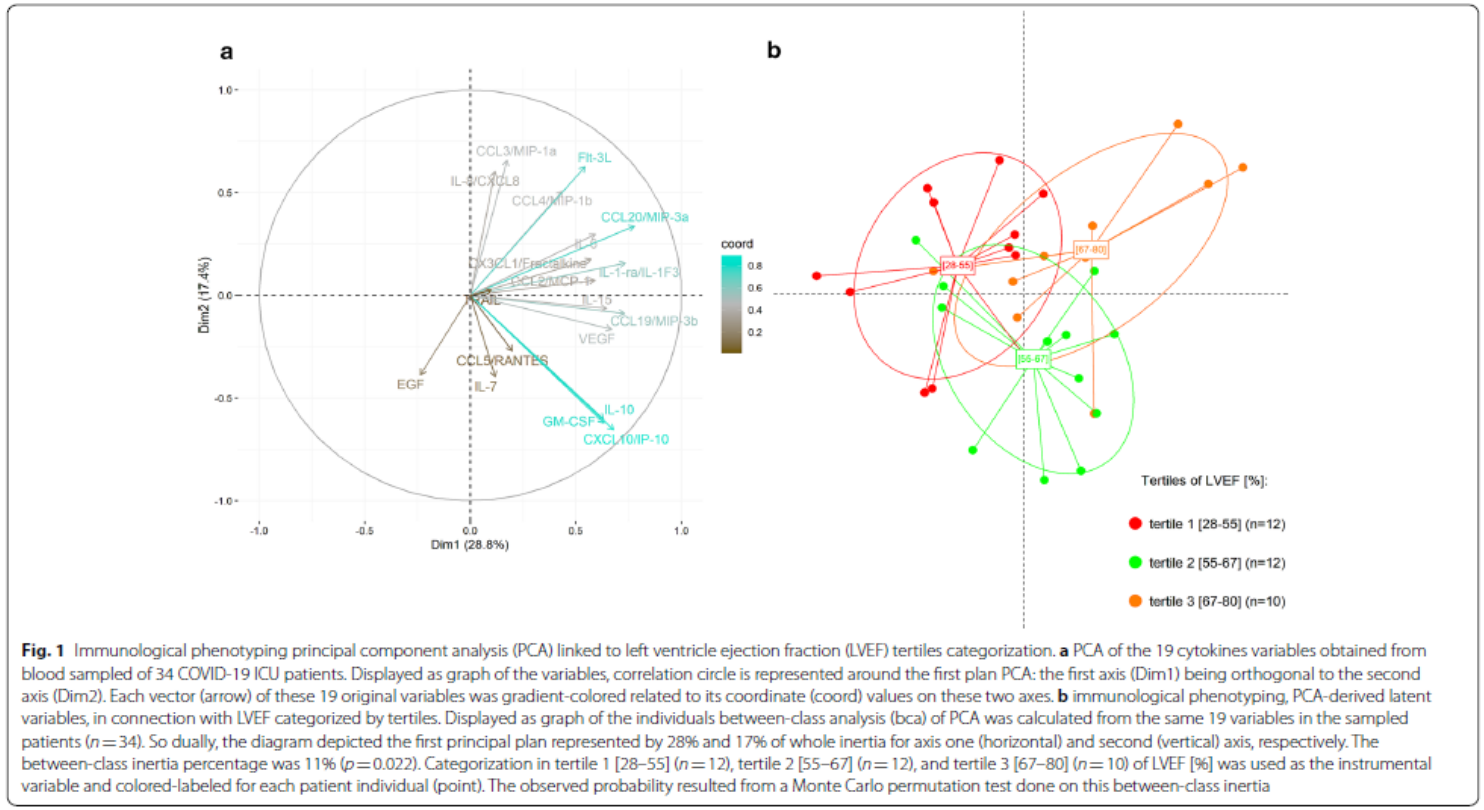
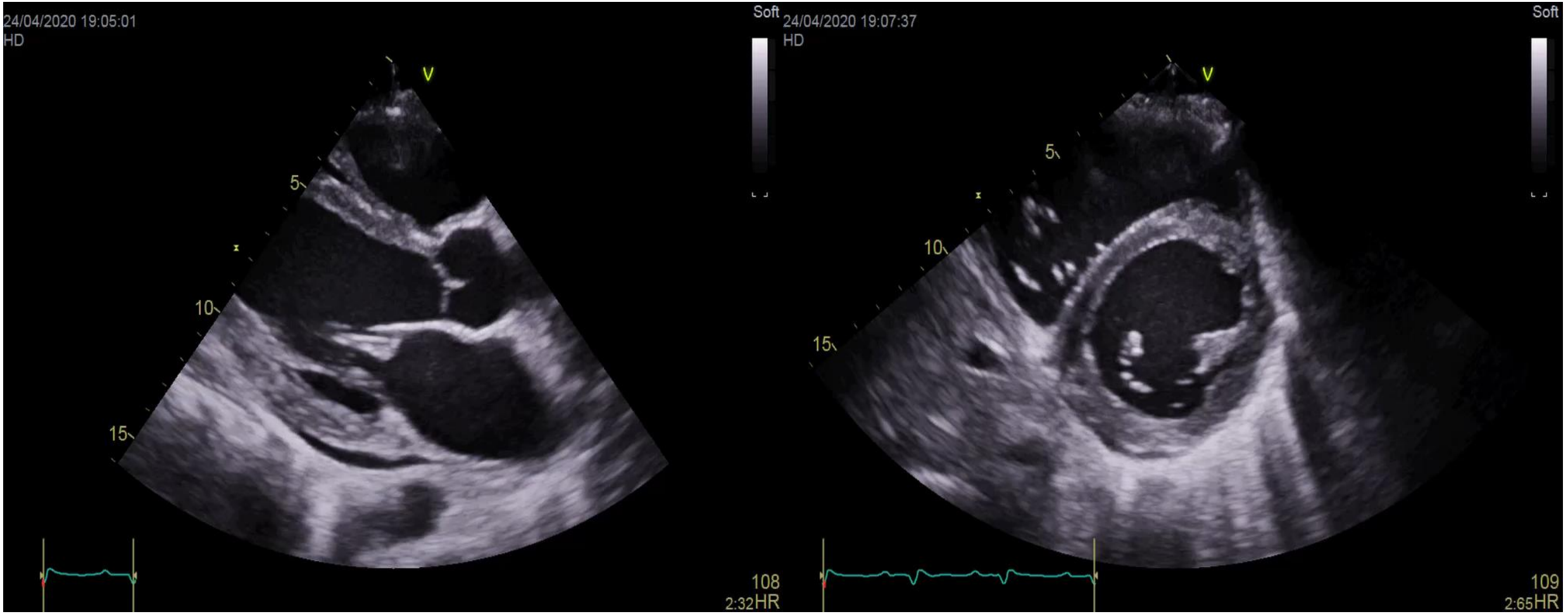


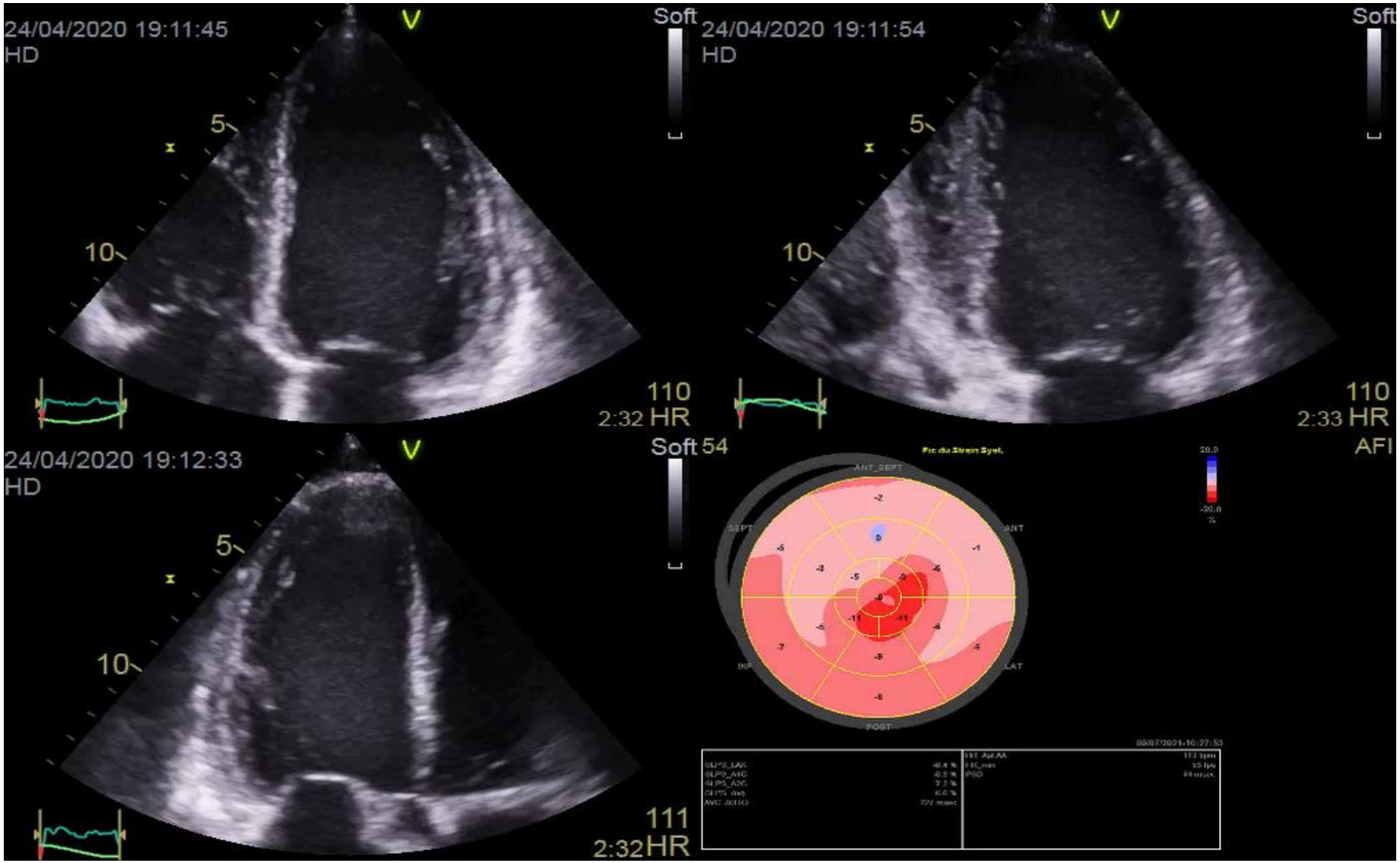
Fig. 1 Immunological phenotyping principal component analysis (PCA) linked to left ventricle ejection fraction (LVEF) tertiles categorization. **a** PCA of the 19 cytokines variables obtained from blood sampled of 34 COVID-19 ICU patients. Displayed as graph of the variables, correlation circle is represented around the first plan PCA: the first axis (Dim1) being orthogonal to the second axis (Dim2). Each vector (arrow) of these 19 original variables was gradient-colored related to its coordinate (coord) values on these two axes. **b** immunological phenotyping, PCA-derived latent variables, in connection with LVEF categorized by tertiles. Displayed as graph of the individuals between-class analysis (bca) of PCA was calculated from the same 19 variables in the sampled patients ($n=34$). So dually, the diagram depicted the first principal plan represented by 28% and 17% of whole inertia for axis one (horizontal) and second (vertical) axis, respectively. The between-class inertia percentage was 11% ($p=0.022$). Categorization in tertile 1 [28–55] ($n=12$), tertile 2 [55–67] ($n=12$), and tertile 3 [67–80] ($n=10$) of LVEF [%] was used as the instrumental variable and colored-labeled for each patient individual (point). The observed probability resulted from a Monte Carlo permutation test done on this between-class inertia

Bagate et al, ICMx, 2021.

Myocardite COVID



Myocardite COVID



Myocardite COVID

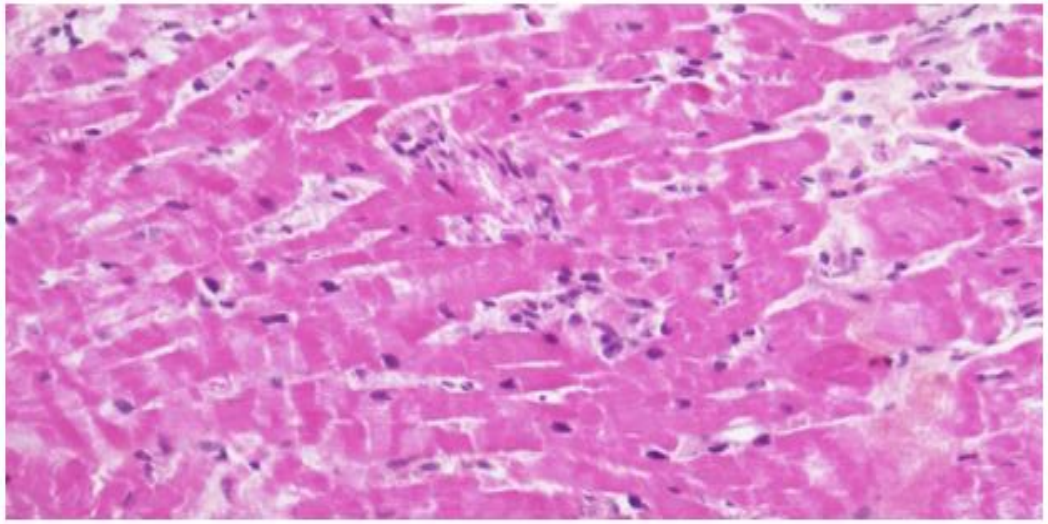


Fig 3 : 18 years old woman endomyocardial biopsy Limited foci of myocardial necrosis surrounded by mononuclear inflammatory cells (Hematoxylin Eosin and Saffron stain, original magnification x400)

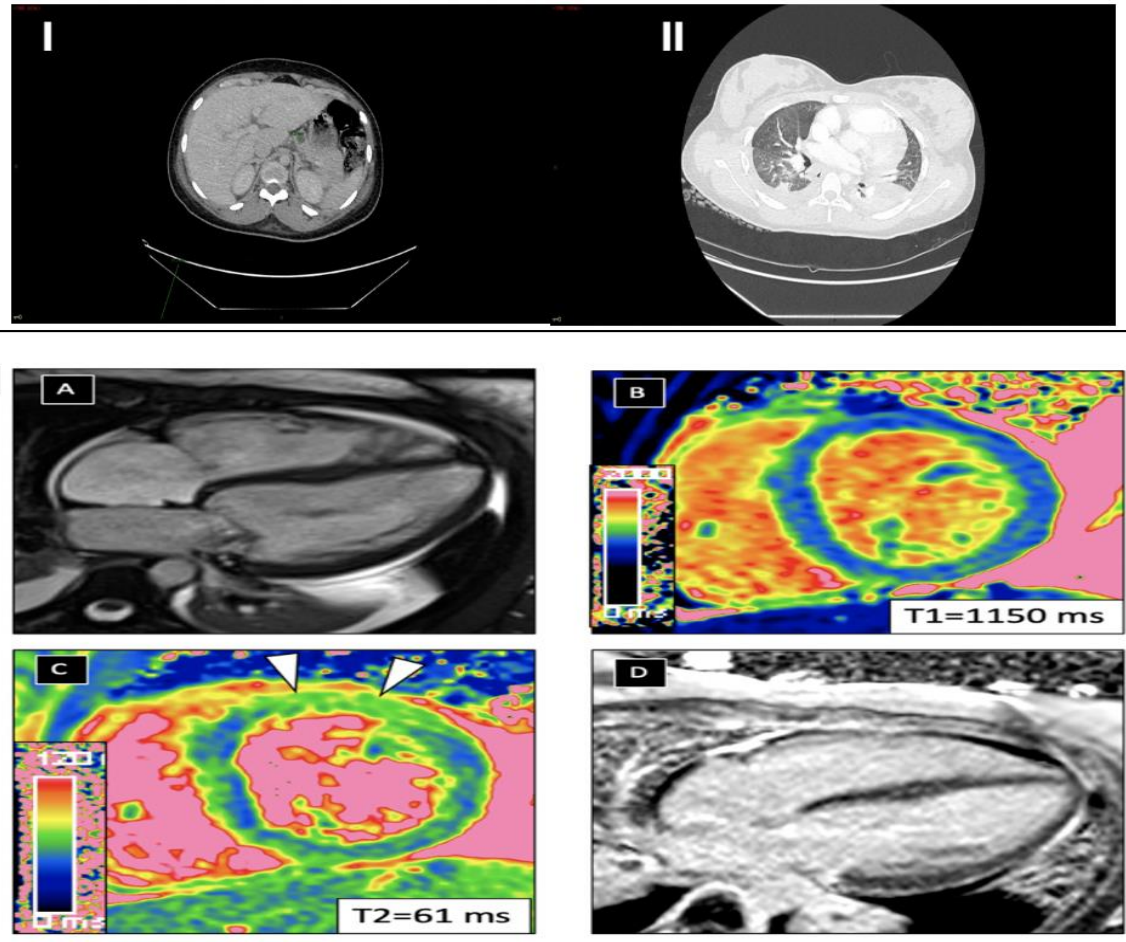


Fig 1: 18 years old woman medical imaging
I-Abdominal CT scan - mediastinal window: diffuse swelling of the pancreatic gland suggestive of an acute oedemato-interstitial pancreatitis (Balthazar stage B).
II-Chest CT scan - parenchymal window: lower lobar parenchymal condensation with mild bilateral pleural effusion. The heart chambers were dilated.
III- Four chamber cine MR image (A) evidenced normal looking ventricles and atrias.. A small pericardial effusion was present and a mild bilateral pleural effusion. T1 (B) and T2 (C) mapping sequences acquired in the middle short-axis plane detected a global raise of myocardial native T1 (1150 ms; normal values: 950-1000 ms at 1.5T) and T2 (61 ms; normal values: 50-55 ms at 1.5T), suggesting diffuse myocardial edema. Subepicardial regions and anterior wall of left ventricle were especially abnormal (arrowheads). None focal lesion was evidenced on late gadolinium enhanced images (D).

Myocardite COVID

Hôpitaux de Toulouse

Contacts

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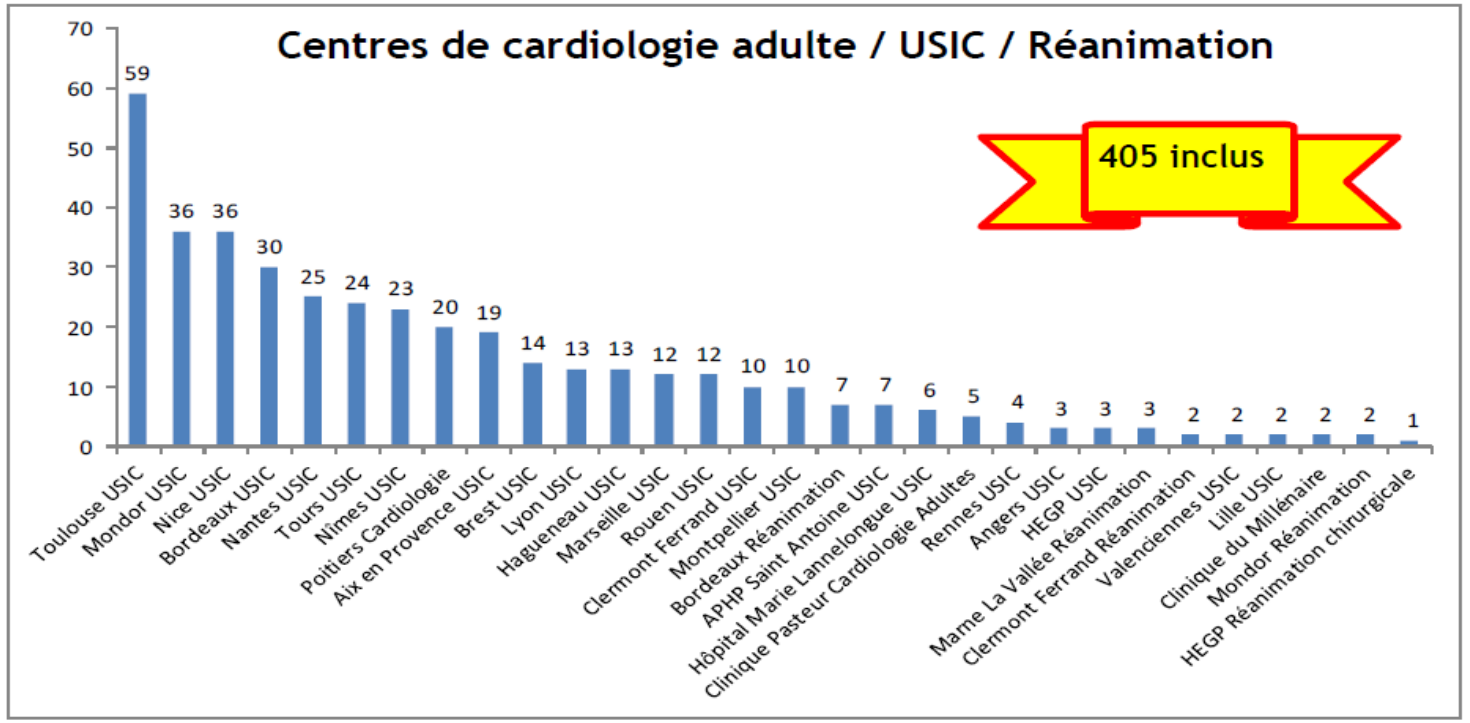
MYOCOVID

« Registre hospitalier de myocardites aigues : Évolution de la proportion de cas SARS-Cov-2 positifs pendant la pandémie de Covid19, caractéristiques et pronostic des cas »

NCT04375748

Newsletter n°8 **Novembre 2021**



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Myocardite post vaccin Sars-Cov-2

ORIGINAL ARTICLE

Myocarditis after BNT162b2 mRNA Vaccine against Covid-19 in Israel

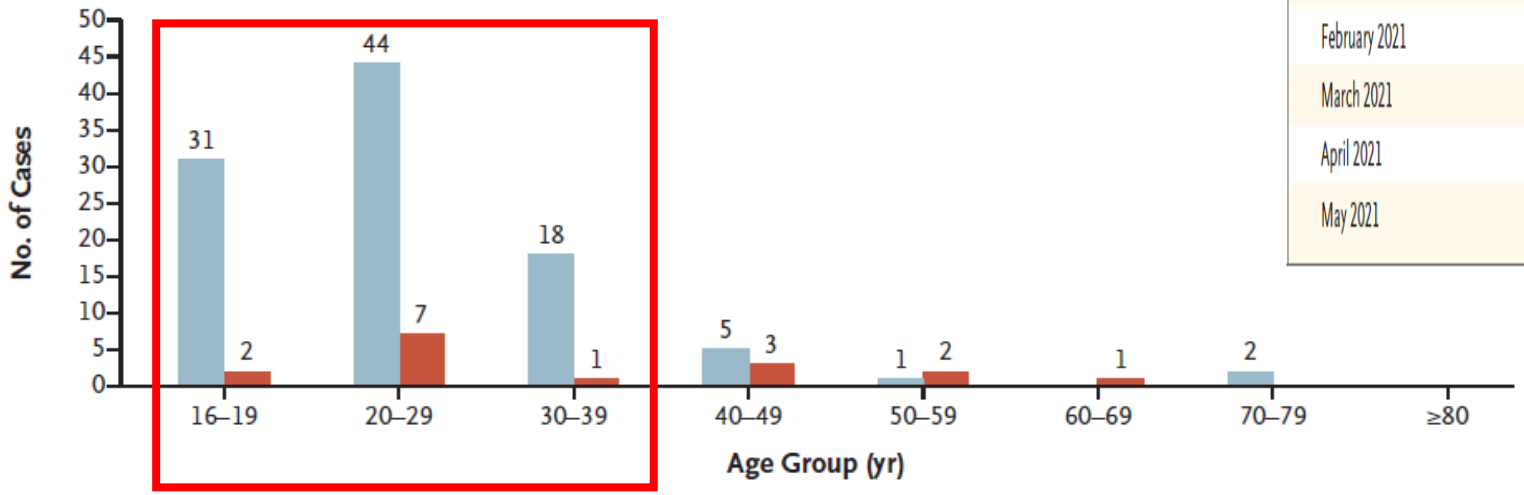
D. Mevorach, E. Anis, N. Cedar, M. Bromberg, E.J. Haas, E. Nadir, S. Olsha-Castell, D. Arad, T. Hasin, N. Levi, R. Asleh, O. Amir, K. Meir, D. Cohen, R. Dichtiar, D. Novick, Y. Hershkovitz, R. Dagan, I. Leitersdorf, R. Ben-Ami, I. Miskin, W. Saliba, K. Muhsen, Y. Levi, M.S. Green, L. Keinan-Boker, and S. Alroy-Preis

Augmentation faible de myocardite, après 2e dose, homme jeune,
Surtout des myocardites peu graves

Table 1. Reported Myocarditis Cases, According to Timing of First or Second Vaccine Dose.*

Timing	First Vaccine Dose			Second Vaccine Dose			Both Doses
	No. of Vaccinations	Myocarditis Cases	Males/ Females	No. of Vaccinations	Myocarditis Cases	Males/ Females	Myocarditis Cases
Six-month study period	5,442,696	19	17/2	5,125,635	117	101/16	136
December 2020	987,013	0	0/0	0	0	0/0	0
January 2021	2,109,854	4	3/1	1,844,896	13	12/1	17
February 2021	1,613,909	6	5/1	1,546,184	47	41/6	53
March 2021	528,069	7	7/0	1,397,609	44	38/6	51
April 2021	152,765	1	1/0	253,701	13	10/3	14
May 2021	51,086	1	1/0	83,245	0	0	1

D Distribution of 117 Cases of Myocarditis after Second Vaccine Dose, According to Age and Sex



Mevorach et al, NEJM, 2021.

IDM et COVID

Risk of acute myocardial infarction and ischaemic stroke following COVID-19 in Sweden: a self-controlled case series and matched cohort study

Ioannis Katsoularis, Osvaldo Fonseca-Rodríguez*, Paddy Farrington, Krister Lindmark, Anne-Marie Fors Connolly*

	Acute myocardial infarction		Univariable models	Multivariable model
	No (n=424 320)	Yes (n=49)	OR (95% CI; p value)	OR (95% CI; p value)
COVID-19 diagnosis				
No	340 407 (99·99%)	25 (0·01%)	1 (ref)	1 (ref)
Yes	83 913 (99·97%)	24 (0·03%)	4·06 (2·27–7·25; p<0·0001)	3·41 (1·58–7·36; p=0·0017)

Katsoularis et al, JAMA, 2020.

IDM et COVID

JAMA | Original Investigation

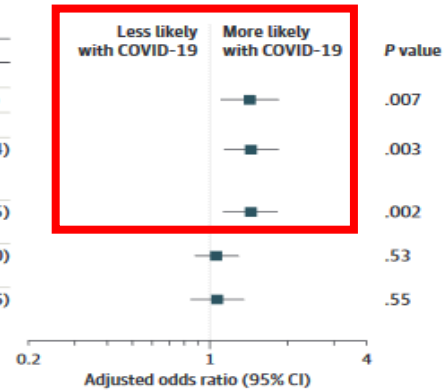
Association Between COVID-19 Diagnosis and In-Hospital Mortality in Patients Hospitalized With ST-Segment Elevation Myocardial Infarction

Marwan Saad, MD, PhD; Kevin F. Kennedy, MS; Hafiz Imran, MD; David W. Louis, MD; Ernie Shippey, MS; Athena Poppas, MD; Kenneth E. Wood, DO; J. Dawn Abbott, MD; Herbert D. Aronow, MD, MPH

Figure 2. Association Between COVID-19 Diagnosis and Outcomes Among Propensity-Matched Patients With Out-of-Hospital and In-Hospital ST-Segment Elevation Myocardial Infarction (STEMI)

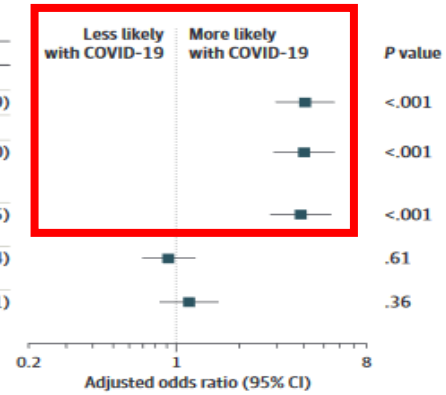
A Out-of-hospital STEMI

Outcome	Patients, No. (%) With COVID-19 (n = 551)	Patients, No. (%) Without COVID-19 (n = 2755)	Absolute difference (95% CI)	Odds ratio (95% CI) Unadjusted	Odds ratio (95% CI) Adjusted	P value
Primary						
In-hospital death	84 (15.2)	308 (11.2)	4.1 (1.09 to 7.04)	1.85 (1.48 to 2.32)	1.43 (1.1 to 1.86)	.007
Secondary						
Composite of death, stroke, or myocardial infarction	99 (18.0)	364 (13.2)	4.8 (1.58 to 7.93)	1.91 (1.55 to 2.36)	1.44 (1.13 to 1.84)	.003
Composite of death or stroke	99 (18.0)	362 (13.1)	4.8 (1.65 to 8.00)	1.88 (1.53 to 2.33)	1.45 (1.13 to 1.85)	.002
Acute decompensated heart failure	175 (31.8)	838 (30.4)	1.3 (−2.51 to 5.20)	1.07 (0.90 to 1.27)	1.06 (0.87 to 1.30)	.53
Cardiogenic shock	101 (18.3)	476 (17.3)	1.1 (−2.15 to 4.25)	1.11 (0.90 to 1.37)	1.07 (0.85 to 1.36)	.55



B In-hospital STEMI

Outcome	Patients, No. (%) With COVID-19 (n = 252)	Patients, No. (%) Without COVID-19 (n = 756)	Absolute difference (95% CI)	Odds ratio (95% CI) Unadjusted	Odds ratio (95% CI) Adjusted	P value
Primary						
In-hospital death	193 (76.6)	335 (44.3)	32.3 (25.15 to 39.40)	6.23 (4.83 to 8.04)	4.11 (2.97 to 5.69)	<.001
Secondary						
Composite of death, stroke, or myocardial infarction	199 (79.0)	369 (48.8)	30.2 (23.09 to 37.23)	5.76 (4.41 to 7.52)	3.94 (2.82 to 5.50)	<.001
Composite of death or stroke	199 (79.0)	364 (48.1)	30.8 (23.74 to 37.90)	5.66 (4.33 to 7.39)	4.04 (2.89 to 5.65)	<.001
Acute decompensated heart failure	107 (42.5)	335 (44.3)	−1.9 (−8.93 to 5.22)	0.56 (0.45 to 0.69)	0.93 (0.70 to 1.24)	.61
Cardiogenic shock	69 (27.4)	185 (24.5)	2.9 (−3.28 to 9.10)	0.94 (0.74 to 1.19)	1.16 (0.84 to 1.61)	.36



Saad et al, JAMA, 2021.

EP/TVP et COVID

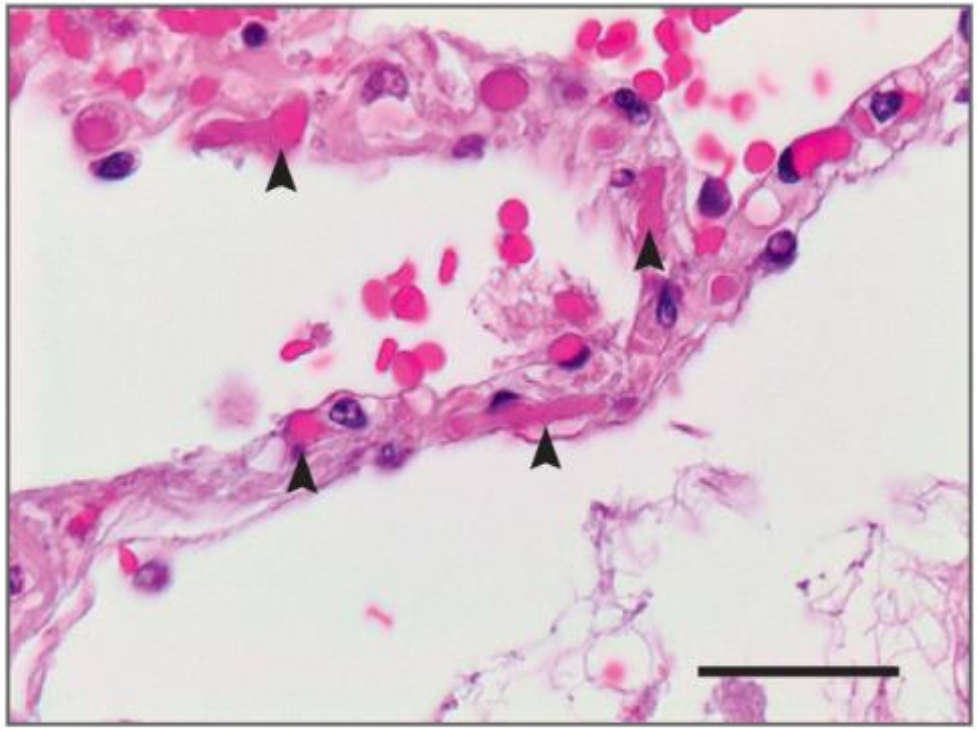


Figure 2. Microthrombi in the interalveolar Septa of a Lung from a Patient Who Died fr
Covid-19.

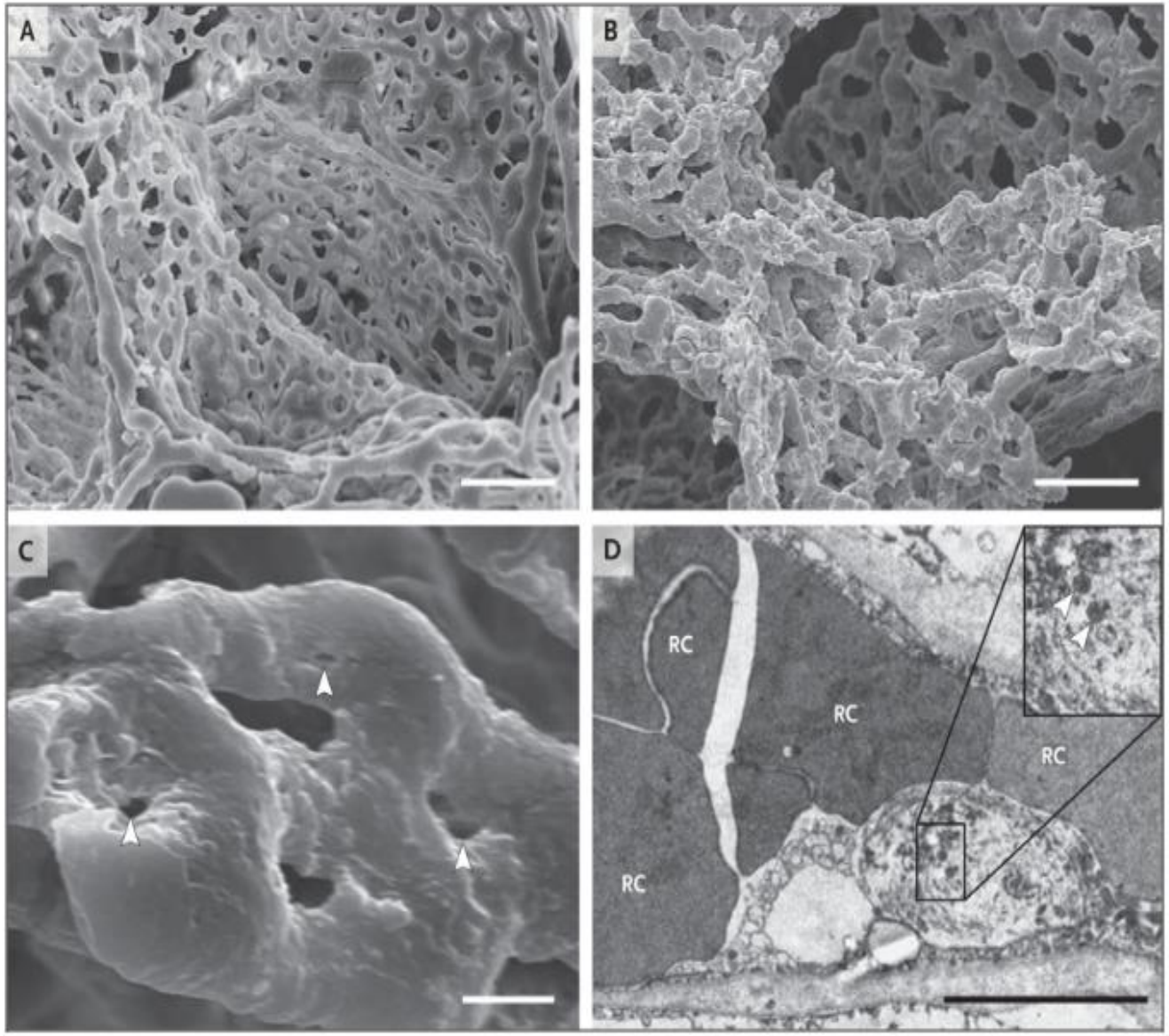


Figure 3. Microvascular Alterations in Lungs from Patients Who Died from Covid-19.

Ackermann, NEJM, 2020 ; Sakr et al, AIC, 2020 ; Poor, Chest, 2021.

EP/TVP et COVID

Pulmonary Embolism and Deep Vein Thrombosis in COVID-19: A Systematic Review and Meta-Analysis

Young Joo Suh, MD, PhD • Hyunsook Hong, PhD • Mickaël Ohana, MD, PhD • Florian Bompard, MD • Marie-Pierre Revel, MD, PhD • Clarissa Valle, MD • Alban Gervaise, MD, PhD • Julien Poissy, MD • Sophie Susen, MD, PhD • Guillaume Hékimian, MD • Mathieu Artifoni, MD • Daniel Periard, MD • Damien Contou, MD • Julie Delaloye, MD • Bienvenido Sanchez, MD • Cheng Fang, FRCR • Giorgio Garzillo, MD • Hasti Robbie, MD • Soon Ho Yoon, MD, PhD

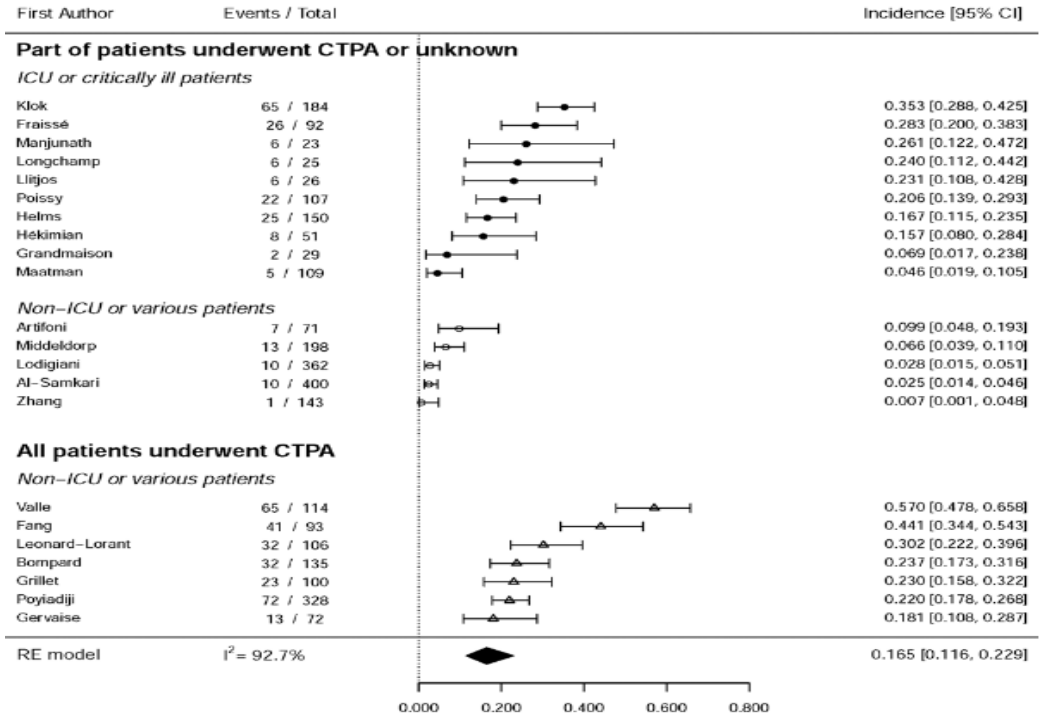


Table 4: Estimated Sensitivities, Specificities, and Predictive Values at Specific D-dimer Values

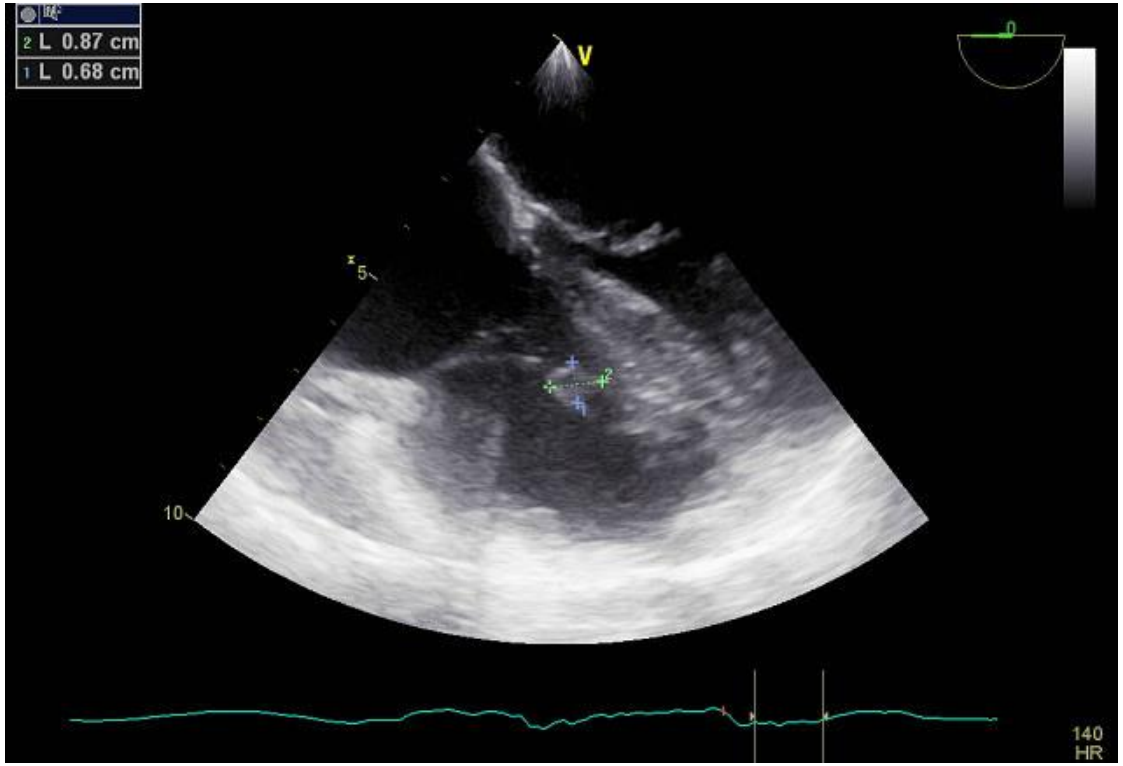
			Non-ICU Patients*		ICU Patients*	
Cutoff (µg/L)	Sensitivity (%)	Specificity (%)	Negative Predictive Value (%)	Positive Predictive Value (%)	Negative Predictive Value (%)	Positive Predictive Value (%)
500	96 (93, 97)	10 (7, 14)	95 (89, 100)	11 (10, 12)	88 (78, 97)	26 (25, 27)
1000	91 (86, 94)	24 (18, 32)	96 (92, 99)	12 (11, 13)	89 (83, 94)	28 (27, 30)
2000	81 (72, 87)	48 (38, 59)	96 (93, 98)	15 (13, 18)	88 (85, 92)	34 (31, 37)
3000	72 [(61, 81)	63 (51, 73)	95 (93, 97)	19 (16, 22)	87 (84, 91)	39 (35, 43)

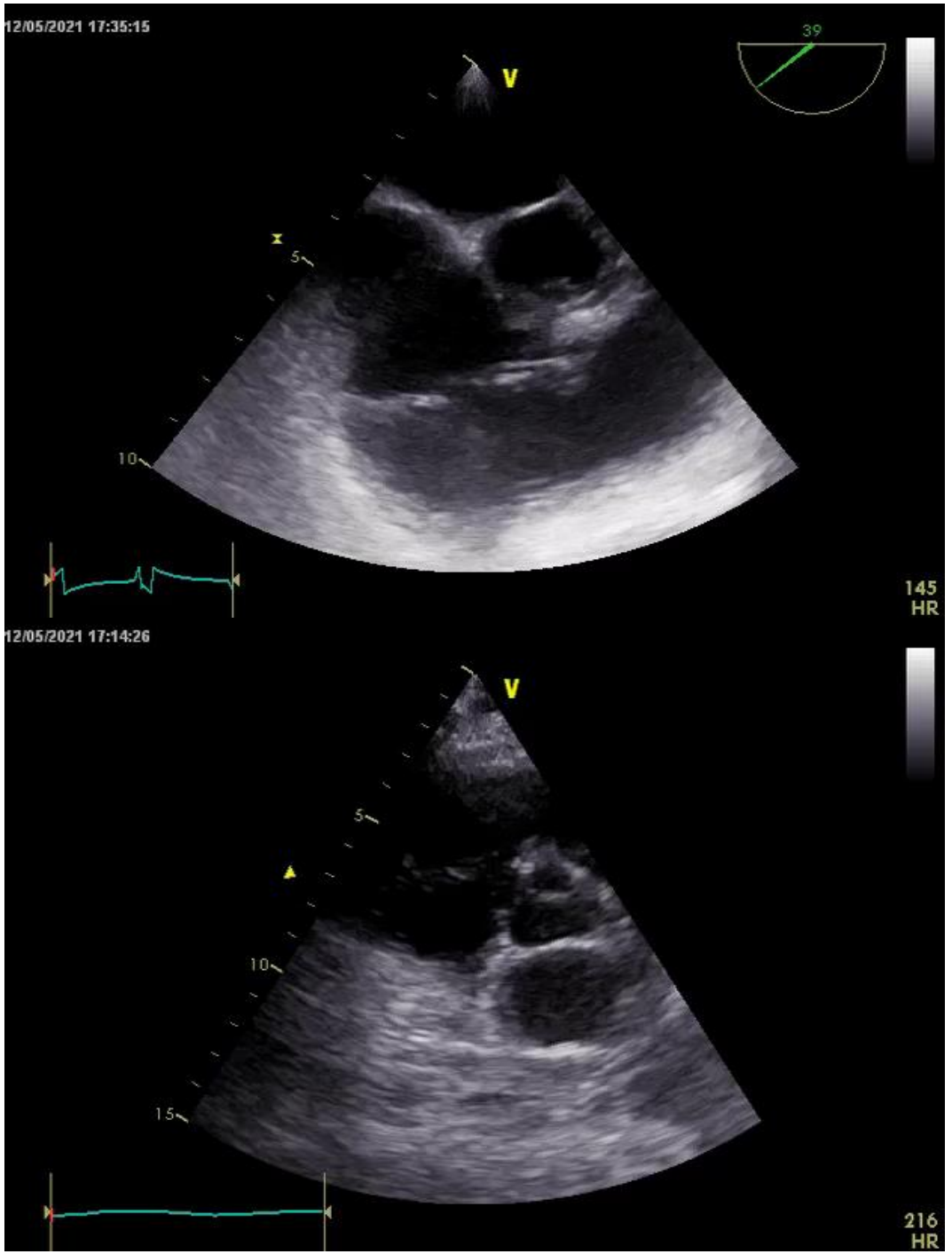
Note.—Data in parentheses are 95% CIs. The expected sensitivity, specificity, and positive and negative predictive values at specific D-dimer values were estimated for patients admitted to the intensive care unit (ICU) and those not admitted to the ICU, with an assumption that the pooled incidence of pulmonary embolism in our study could reflect the actual prevalence.

* CIs for predictive values were estimated with a sample size of 500, an approximate number of patients with individual D-dimer data in this study.

Suh et al, Radiology, 2020.

EP/TVP et COVID





CPA et COVID avec SRDA grave

RESEARCH LETTER Open Access

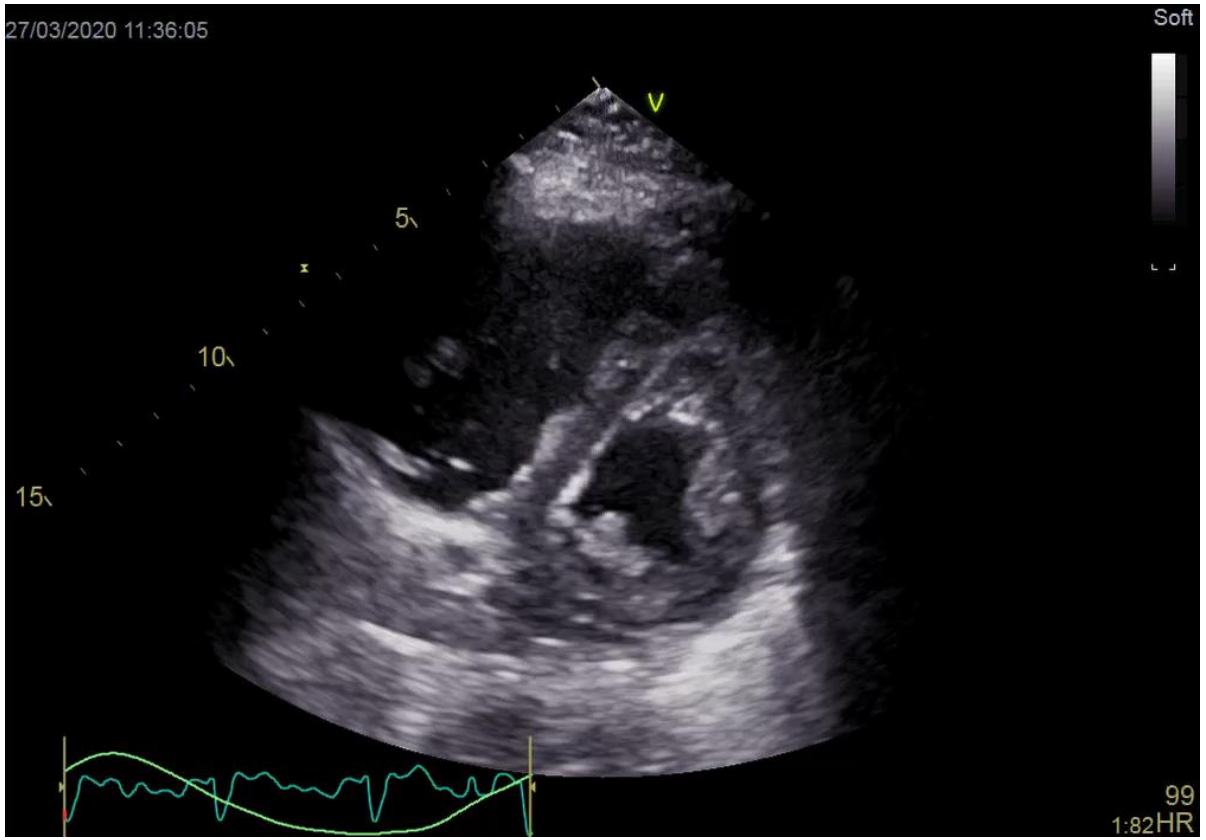
Acute cor pulmonale in Covid-19 related acute respiratory distress syndrome

Pedro Cavaleiro[1,2], Paul Masi[1,2*], François Bagate[1,2], Thomas d'Humières[3,4] and Armand Mekontso Dessap[1,2,4*]

Table 2 Univariate and multivariable analysis for acute cor pulmonale in patients with Cocid-19 related acute respiratory distress syndrome

	N patients with data	Univariate analysis	Multivariable analysis
Patient characteristics*			
Body mass index (kg/m^2)	113	1.07 [0.996–1.14], $p=0.06$	NR
Medical history*			
Diabetes	117	0.34 [0.15–0.78], $p=0.01$	NR
Chronic kidney disease	117	0.16 [0.03–0.71], $p=0.02$	NS
Respiratory parameters*			
Respiratory system compliance (mL/cmH_2O)	102	1.02 [0.99 -1.05], $p=0.27$	NS
CT-scan			
Pulmonary embolism	81	8.5 [1.63–44.33], $p=0.01$	7.30 [1.32–40.29], $p=0.02$

Data presented as OR [95% CI]; OR—Odds Ratio, 95% CI—95% Confidence Interval, NS—not significant in the final model, NR—not retained in the final model; The multivariable model showed a good calibration as assessed by the Hosmer and Lemeshow goodness of fit test [$X^2(8\ df)=7.8$, $p=0.45$] and a fair discrimination as assessed by the receiver operating characteristics curve [area under the curve (AUC) 0.779; 95% CI 0.673–0.885; $p<0.0001$]



PCO2 et mécanique ventilatoire non associées

Cavaleiro et al, Crit Care, 2020.

COVID grave -corticoïde

ORIGINAL ARTICLE

Dexamethasone in Hospitalized Patients with Covid-19 — Preliminary Report

The RECOVERY Collaborative Group*

- **DXM 6 mg/j pdt 10j**
- **Patients O^2 dépendant**

Respiratory Support at Randomization	Dexamethasone	Usual Care	Rate Ratio (95% CI)
	no. of events/total no. (%)		
Invasive mechanical ventilation	95/324 (29.3)	283/683 (41.4)	0.64 (0.51–0.81)
Oxygen only	298/1279 (23.3)	682/2604 (26.2)	0.82 (0.72–0.94)
No oxygen received	89/501 (17.8)	145/1034 (14.0)	1.19 (0.91–1.55)
All Patients	**482/2104 (22.9)**	**1110/4321 (25.7)**	**0.83 (0.75–0.93)**
			P<0.001

Chi-square trend across three categories: 11.5

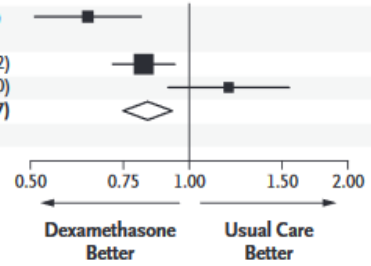
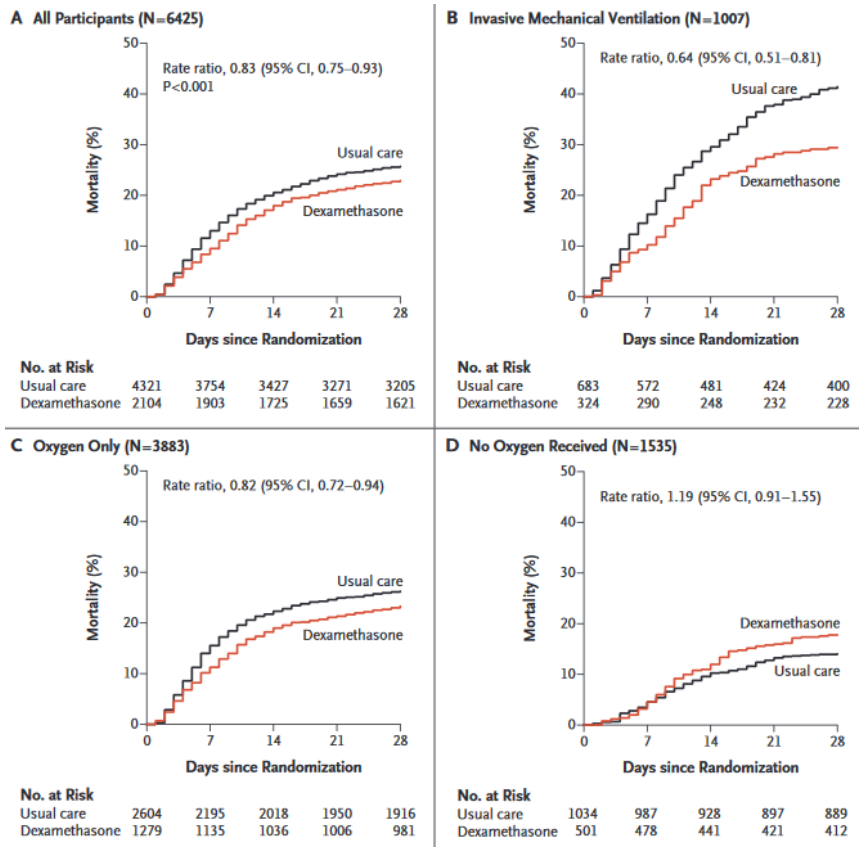


Figure 3. Effect of Dexamethasone on 28-Day Mortality, According to Respiratory Support at Randomization.

Shown are subgroup-specific rate ratios for all the patients and for those who were receiving no oxygen, receiving oxygen only, or undergoing invasive mechanical ventilation at the time of randomization. Rate ratios are plotted as squares, with the size of each square proportional to the amount of statistical information that was available; the horizontal lines represent 95% confidence intervals.



RECOVERY group NEJM, 2021.

COVID grave -Tocilizumab

JAMA | Original Investigation

Association Between Administration of IL-6 Antagonists and Mortality Among Patients Hospitalized for COVID-19

A Meta-analysis

The WHO Rapid Evidence Appraisal for COVID-19 Therapies (REACT) Working Group

Figure 1. Association Between IL-6 Antagonists vs Usual Care or Placebo and Primary Outcome of 28-Day All-Cause Mortality

Anti-IL-6 agent and trial name	No. of events/total patients: Usual care or placebo	No. of events/total patients: Anti-IL-6	Odds ratio (95% CI)	Weight, %
Tocilizumab				
ARCHITECTS	2/11	0/10	0.18 (0.01-4.27)	0.09
BACC-Bay	4/82	9/161	1.15 (0.34-3.87)	0.63
CORIMUNO-TOCI-1	8/67	7/63	0.92 (0.31-2.71)	0.79
CORIMUNO-TOCI-ICU	10/43	8/49	0.64 (0.23-1.82)	0.85
COV-AID[a]	7/72	9/81	1.16 (0.41-3.29)	0.84
COVACTA	28/144	58/294	1.02 (0.62-1.68)	3.62
COVIDOSE2-SS-A	2/8	0/19	0.07 (<0.01-1.58)	0.09
COVIDSTORM	0/13	0/26	NA[b]	
COVINTOC	15/88	11/91	0.67 (0.29-1.55)	1.30
COVITOZ	0/9	0/17	NA[b]	
EMPACTA	11/128	26/249	1.24 (0.59-2.60)	1.67
HMO-020-0224	8/17	11/37	0.48 (0.15-1.56)	0.65
ImmCoVA	2/27	2/22	1.25 (0.16-9.67)	0.22
PreToVid[c]	34/180	21/174	0.59 (0.33-1.06)	2.63
RECOVERY	729/2094	621/2022	0.83 (0.73-0.95)	53.76
REMAP-CAP[d]	116/358	85/353	0.66 (0.48-0.92)	8.43
REMDACTA	41/210	78/430	0.91 (0.60-1.39)	5.18
TOCIBRAS	6/64	14/65	2.65 (0.95-7.42)	0.87
TOCOVID	0/134	0/136	NA[b]	
Subgroup I^2 = 3.3%	1023/3749	960/4299	0.83 (0.74-0.92)	81.61
Sarilumab				
CORIMUNO-SARI-1	14/76	8/68	0.59 (0.23-1.51)	1.04
CORIMUNO-SARI-ICU	11/33	14/48	0.82 (0.32-2.14)	1.00
REGENERON-P2	19/90	104/367	1.48 (0.85-2.57)	2.97
REGENERON-P3	64/286	264/1044	1.17 (0.86-1.60)	9.45
REMAP-CAP[d]	19/65	10/48	0.64 (0.26-1.53)	1.19
SANOFI	7/84	30/332	1.09 (0.46-2.58)	1.24
SARCOVID	0/10	2/20	2.84 (0.12-64.87)	0.09
SARICOR	4/39	3/76	0.36 (0.08-1.69)	0.38
SARTRE	1/70	2/70	2.03-0.18-22.91)	0.16
Subgroup I^2 = 0%	139/753	437/2073	1.08 (0.86-1.36)	17.51
Siltuximab				
COV-AID[a]	7/72	10/77	1.39 (0.50-3.86)	0.87
Overall I^2 = 18.2%	1158/4481	1407/6449	0.86 (0.79-0.95)	100.00

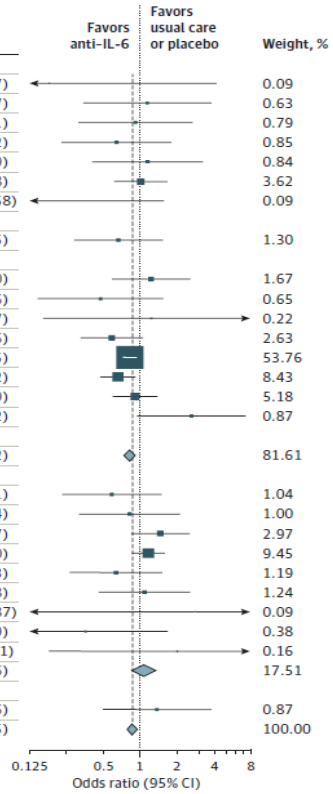
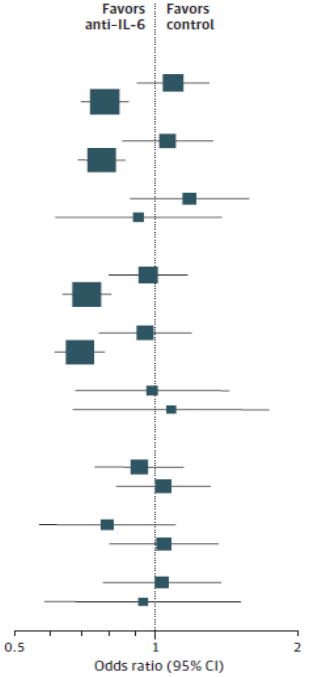


Figure 2. Subgroup Analysis of 3 Outcomes by Treatment Group and Corticosteroid Use

Outcome and treatment	I^2, %	No. of events/total patients: Control	No. of events/total patients: Anti-IL-6	Odds ratio (95% CI)
28-d mortality				
All anti-IL-6				
No corticosteroid use	0	293/1280	537/2357	1.09 (0.91-1.30)
Corticosteroid use	0	838/2848	827/3468	0.78 (0.69-0.88)
Tocilizumab				
No corticosteroid use	0	211/898	254/1192	1.06 (0.85-1.33)
Corticosteroid use	0	793/2585	693/2815	0.77 (0.68-0.87)
Sarilumab				
No corticosteroid use	0	83/384	283/1134	1.18 (0.88-1.58)
Corticosteroid use	0	48/281	124/607	0.92 (0.61-1.38)
Progression to IMV, ECMO, or death at 28 d				
All anti-IL-6				
No corticosteroid use	0	308/1004	399/1541	0.96 (0.79-1.17)
Corticosteroid use	0	893/2496	822/2986	0.71 (0.63-0.80)
Tocilizumab				
No corticosteroid use	0	250/791	266/1016	0.95 (0.76-1.20)
Corticosteroid use	0	859/2283	729/2518	0.69 (0.61-0. 78)
Sarilumab				
No corticosteroid use	0	59/214	126/498	0.98 (0.67-1.44)
Corticosteroid use	0	38/227	75/423	1.08 (0.67-1.75)
28-d secondary infections[a]				
All anti-IL-6				
No corticosteroid use	3	165/758	434/1820	0.92 (0.74-1.15)
Corticosteroid use	1	160/798	310/1378	1.04 (0.82-1.31)
Tocilizumab				
No corticosteroid use	0	86/385	146/659	0.79 (0.57-1.10)
Corticosteroid use	16	132/573	210/772	1.04 (0.80-1.36)
Sarilumab				
No corticosteroid use	8	79/373	285/1130	1.03 (0. 77-1.38)
Corticosteroid use	0	28/225	92/560	0.94 (0.58-1.52)



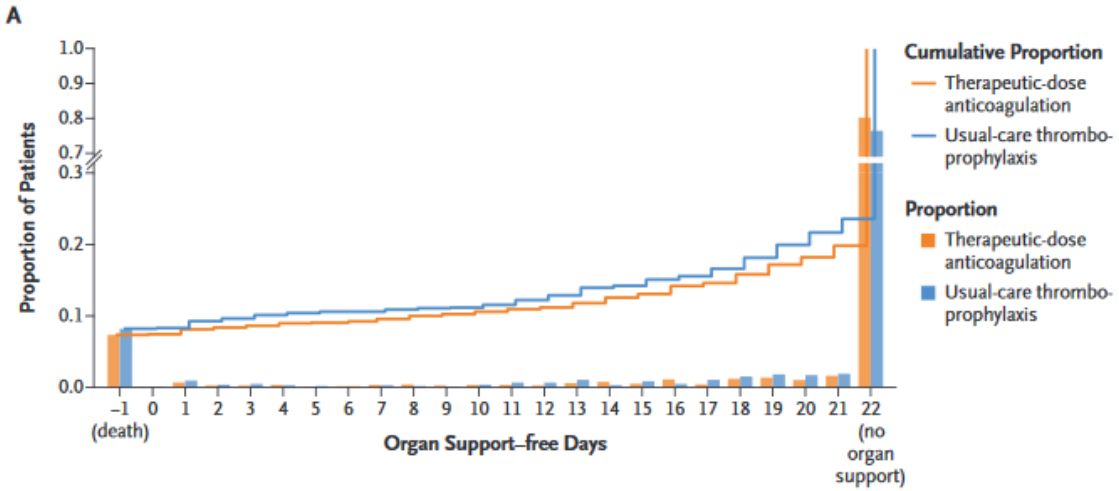
REACT working group, JAMA, 2021.

COVID grave -anticoagulation

ORIGINAL ARTICLE

Therapeutic Anticoagulation with Heparin in Noncritically Ill Patients with Covid-19

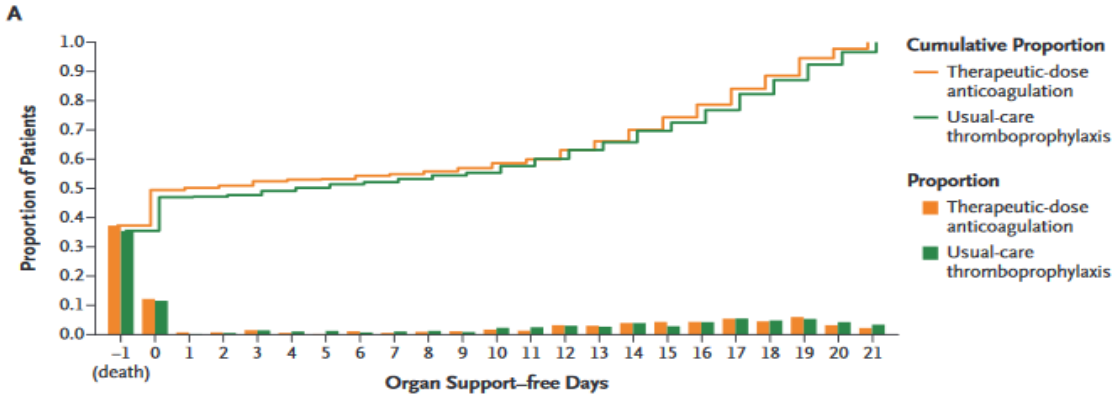
The ATTACC, ACTIV-4a, and REMAP-CAP Investigators*



ORIGINAL ARTICLE

Therapeutic Anticoagulation with Heparin in Critically Ill Patients with Covid-19

The REMAP-CAP, ACTIV-4a, and ATTACC Investigators*



IMCVO Hôpital privé de Parly 2 — 20èmes RENCONTRES MÉDICO-CHIRURGICALES — Palais des Congrès de VERSAILLES — SAMEDI 4 DÉCEMBRE 2021 — IMCVO Institut des Maladies Cardio-Vasculaires de l'Ouest — Journée Yves Guérin

NEJM, 2021.

Chirurgie cardiaque et COVID

The Effect of COVID-19 on Adult Cardiac Surgery in the United States in 717 103 Patients

Tom C. Nguyen, MD, Vinod H. Thourani, MD, Alexander P. Nissen, MD, Robert H. Habib, PhD, Joseph A. Dearani, MD, Allan Ropski, MS, Juan A. Crestanello, MD, David M. Shahian, MD, Jeffrey P. Jacobs, MD, and Vinay Badhwar, MD

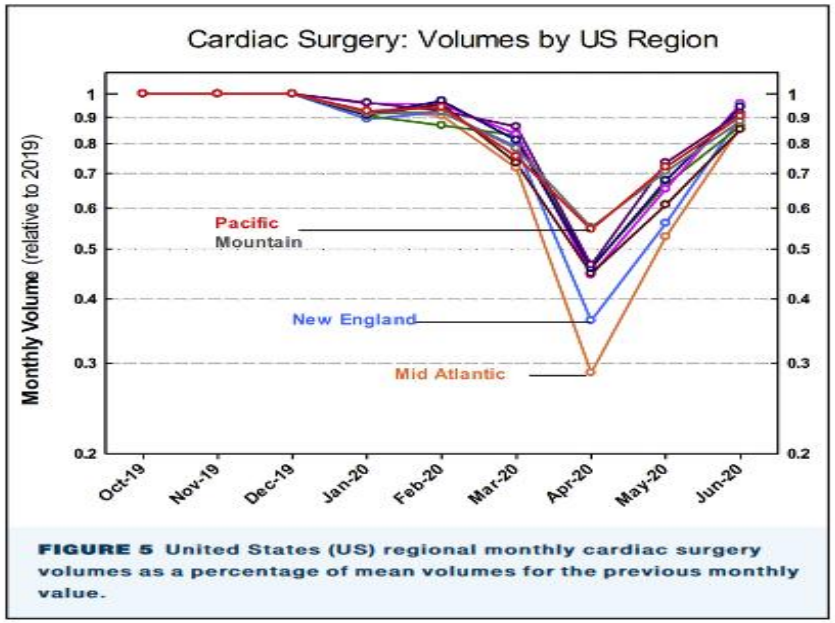


FIGURE 5 United States (US) regional monthly cardiac surgery volumes as a percentage of mean volumes for the previous monthly value.

Anaesthesia 2021 doi:10.1111/anae.15458

Original Article

Timing of surgery following SARS-CoV-2 infection: an international prospective cohort study

COVIDSurg Collaborative* and **GlobalSurg Collaborative***

NIHR Global Health Research Unit on Global Surgery, Birmingham, UK

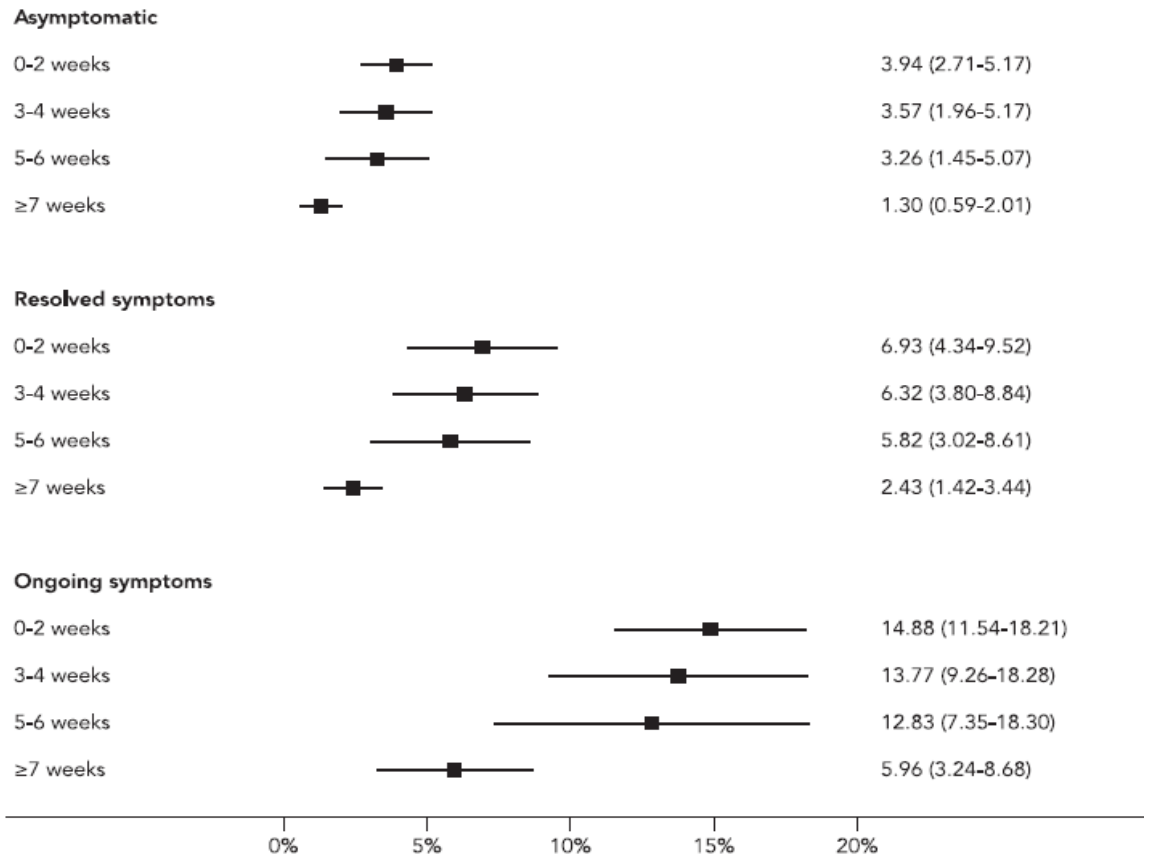


Figure 3 Adjusted 30-day postoperative mortality rates in patients with pre-operative SARS-CoV-2 infection stratified by COVID-19 symptoms. The time-periods relate to the timing of surgery following the diagnosis of SARS-CoV-2 infection. Full models and results are available in online Supporting Information (Appendix S1, Tables S7–S8).

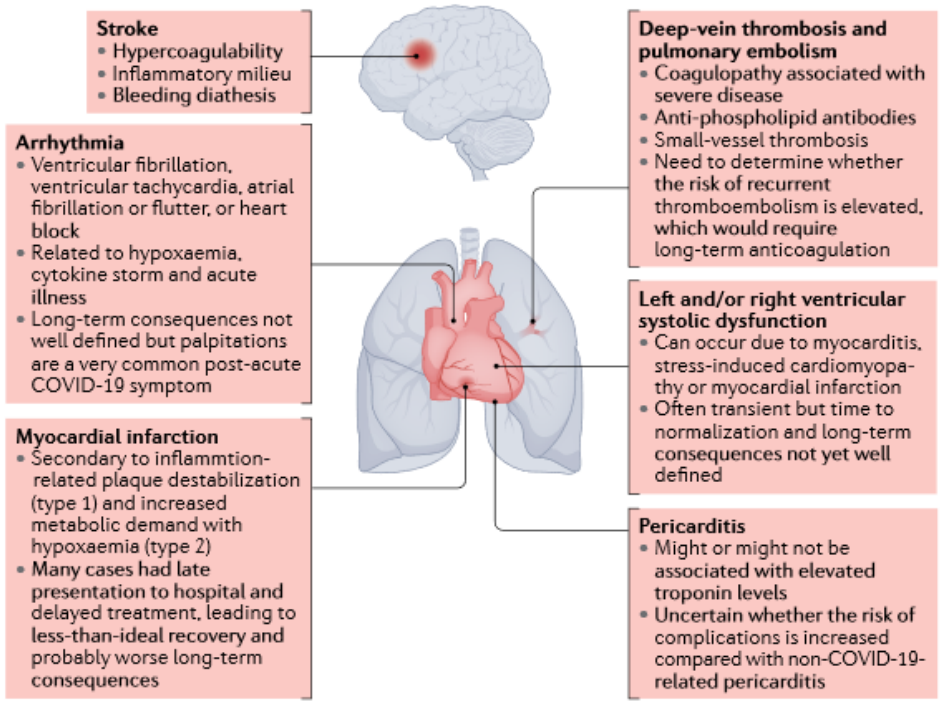
IMCVO Hôpital privé de Parly 2 — 20èmes RENCONTRES MÉDICO-CHIRURGICALES — Palais des Congrès de VERSAILLES — SAMEDI 4 DÉCEMBRE 2021 — IMCVO Institut des Maladies Cardio-Vasculaires de l'Ouest — Journée Yves Guérin

Nguyen et al, Ann Thorac Surg, 2021 ; COVIDSurg Collaborative, Anaesthesia, 2021.

Impact cardiovasculaire à long terme du COVID

Cardiac involvement in the long-term implications of COVID-19

Benjamin A. Satterfield, Deepak L. Bhatt and Bernard J. Gersh



Box 2 | Cardiac monitoring in survivors of COVID-19

- In patients with coronavirus disease 2019 (COVID-19) and elevated troponin levels, how long does troponin take to normalize?
- In patients with COVID-19 and newly reduced left ventricular ejection fraction (LVEF), how many normalize and how long does this normalization take?
- Is there an association between normalization of troponin levels and normalization of LVEF if both were abnormal during acute COVID-19?
- In patients with acute COVID-19 who present with reduced LVEF or abnormal first-phase ejection fraction but in whom these parameters subsequently normalize, is there an increased risk of developing heart failure in the coming years?
- In patients with a myocarditis-like late gadolinium enhancement pattern or abnormal T1 or T2 values on cardiac MRI, is there an increased risk of developing heart failure in the coming years?
- Are survivors of COVID-19 at increased risk of diastolic dysfunction over the long term?

Satterfield et al, Nat Rev Cardiol, 2020.

Impact direct et indirect du COVID sur les pathologies cardiovasculaires