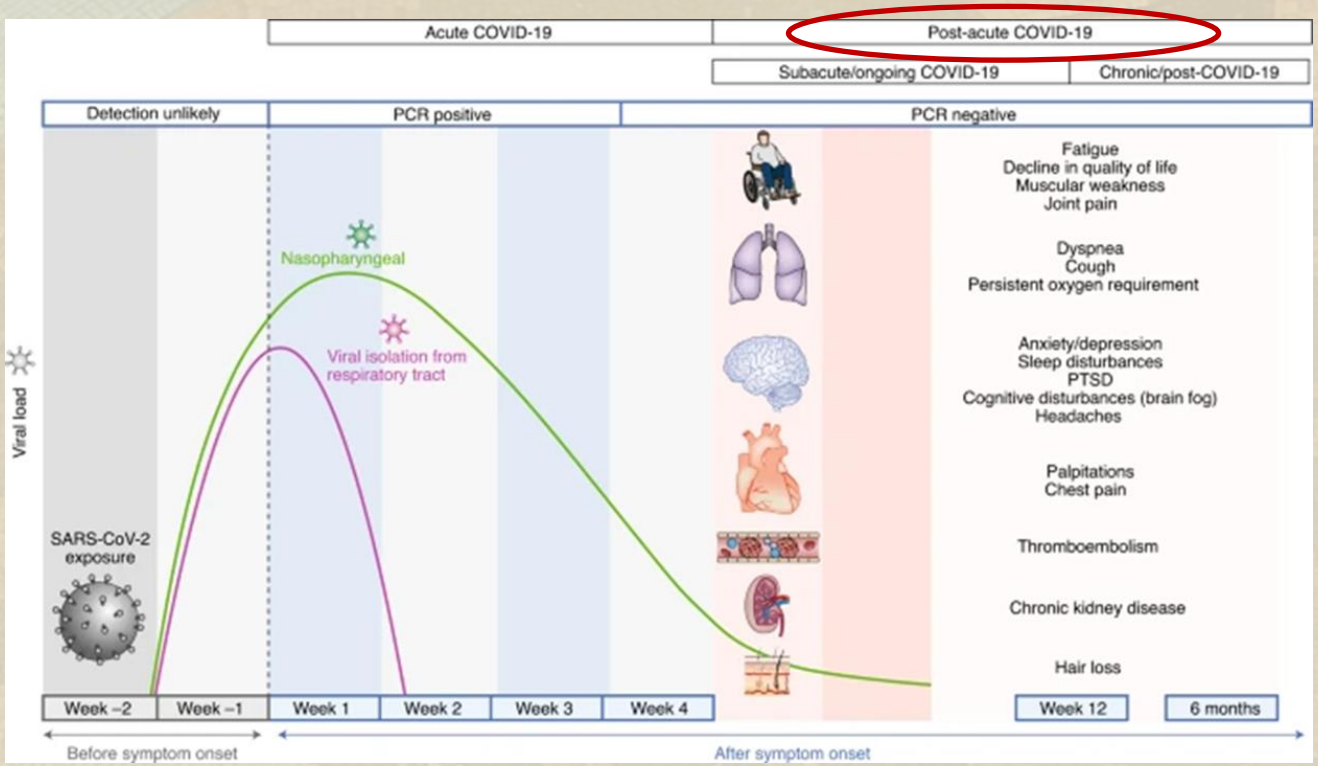
PÉCSI TUDOMÁNYEGYETEM
ÁLTALÁNOS ORVOSTUDOMÁNYI KAR
www.aok.pte.hu

Anesztézia és post-COVID

Molnár Tihamér Szabolcs

Szintentartó Tanfolyam
2023

Definíció



the prevalence may be as high as 40% in adults and 3.5% in children
Public Health Rev 2022;43:1604501

National Institute of Health (USA)

Wide range and/or constellation of symptoms reflecting lack of recovery “a few weeks” after COVID-19 index infection

Centers for Disease Control (USA)

Wide range of new, returning, or ongoing symptoms after COVID-19 infection, occurring at least four weeks after COVID-19 infection

World Health Organization

Symptoms occurring in an individual with confirmed or suspected COVID-19, usually three months from the onset of COVID-19 infection and lasting at least two months, and which cannot be explained by an alternative diagnosis

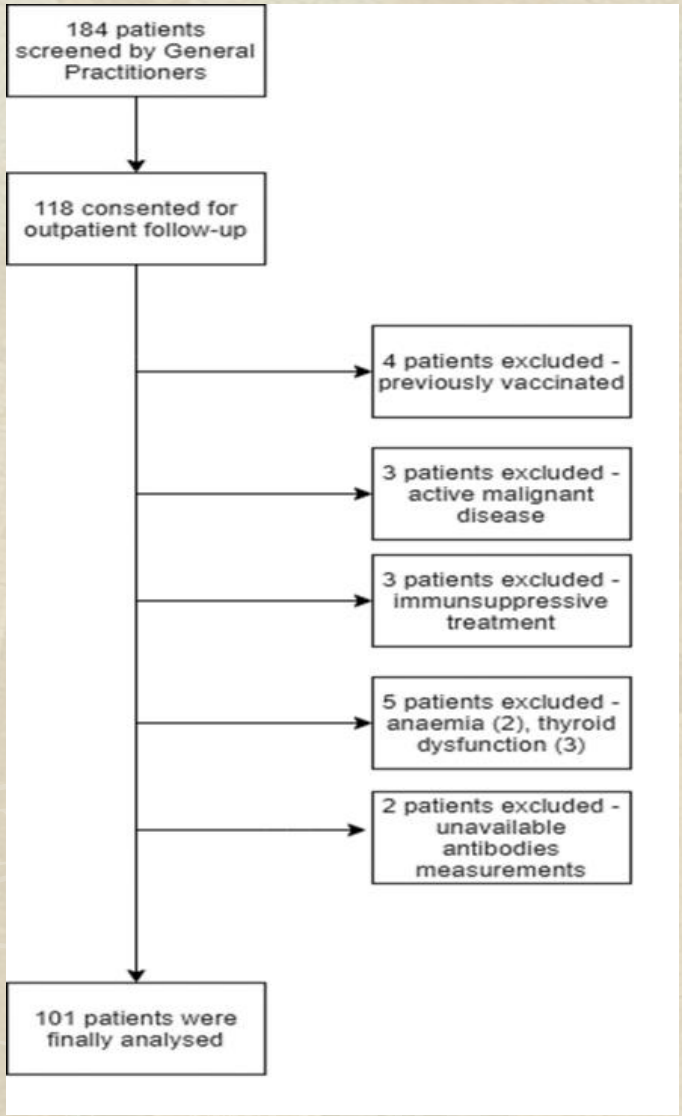
Perioper Care Oper Room Manag. 2022

Post-COVID syndrome (PCS)

- Incidencia: 10-35% (kórházi kezelés után: 85%)
- A leggyakoribb tünetek a fáradtság (18-72%); dyspnoe (10-40%); mentális problémák (26%); mellkasi fájdalom (22%); szag- és ízvesztés (11%)
- A post-COVID betegek egyharmadának vannak alapbetegségei (HT, DM stb.)
- Megjelennek az alapellátásban és a járóbeteg-szakrendeléseken
- Megjelennek a műtétre várók között

Archives of Medical Research 52 (2021) 575-581

Pécsi adatok

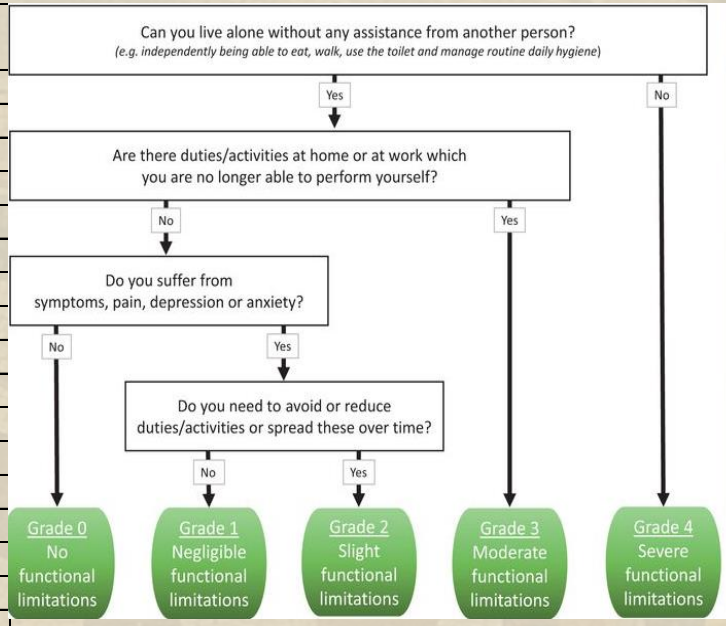


	Total population (N=101)	4-12 weeks (N=68)	12 weeks< (N=33)	*p*
	Post COVID symptoms (N, %)			
Fatigue	69 (68.3)	47 (69.1)	22 (66.7)	0.804
Fever	5 (5)	3 (4.4)	2 (6.1)	0.720
Reduction in physical capacity	64 (63.4)	44 (64.7)	20 (60.6)	0.688
Dyspnoe	22 (21.8)	10 (14.7)	12 (36.4)	*0.013*
Cough	16 (15.8)	15 (22.1)	1 (3)	*0.014*
Chest tightness	23 (22.8)	14 (20.6)	9 (27.3)	0.452
Chest pain	16 (15.8)	13 (19.1)	3 (9.1)	0.196
Palpitation	50 (49.5)	34 (50)	16 (48.5)	0.886
„Brain fog"	6 (5.9)	5 (7.4)	1 (3)	0.389
Headache	23 (22.8)	12 (17.6)	11 (33.3)	0.078
Subjective cognitive impairment	18 (17.8)	12 (17.6)	6 (18.2)	0.947
Numbness	9 (8.9)	7 (10.3)	2 (6.1)	0.484
Dizziness	16 (15.8)	13 (19.1)	3 (9.1)	0.196
Sleep disturbancies	35 (34.7)	22 (32.4)	13 (39.4)	0.486
Abdominal pain	4 (4)	4 (5.9)	0 (0)	0.161
Nausea	5(5)	2 (2.9)	3 (9.4)	0.168
Diarrhoea	3 (3)	2 (2.9)	1 (3)	0.980
Joint pain	20 (19.8)	12 (17.6)	8 (24.2)	0.435
Muscle pain	19 (18.8)	10 (14.7)	9 (27.3)	0.130
Depression	12 (11.9)	7 (10.3)	5 (15.2)	0.479
Anxiety	14 (14)	5 (7.4)	9 (28.1)	*0.005*
Earache	8 (7.9)	5 (7.4)	3 (9.1)	0.762
Sore throat	10 (9.9)	9 (13.2)	1 (3)	0.107
Loss of taste	16 (15.8)	11 (16.2)	5 (15.6)	0.944
Loss of smell	22 (21.8)	16 (23.5)	6 (18.2)	0.541
Skin rash	4 (4)	4 (5.9)	0 (0)	0.155
Hair loss	18 (17.8)	9 (13.2)	9 (27.3)	0.084
anti-SARS-CoV-2 S-Ig (U/mL, median, IQR)	125 (40-289)	169.5 (58-308)	70.8 (31-131)	*0.037*
anti-SARS-CoV-2 NC-Ig (U/mL,median,IQR)	53.9 (18-105)	54.7 (21-107)	41.8 (9-97)	0.201

J Clin Med **2021**, 10, 4337.

Fáradtság: nem súlyos vs. súlyos

	Non-Severe fatigue (N=38)	Severe fatigue (N=63)	P-value
Age	52.2±13	48.7±11	0.064
female (N, %)	18 (47.4)	44 (69.8)	0.025*
BMI	28.5±8	27.3±5	0.468
Symptom onset to follow-up (day)	71.2±26	69±32	0.641
Hospitalization	16 (42.1)	23 (36.5)	0.576
PCFS	1 (0-1)	2 (1-2)	<0.001
Lenght of hospitalization (day)	3.2±4	2.3±3.5	0.370
CTss	9 (6-11)	11 (7-13)	0.217
O_2 supplementation (N, %)	8 (21)	14 (22)	0.890
Antiviral medication (N,%)	15 (39.5)	19 (30.2)	0.337
CRP	52.9 (14-81)	29.5 (12-79)	0.630
hsTroponin-T	10.4 (4-13)	6.6 (5-9)	0.201
NLR	3.2 (2-6)	4.3 (2-6)	0.476
IL-6	29 (12-36)	28 (20-48)	0.580
D-dimer	738 (573-1009)	740 (412-1159)	0.730
ferritin	552 (354-899)	569 (462-881)	0.695
Total CFQ-11 Score	9.9±3.7	19.2±3.7	<0.001
Physical Fatigue	7.3±2.6	14.3±2.6	<0.001
Psychological Fatigue	2.6±1.9	5±2.6	<0.001
Total CFQ-11 Score	1.5±1.4	7±1.9	<0.001
Number of symptoms (mean, min-max)	2 (0-3)	7 (5-10)	<0.001
Total value on VAS*	6 (0-14)	18 (15-21)	<0.001
anti-SARS-CoV-2 S-Ig (U/mL)	211 (103-473)	72.7 (25-201)	<0.001
anti-SARS-CoV-2 NC-Ig (U/mL)	91.8 (46-125)	34.5 (10-66)	<0.001



How much are you currently affected in your everyday life by COVID-19? Please indicate which one of the following statements applies to you most.	Corresponding PCFS scale grade
I have no limitations in my everyday life and no symptoms, pain, depression or anxiety related to the infection.	0
I have negligible limitations in my everyday life as I can perform all usual duties/activities, although I still have persistent symptoms, pain, depression or anxiety.	1
I suffer from limitations in my everyday life as I occasionally need to avoid or reduce usual duties/activities or need to spread these over time due to symptoms, pain, depression or anxiety. I am, however, able to perform all activities without any assistance.	2
I suffer from limitations in my everyday life as I am not able to perform all usual duties/activities due to symptoms, pain, depression or anxiety. I am, however, able to take care of myself without any assistance.	3
I suffer from severe limitations in my everyday life: I am not able to take care of myself and therefore I am dependent on nursing care and/or assistance from another person due to symptoms, pain, depression or anxiety.	4

vaccines

MDPI

Article

Serum Level of Anti-Nucleocapsid, but Not Anti-Spike Antibody, Is Associated with Improvement of Long COVID Symptoms

Reka Varnai [1], Tihamer Molnar [2,*], Laszlo Zavori [3], Margit Tőkés-Füzesi [4], Zsolt Illes [5], Andrea Kanizsai [6] and Peter Csecsei [7]

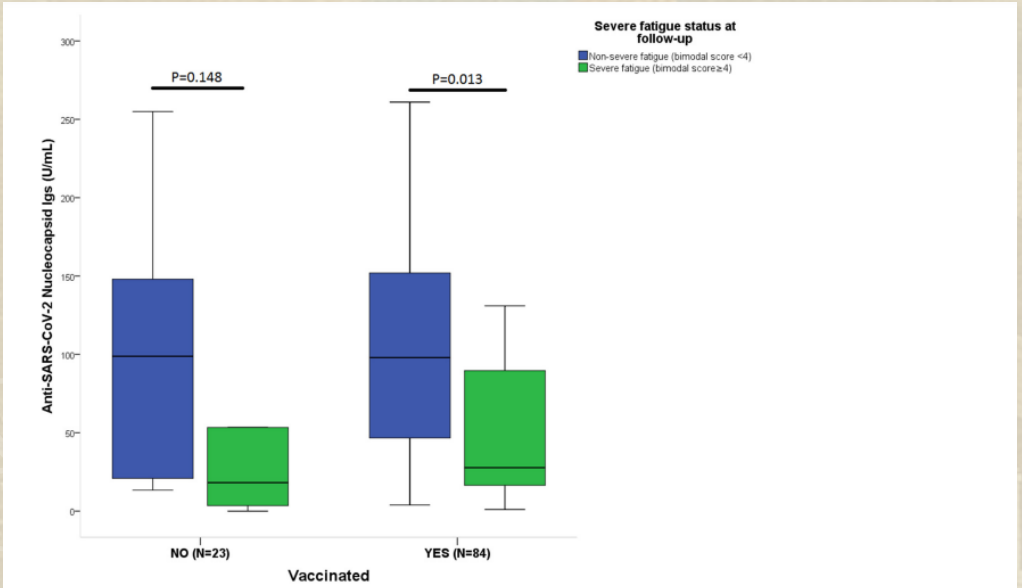


Figure 2. Patients with severe fatigue show decreased level of serum antiSARS-CoV-2 nucleocapsid-Ig (A + M + G) antibody levels both in unvaccinated (non-severe fatigue, N = 9 vs. severe fatigue, and N = 14) and vaccinated (non-severe fatigue, N = 41 vs. severe fatigue, and N = 43) individuals but significance is observed only in the vaccinated group. The case definition of severe fatigue was established using a combination of a bimodal scoring system and the CFQ-11 scale, resulting in a final score ranging between 0–11. A score of 4 or more was defined as severe fatigue. Statistical analysis

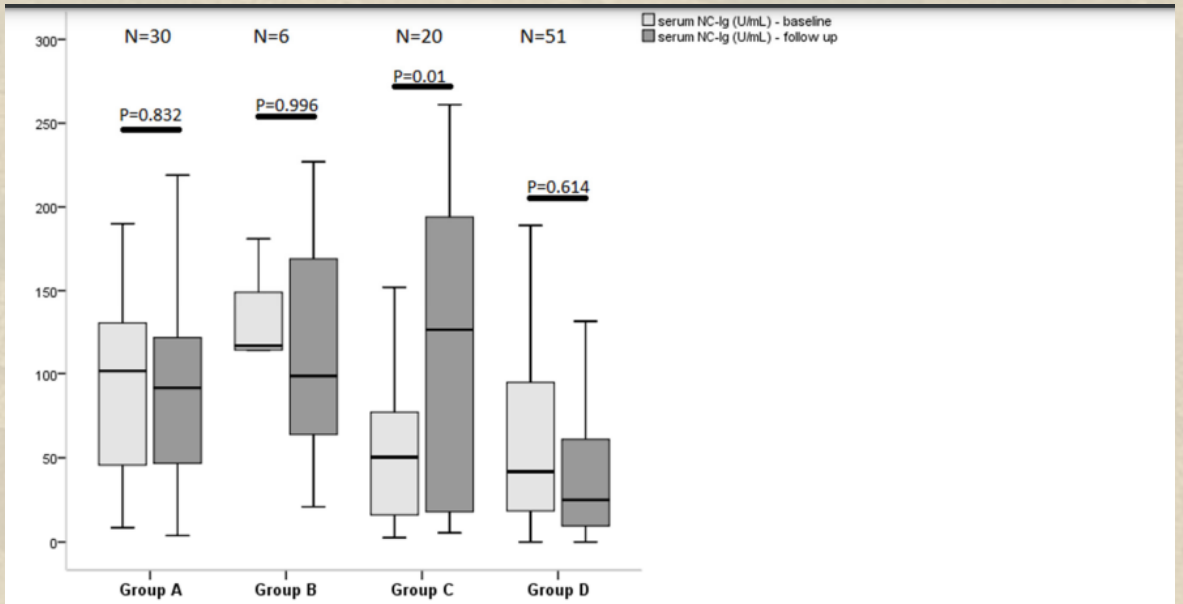


Figure 1. Association between the severity of post-COVID fatigue and serum level of anti-SARS-CoV-nucleocapsid immuneglobulins at baseline and follow-up visits. We used the Chalder-fatigue scale (CFQ-11) to establish a case definition for severe fatigue by utilizing a bimodal scoring system ranging between 0–11. A case of severe fatigue was defined as a score of 4 or more. Group A, (N = 30): patients experienced severe fatigue neither at baseline nor at follow-up (bimodal score < 4 at both visit). Group B, (N = 6): patients only had severe fatigue at follow-up (bimodal score ≥ 4), and baseline bimodal score was <4. Group C, (N = 20): patients had severe fatigue (bimodal score ≥ 4) at the baseline visit but not at follow-up. Group D, (N = 51): at both visits, patients experienced severe fatigue (bimodal score ≥ 4). Time of baseline visit was at least 30 days after COVID-19 symptom onset. Next, follow-up visit was 17–24 post-baseline weeks. Nucleocapsid IgA + IgM + IgG level

post-COVID cikk: 6000+ (PubMed)

Journal of Clinical Anesthesia 72 (2021) 110283

Contents lists available at ScienceDirect

Journal of Clinical Anesthesia

journal homepage: www.elsevier.com/locate/jclinane

Correspondence

Anesthesia and the "post-COVID syndrome": Perioperative considerations for patients with prior SARS-CoV-2 infection

To the Editor:

The COVID-19 pandemic continues to present a major global health threat. Although most patients infected with SARS-CoV-2 do not develop fatal or critical illness, even mild cases may have long-term health consequences. A recent study in *The Lancet* by Huang *et al* found that, among 1733 previously-hospitalized COVID-19 patients, 76% experienced at least one residual symptom 6 months after diagnosis [1]. Symptoms ranging from chest tightness and dyspnea to anosomia and headaches have been described as part of a chronic "post-COVID syn-

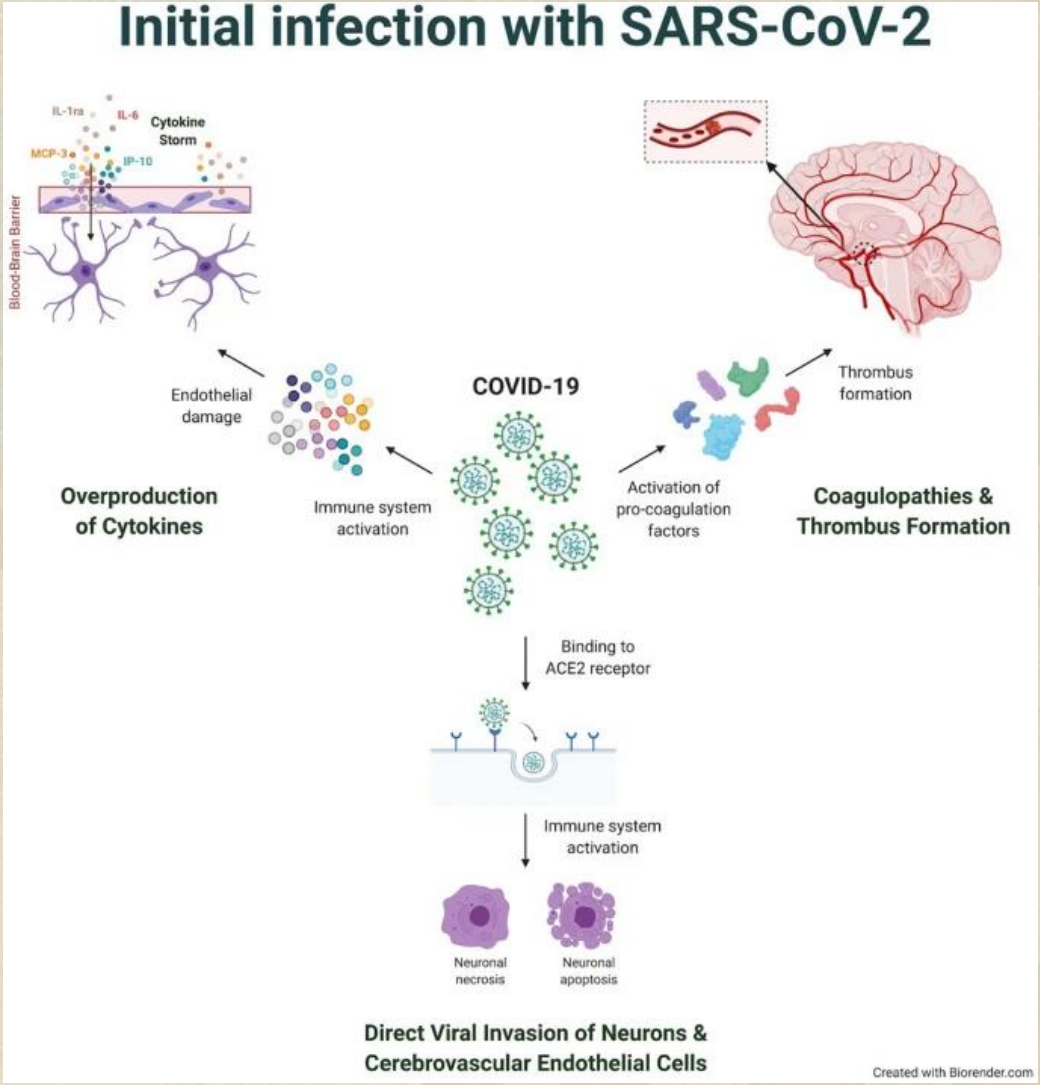
but chronic cardiovascular effects of COVID may also be significant [4]. Huang *et al* found that 4–10% of patients reported chest pain and 9–11% experienced palpitations after 6 months [1]. These effects may reflect myocardial fibrosis or inflammation [4]. In another study of 26 patients who complained of new cardiac symptoms following COVID-19 infection, 58% demonstrated evidence of myocardial edema and/or decreased perfusion on cardiac MRI, at a median of 47 days after symptom-onset [5].

Anesthesiologists must be vigilant of possible cardiac dysfunction in

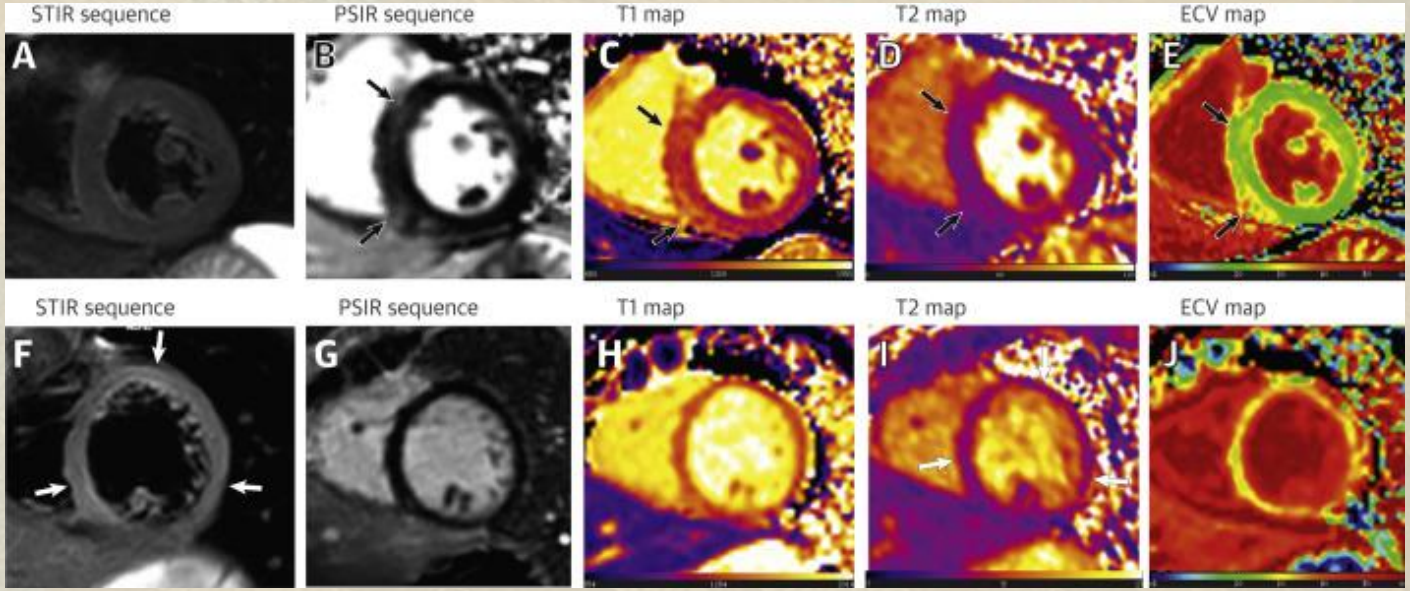
Anesztézia szempontok post-COVID betegnél

	Symptom or finding	Management considerations and strategies
Neurologic 11-13%	Peripheral neuropathy	Judicious use of neuromuscular blockade (NMB) Quantitative reversal of NMB Avoidance of regional anesthesia Perioperative Neurology consult
Cardiovascular 50-58%	Palpitations Chest pain Decreased myocardial perfusion	Perioperative EKG Transthoracic Echocardiogram Cardiology referral/evaluation
Pulmonary 20-29%	Residual small airway dysfunction Restrictive lung disease Diffusion impairment	Avoidance of general endotracheal anesthesia Discussion of possible postoperative mechanical ventilation with patients, families and proceduralist team
Hematologic Renal: 35%	Hypercoagulability Venous and arterial thromboses	Pre- and intraoperative thromboprophylaxis (mechanical and pharmacologic) Use of Enhanced Recovery After Surgery (ERAS) protocols to facilitate early mobilization and ambulation
Functional status	Fatigue Muscle weakness Decreased mobility	Referral to pre-operative exercise and conditioning programs

CNS: neuroinflammáció, apoptózis és stroke



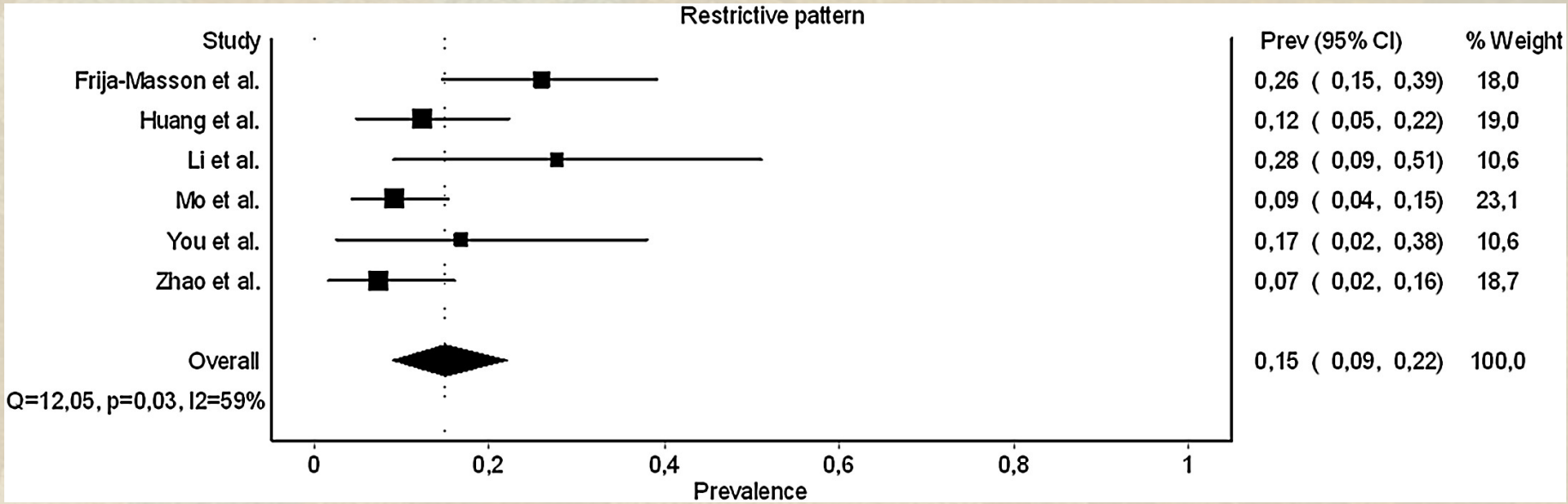
Cardiac Involvement (Quantitative Cardiac CMR)

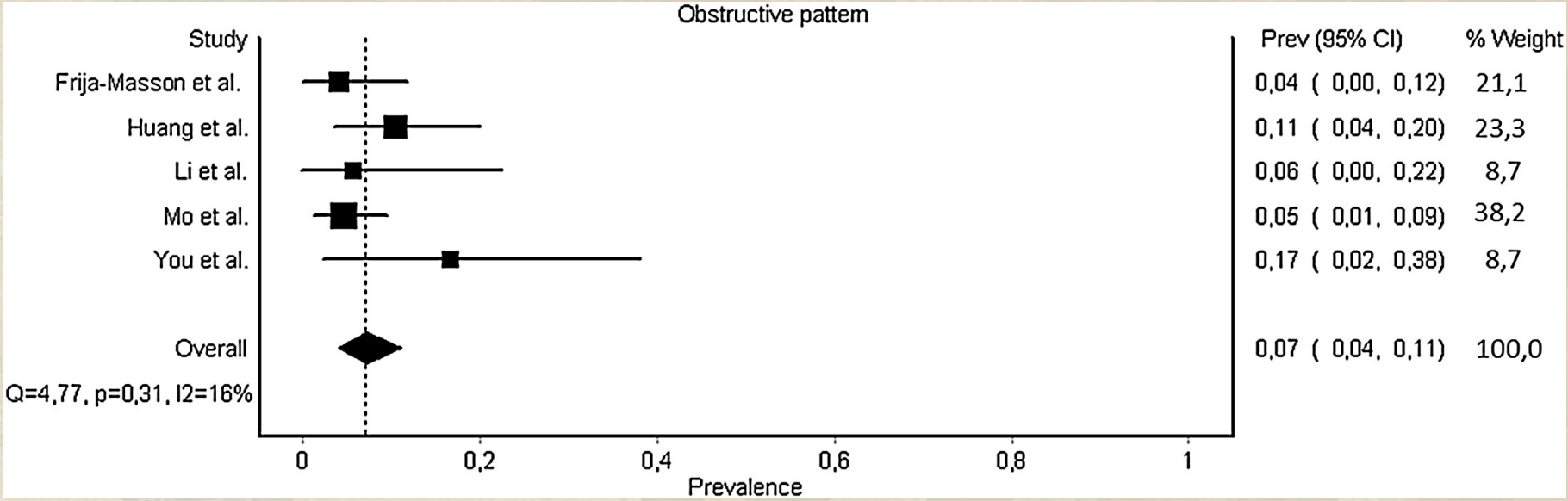


A 60-year-old male patient **(first row)** 2 months after the onset of palpitations. Short-axis STIR sequence **(A)** showed no evidence of myocardial edema. However, PSIR image **(B)** of the same slice showed focal LGE in the LV septal and inferior segments **(black arrows)**. Increased native T1 (1,434 ± 43 ms), ECV (30 ± 2%), and normal T2 values (38 ± 2 ms) were shown in the corresponding location of focal LGE on the T1 **(C)**, T2 **(D),** and ECV maps **(E) (black arrows)**. A 29-year-old female patient **(second row)** 1 and a half months after the onset of palpitations. Short-axis STIR **(F)** and PSIR sequence **(G)** showed global myocardial signal hyperintensity but no apparent LGE, global T1, and ECV values were significantly increased on the T1 **(H)** and ECV maps **(J)**. T2-mapping sequence **(I)** showed increased T2 values at inferior septal (41 ± 8 ms), anterior (41 ± 6 ms), and inferior lateral segments (43 ± 5 ms), which matched the location with increased signal intensity on short-axis STIR sequence **(F) (white arrows)**.

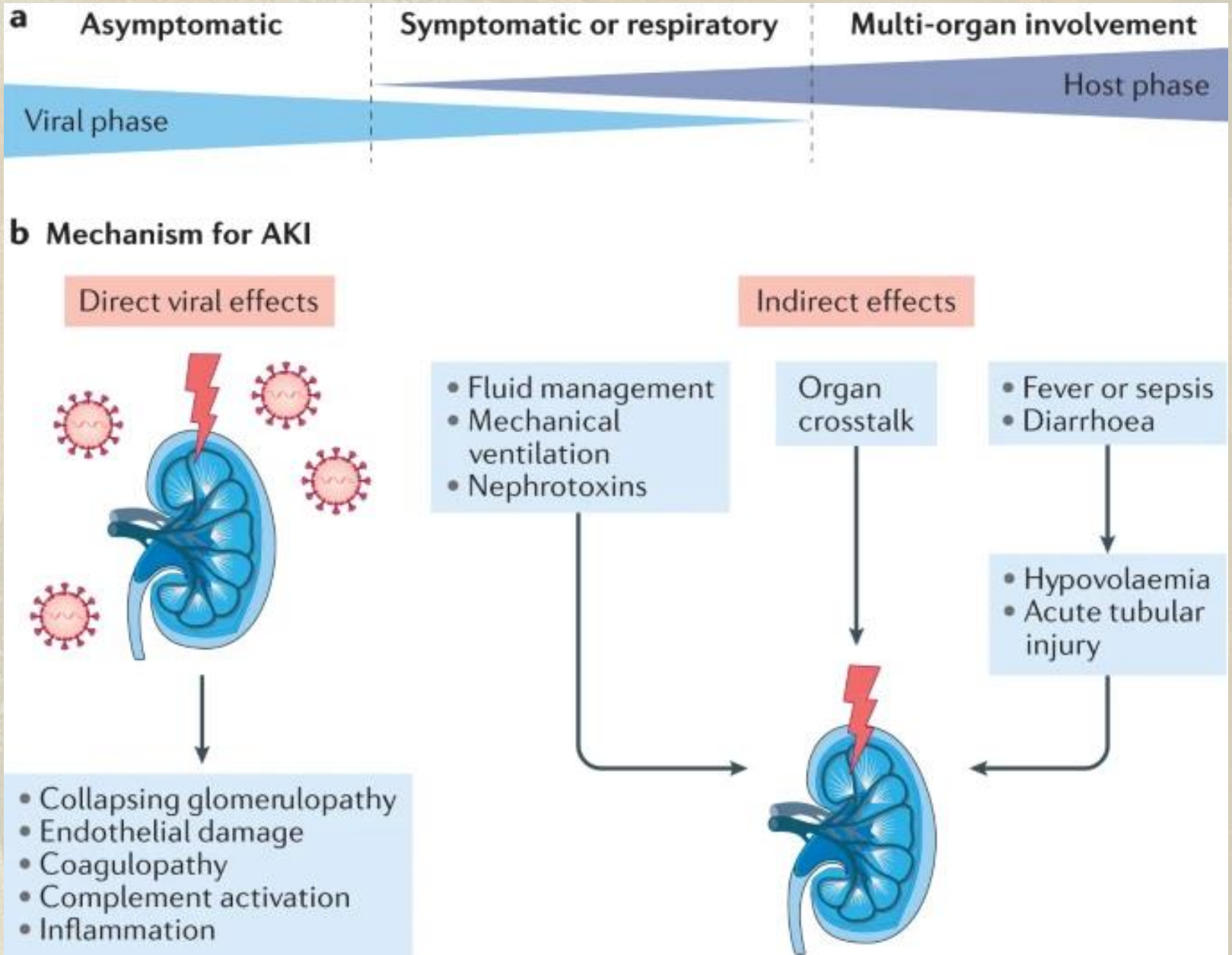
right ventricular dilatation, pulmonary hypertension, and left ventricular diastolic dysfunction

Tüdő: restriktív és obstruktív károsodás



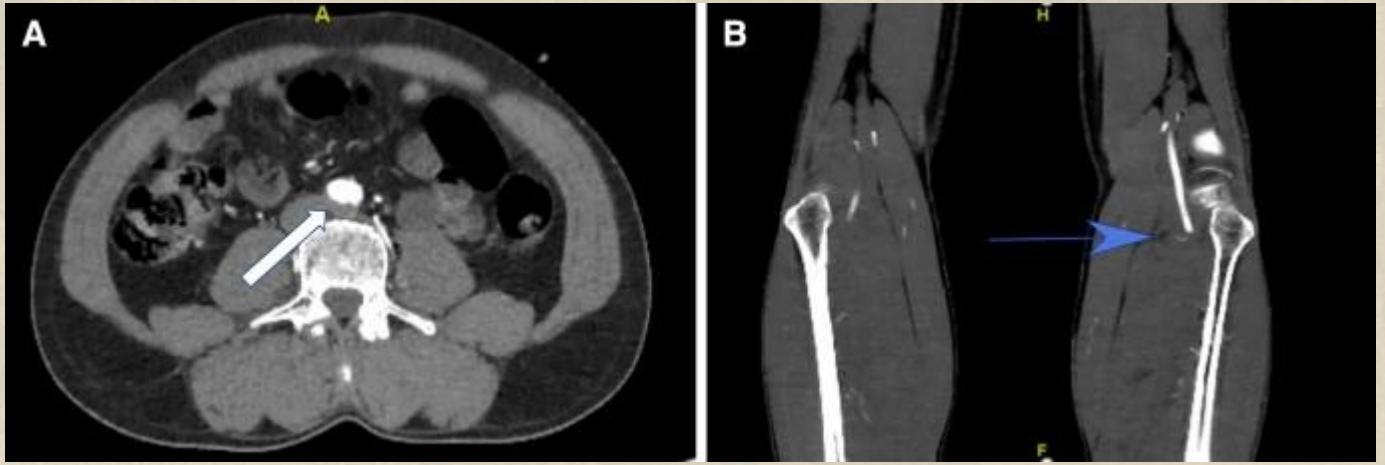


AKI

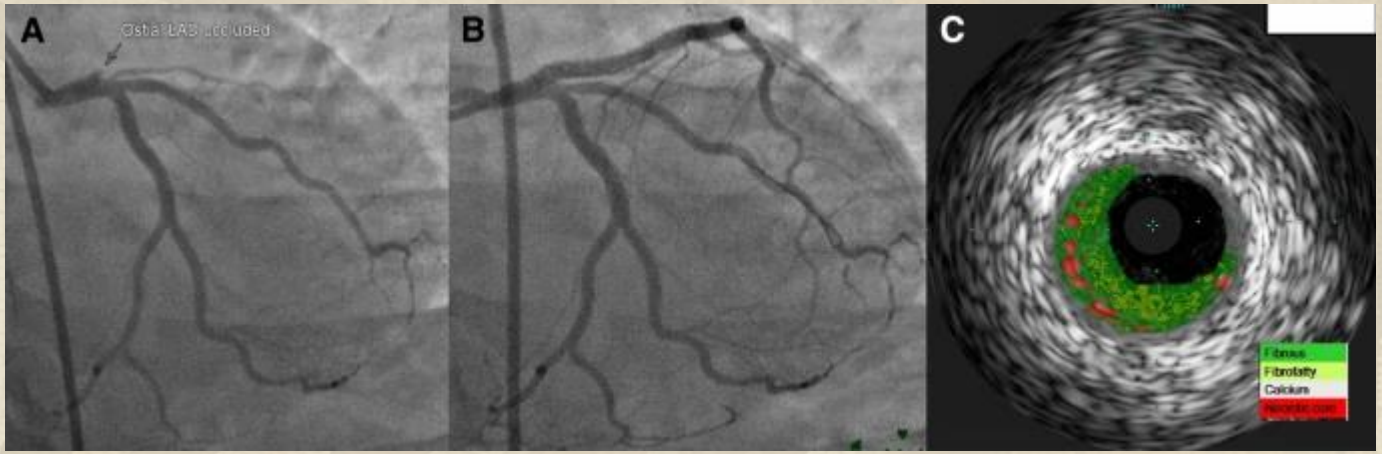

a
Asymptomatic
Symptomatic or respiratory
Multi-organ involvement
Viral phase
Host phase
b Mechanism for AKI
Direct viral effects
Indirect effects
• Fluid management
• Mechanical ventilation
• Nephrotoxins
Organ crosstalk
• Fever or sepsis
• Diarrhoea
• Hypovolaemia
• Acute tubular injury
• Collapsing glomerulopathy
• Endothelial damage
• Coagulopathy
• Complement activation
• Inflammation

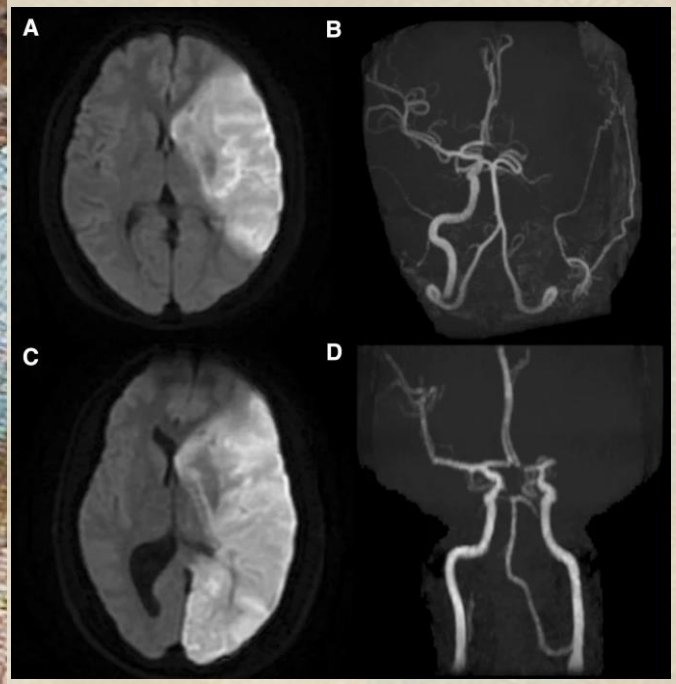
Thrombosis

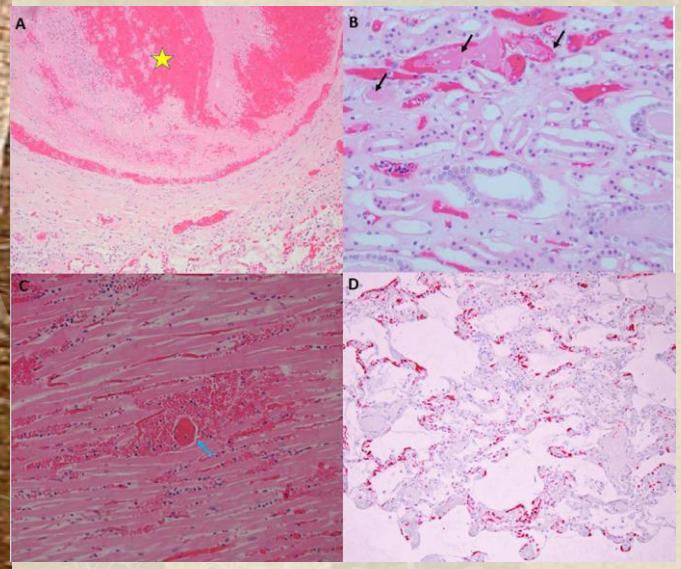
a An eccentric thrombus (white arrow) is present in the distal aorta just before its bifurcation. b An abrupt cut off of the left popliteal artery (blue arrow)



a Coronary angiogram showed complete occlusion of ostial left anterior descending artery (LAD). Left circumflex artery and ramus intermedius branch are normal. **b** Restoration of flow in the LAD after implantation of drug eluting stent. **c** Intravascular ultrasound (virtual histology) showed predominantly fibrotic plaque with minimal necrotic core in the ostial LAD

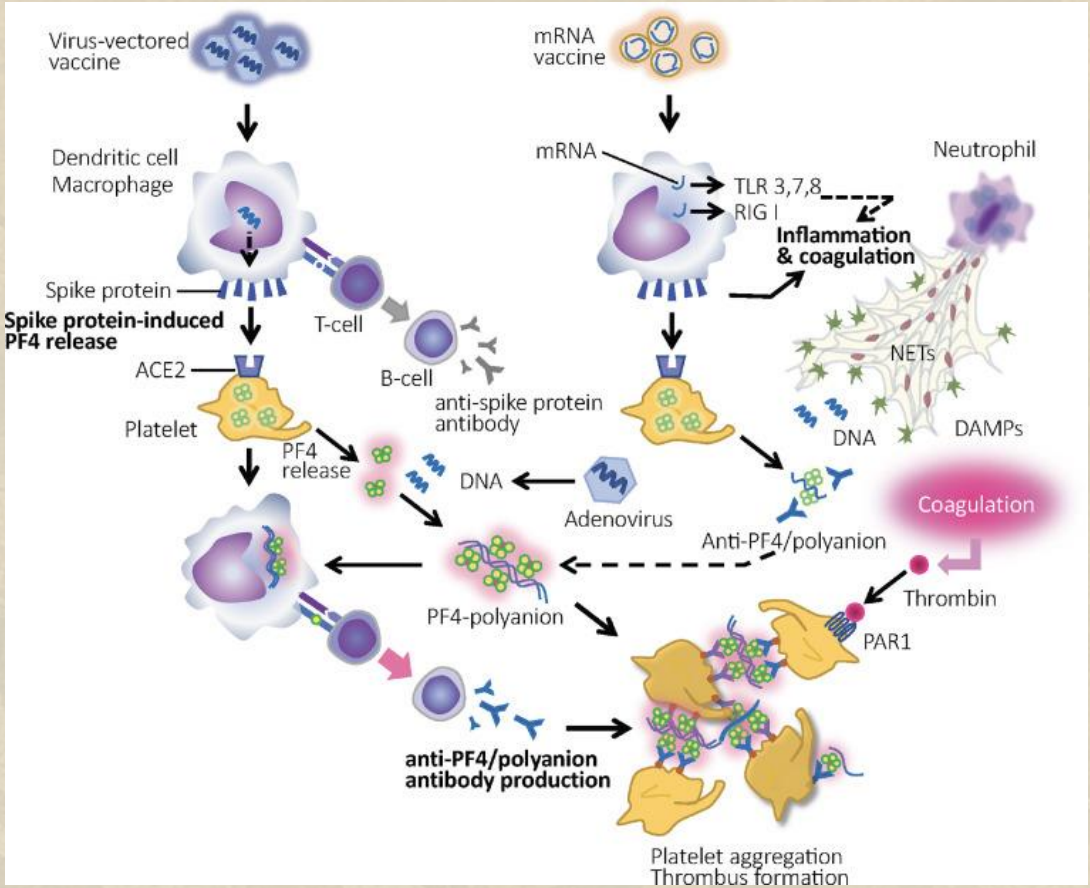






Megakaryocytes and platelet-fibrin thrombi characterize multi-organ thrombosis at autopsy in COVID-19. Lancet, 2020

Thromboembolic events and vaccination



VTE after ChAdOx1 and BNT162b2 vaccination:
RR: 1.10 (95% CI, 1.02–1.18 at 8–14 days) and 0.99 (95% CI, 0.90–1.08).
After SARS-CoV-2 infection: 13.86 (95% CI, 12.76–15.05)

CVST after ChAdOx1 vaccination and COVID-19:
RR: 4.01 (95% CI, 2.08–7.71 at 8–14 days) and 13.43 (95% CI, 1.99–90.59)

Single-center paper

Bui *et al. Perioperative Medicine* (2021) 10:1
https://doi.org/10.1186/s13741-020-00172-2

Perioperative Medicine

COMMENTARY Open Access

Preparing previously COVID-19-positive patients for elective surgery: a framework for preoperative evaluation

Naomi Bui[1], Mareli Coetzer[2], Katie J. Schenning[1] and Avital Y. O'Glasser[2*]

Abstract

The preoperative evaluation and risk assessment has always been a critical aspect of safe surgical practice, and in the midst of the SARS-CoV-2 pandemic, it has become even more crucial to patient safety. Emerging data show that surgical procedures in patients who test positive for coronavirus disease (COVID) are associated with worse clinical outcomes and increased postoperative complications and mortality. In addition to personal protective equipment (PPE) management, isolation protocols, preoperative SARS-CoV-2 screening, and steps to ensure clinician safety, determining how to deem patients who have recovered from COVID-19 safe to proceed is an added challenge. We present a preoperative protocol for evaluation of previously COVID-positive patients for elective surgery.

Keywords: Preoperative medicine, COVID-19, Elective surgery, Preoperative protocol

A framework for preoperative evaluation

Step/test	Minor procedures and/or without general anesthesia		Major procedures	
	Asymptomatic	Symptomatic	Asymptomatic	Symptomatic
Chest XR	No—if pulmonary exam and O_2 sat normal	No—if pulmonary exam and O_2 sat normal	Yes	Yes
EKG	Yes	Yes	Yes	Yes
Echo	No—if cardiac exam and vitals normal	No—if cardiac exam, NT-pro-BNP, and vitals normal	No—if cardiac exam, NT-pro-BNP, and vitals normal	Determined by H&P
Metabolic Panel	Yes	Yes	Yes	Yes
CBC, with diff	Yes	Yes	Yes	Yes
PTT	No	Consider based on severity of illness	Yes	Yes
D-dimer	No	Yes	Yes	Yes
Fibrinogen	No	Consider based on severity of illness	Yes	Yes
NT-pro-BNP	No	Yes	Yes	Yes
LDH, ferritin, prealbumin	No	Consider based on severity of illness	No	Consider based on severity of illness

Review paper

Contents lists available at ScienceDirect

Perioperative Care and Operating Room Management

journal homepage: www.elsevier.com/locate/pcorm

COVID-19 in the perioperative setting: A review of the literature and the clinical landscape

Avital Y. O'Glasser [a,b,*], Katie J. Schenning [b]

[a] Division of Hospital Medicine, Department of Medicine, Oregon Health & Science University, 3181 SW Sam Jackson Park Road, CHH2 8008, Portland, OR 97239, United States
[b] Department of Anesthesiology & Perioperative Medicine, Oregon Health & Science University, United States

ARTICLE INFO

Keywords:
COVID-19
SARS-CoV-2
Perioperative medicine
Surgical risk
Anesthesiology

ABSTRACT

The COVID-19 pandemic has dramatically affected societies and healthcare systems around the globe. The perioperative care continuum has also been under significant strain due to the pandemic—tasked with simultaneously addressing surgical strains and backlogs, infection prevention strategies, and emerging data regarding significantly higher perioperative risk for COVID-19 patients and survivors. Many uncertainties persist regarding the perioperative risk, assessment, and management of COVID-19 survivors—and the energy to catch up on surgical backlogs must be tempered with strategies to continue to mitigate COVID-19 related perioperative risk. Here, we review the available data for COVID-19-related perioperative risk, discuss areas of persistent uncertainty, and empower the perioperative teams to pursue evidence-based strategies for high quality, patient-centered, team-based care as we enter the third year of the COVID-19 pandemic.

Organ System Affected by COVID-19	Potential Perioperative Complications
Generalized	Frailty Deconditioning Malnutrition Sarcopenia Decreased exercise tolerance Post-exertional malaise
Neurocognitive Neuropsychiatric	Delirium Postoperative cognitive dysfunction Sleep abnormalities Post-intensive care syndrome Cerebrovascular disease Autonomic instability or autonomic neuropathy Other neuropathies
Pulmonary	Chronic restrictive lung disease Chronic hypoxic respiratory failure Acute respiratory distress Upper airway injury related to intubation
Cardiac	Cardiomyopathy Myocarditis Ischemic heart disease Arrhythmias Postural orthostatic tachycardia syndrome
Renal	Post-infection CKD including dialysis Acute kidney injury
Hematologic	Venous thromboembolism Thrombocytopenia Disseminated intravascular coagulation
Endocrine	Autoimmune thyroid disease New onset diabetes mellitus

ÖSSZEFOGLALÁS ÉS AJÁNLÁSOK

- **Preoperatív szak** – COVID-19 szűrés, minden beteg esetében a COVID-19-hez kapcsolódó kockázatértékelés (asymp vs symp; minor vs major).

- **Sebészeti kockázat és a műtét időzítése** – A perioperatív morbiditás és mortalitás kockázata megnőhet COVID-19-ben és post-COVID hét-kilenc hétig. Nem szabad elektív műtétet végezni olyan betegeknél, akiknél COVID-19 tünetek jelentkeznek vagy felmerül a COVID-19 fertőzés gyanúja (vagy továbbra is fertőzők). A post-COVID betegek perioperatív kockázatának értékelésekor figyelembe kell venni a meglévő tüneteket és a kezdeti betegség súlyosságát.
- GlobalSurg-COVIDSurg multicenter cohort: patients may benefit from further delay (Anaesthesia 2021;76:748-58).

- **Az érzéstelenítési technika** – a betegtényezők és a tervezett műtét alapján kell megválasztani. A regionális érzéstelenítés nem ellenjavallt, azonban sok COVID-19-beteg alvadásgátlót kap, ami befolyásolhatja a neuraxiális érzéstelenítés vagy a mély perifériás idegblokkok időzítését.

Prehabilitation: 21.964 USD megtakarítás

ELSEVIER

Journal of the American College of Surgeons

Volume 228, Issue 1, January 2019, Pages 72-80

Original scientific article from the ACS scientific forum 2018

Taking Control of Your Surgery: Impact of a Prehabilitation Program on Major Abdominal Surgery

Presented at the American College of Surgeons 104th Annual Clinical Congress, Scientific Forum, Boston, MA, October 2018.

Ryan Howard MD [a], Yue S. Yin BS [a], Lane McCandless BS [c], Stewart Wang MD, FACS [a], Michael Englesbe MD, FACS [b], David Machado-Aranda MD, FACS [a]

Journal of Personalized Medicine

Submit to Special Issue

Submit Abstract to Special Issue

Review for *JPM*

Edit a Special Issue

Journal Menu

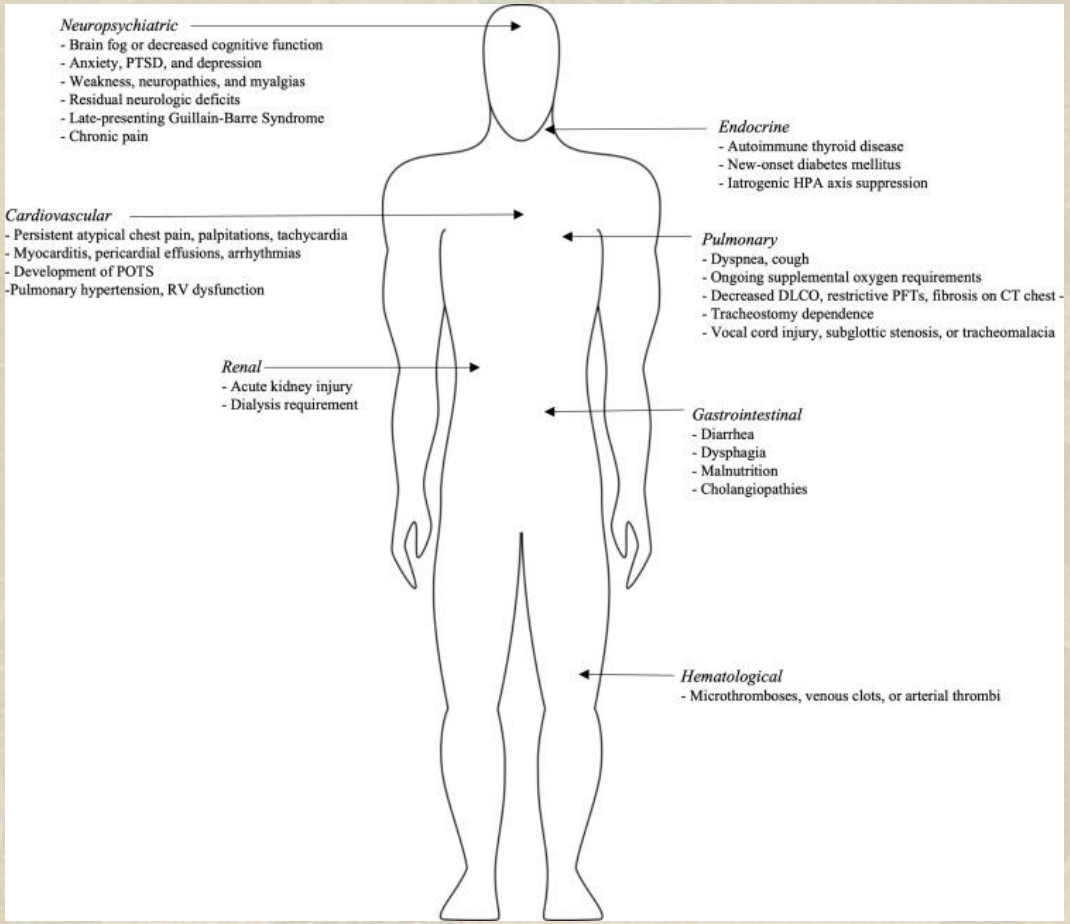
- *JPM* Home
- Aims & Scope

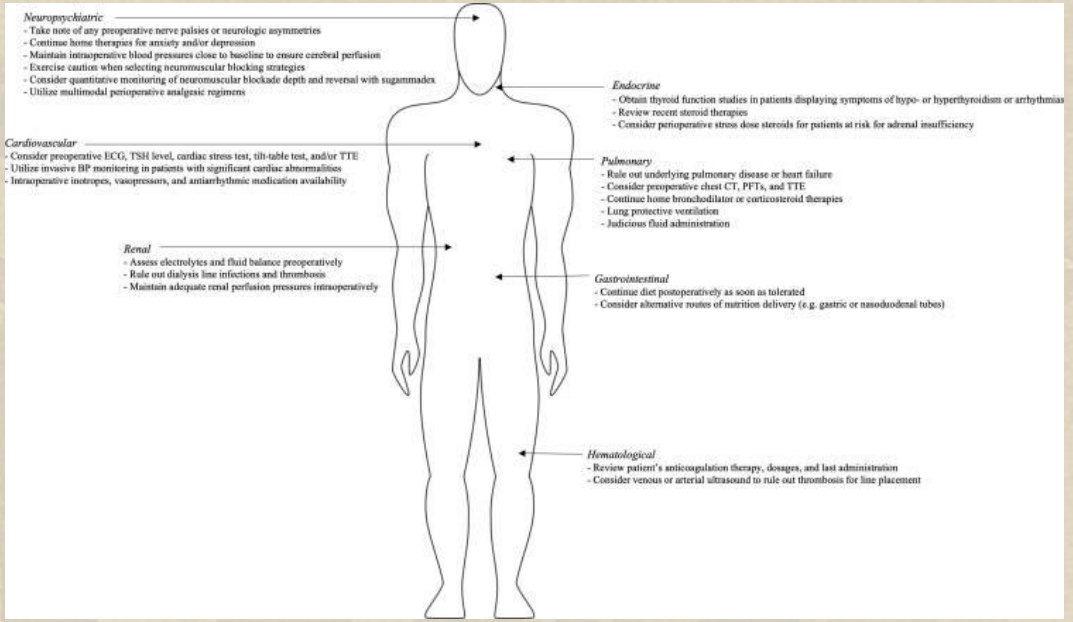
Special Issue "Effects of COVID-19 on Humans: A Study of Sequelae"

A special issue of ***Journal of Personalized Medicine*** (ISSN 2075-4426). This special issue belongs to the section "**Mechanisms of Diseases**".

Köszönöm a figyelmet!

“Given that the resolution of COVID symptoms is highly variable depending on illness severity and pre-existing comorbidities, preoperative testing and the decision to proceed with surgery in patients with persistent symptoms should involve a multidisciplinary discussion that includes anesthesiologists, surgeons, and the relevant internal medicine specialists.”


Neuropsychiatric
- Brain fog or decreased cognitive function
- Anxiety, PTSD, and depression
- Weakness, neuropathies, and myalgias
- Residual neurologic deficits
- Late-presenting Guillain-Barre Syndrome
- Chronic pain
Endocrine
- Autoimmune thyroid disease
- New-onset diabetes mellitus
- Iatrogenic HPA axis suppression
Cardiovascular
- Persistent atypical chest pain, palpitations, tachycardia
- Myocarditis, pericardial effusions, arrhythmias
- Development of POTS
-Pulmonary hypertension, RV dysfunction
Pulmonary
- Dyspnea, cough
- Ongoing supplemental oxygen requirements
- Decreased DLCO, restrictive PFTs, fibrosis on CT chest -
- Tracheostomy dependence
- Vocal cord injury, subglottic stenosis, or tracheomalacia
Renal
- Acute kidney injury
- Dialysis requirement
Gastrointestinal
- Diarrhea
- Dysphagia
- Malnutrition
- Cholangiopathies
Hematological
- Microthromboses, venous clots, or arterial thrombi


Neuropsychiatric
- Take note of any preoperative nerve palsies or neurologic asymmetries
- Continue home therapies for anxiety and/or depression
- Maintain intraoperative blood pressures close to baseline to ensure cerebral perfusion
- Exercise caution when selecting neuromuscular blocking strategies
- Consider quantitative monitoring of neuromuscular blockade depth and reversal with sugammadex
- Utilize multimodal perioperative analgesic regimens
Endocrine
- Obtain thyroid function studies in patients displaying symptoms of hypo- or hyperthyroidism or arrhythmias
- Review recent steroid therapies
- Consider perioperative stress dose steroids for patients at risk for adrenal insufficiency
Cardiovascular
- Consider preoperative ECG, TSH level, cardiac stress test, tilt-table test, and/or TTE
- Utilize invasive BP monitoring in patients with significant cardiac abnormalities
- Intraoperative inotropes, vasopressors, and antiarrhythmic medication availability
Pulmonary
- Rule out underlying pulmonary disease or heart failure
- Consider preoperative chest CT, PFTs, and TTE
- Continue home bronchodilator or corticosteroid therapies
- Lung protective ventilation
- Judicious fluid administration
Renal
- Assess electrolytes and fluid balance preoperatively
- Rule out dialysis line infections and thrombosis
- Maintain adequate renal perfusion pressures intraoperatively
Gastrointestinal
- Continue diet postoperatively as soon as tolerated
- Consider alternative routes of nutrition delivery (e.g. gastric or nasoduodenal tubes)
Hematological
- Review patient's anticoagulation therapy, dosages, and last administration
- Consider venous or arterial ultrasound to rule out thrombosis for line placement

pre-anesthesia checkup (PAC) when COVID-19 survivors are posted for elective surgeries

	Asymptomatic	Mild Hypoxia	Moderate Hypoxia	Severe Hypoxia	Cardiac symptoms	Major surgeries	Geriatric	Pediatric	Obstetric
No modification	9 (5.8%)	1 (0.6%)	1 (0.6%)	3 (1.9%)	3 (1.9%)	3 (1.9%)	4 (2.6%)	20 (13%)	4 (2.6%)
Fresh PAC	123 (79.9%)	129 (83.8%)	133 (86.4%)	137 (89%)	140 (90.9%)	140 (90.9%)	136 (88.3%)	133 (86.4%)	137 (89%)
Effort Tolerance	96 (62.3%)	123 (79.9%)	124 (80.5%)	136 (88.3%)	134 (87%)	135 (87.7%)	128 (83.1%)		
BHT	99 (64.3%)	111 (72.1%)	114 (74%)	118 (76.6%)	106 (68.8%)	110 (71.4%)	105 (68.2%)		
6 MWT	86 (55.8%)	101 (65.6%)	113 (73.4%)	109 (70.8%)	107 (69.5%)	110 (71.4%)	87 (56.5%)		
Chest X-ray	110 (71.4%)	115 (74.7%)	113 (73.4%)	111 (72.1)	100 (64.9%)	115 (74.7%)	115 (74.7%)	124 (80.5%)	
ECG	85 (55.2%)	107 (69.5%)	118 (76.6%)	128 (83.1%)	140 (90.9%)	133 (86.4%)	131 (85.1%)		115 (74.7%)
Coagulation profile	82 (53.2%)	95 (61.7%)	110 (71.4%)	127 (82.5%)	121 (78.6%)	131 (85.1%)	112 (72.7%)	80 (51.9%)	120 (77.9%)
ABG	23 (14.9%)	60 (39%)	98 (63.6%)	127 (82.5%)	115 (74.7%)	113 (73.4%)	85 (55.2%)	34 (22.1%)	55 (35.7%)
HRCT chest	37 (24%)	83 (53.9%)	115 (74.7%)	142 (92.2%)	122 (79.2%)	119 (77.3%)	93 (60.4%)	38 (24.7%)	
PFT	29 (18.8%)	71 (46.1%)	98 (63.6%)	126 (81.8%)	103 (66.9%)	117 (76%)	83 (53.9%)		36 (23.4%)
Troponin I	19 (12.3)	24 (15.6%)	40 (26%)	65 (42.2%)	118 (76.6%)	79 (51.3%)	58 (37.7%)	10 (6.5%)	27 (17.5%)
2D echocardiography	36 (23.4%)	68 (44.2%)	92 (59.7%)	119 (77.3%)	146 (94.8%)	134 (87%)	129 (83.8%)	27 (17.5%)	81 (52.6%)

Delay of elective surgery

- El-Boghdadly K, et al. SARS-CoV-2 infection, COVID-19 and timing of elective surgery: A multidisciplinary consensus statement on behalf of the Association of Anaesthetists, the Centre for Peri-operative Care, the Federation of Surgical Specialty Associations, the Royal College of Anaesthetists and the Royal College of Surgeons of England. Anaesthesia. 2021;76(7):940-946.

- Within the ASA and APSF joint statement, a delay in elective procedures is recommended in asymptomatic, symptomatic, hospitalized, or admitted to intensive care units for 4, 6, 8-10, or 12 weeks respectively.
- Anesthesiologists ASo. American Society of Anesthesiologists and Anesthesia Patient Safety Foundation Joint Statement on Elective Surgery and Anesthesia for Patients after COVID-19 Infection https://www.asahq.org/about-asa/newsroom/newsreleases/2020/12/asa-and-apsf-joint-statement-on-elective-surgery-and-anesthesia-forpatients-after-covid-19-infection. Published 2020. Updated December 8, 2020.