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June 9th 2020

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COVID-19 LST

COVID-19 Daily Literature Surveillance

COVID19LST

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Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or n-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, n-of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or n-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Non -randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

* Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.

** As always, a systematic review is generally better than an individual study.

How to cite the Levels of Evidence Table
OCEBM Levels of Evidence Working Group*. "The Oxford 2011 Levels of Evidence".
Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=5653
* OCEBM Table of Evidence Working Group = Jeremy Howick, Iain Chalmers (James Lind Library), Paul Glasziou, Trish Greenhalgh, Carl Heneghan, Alessandro Liberati, Ivan Moschetti, Bob Phillips, Hazel Thornton, Olive Goddard and Mary Hodgkinson

Climate

- A case series conducted in Istanbul found that of over 50% of healthcare providers working in the COVID-19 care unit had developed hand eczema, suggesting that the increased hand hygiene techniques used to combat the transmission of COVID-19 may be leading to these effects.
- Public health experts in Quebec express optimism over the recent announcement by the Quebec government stating that COVID-19 healthcare will be covered for all residents regardless of immigration status. They hope that that this could set a precedent to help address the over 2/3 of migrants previously reporting unmet healthcare needs.
- Gerontologists argue that using age to create public policies for controlling the spread of COVID-19 is unjustified in that it reinforces negative age stereotypes and violates older persons' rights to autonomy.

Epidemiology

- A review conducted by the Centers for Disease in June characterizes the initial spread of COVID-19 in the United States and concludes that community transmission of COVID-19 began in late January or early February 2020, with the primary strain originating in China and some additional strains likely coming from Europe.
- An epidemiological study of cases in Shenzhen, China utilized three parametric models to estimate the serial interval of COVID-19 as 5.9 days, which is shorter than that reported for SARS and MERS and supports a rapid transmission model that necessitates social isolation to control disease spread.
- A study of 71 hospitalized COVID-19 patients found that 9 exhibited hyperlipasemia; however, none of these patients developed acute pancreatitis or severe symptoms, suggesting that the presence of hyperlipasemia may not significantly affect clinical outcomes in patients with the virus.
- A case series in New York describes a group of 17 COVID-19 positive children and adolescents who presented with symptoms of a COVID-19-related inflammatory syndrome and suggest that the pattern of inflammatory markers follows closely with that of Kawasaki disease and that the pattern of abnormal cardiac findings necessitate long-term follow-up in these patients.

Understanding the Pathology

- An author at Montpellier University in France discusses the similarities between Kawasaki Disease (KD) and the "multisystem inflammatory" disease reported in COVID-19 cases and hypothesizes that dysregulation of neutrophil extracellular traps, which are DNA structures with antimicrobial proteins that trap and kill microorganisms, could be a link between the development of Kawasaki Disease and COVID-19.
- In vivo and ex vivo RNA sequencing of COVID-19 related genes in human tissue and immune cells found, among other findings:
  - Higher expression of ACE-2 and CD-147 related genes in male, obese, COPD, hypertensive, asthmatic, and smoking patients
  - Higher expression of CD-147 related genes with increased BMI and older age
  - That children had lower expression of ACE-2 related genes, but higher expression of CD-147 related genes

Transmission and Prevention

- An experiment comparing two methods of disinfection of positive pressure air supply respirators found that, compared to manual cleaning, mechanical boiling was more than twice as efficient and yielded higher degrees of disinfection.
- A retrospective cohort study conducted in North London found that 12.7% of their 631 COVID-19 cases were hospital-associated emphasizing the need for effective preventative precautions in the hospital setting.

Management

- Data from 114 COVID-19 patients in China found that viral load, C-reactive protein (CRP), and serum amyloid A (SAA) may be associated with more severe COVID-19.
- A case report of a COVID-19 patient with acute hypoxemic respiratory failure demonstrated that increased use of external therapeutic temperature modulation (TTM) in patients experiencing cytokine storm and

hyperpyrexia due to COVID-19 can help avoid more aggressive interventions such as extracorporeal membrane oxygenation (ECMO).

Adjusting Practice During COVID-19
- Guidelines and recommendations for adjusting clinical practice during the pandemic include:
  - [Emergency services that transport COVID-19 patients](#)
  - Diagnosis of COVID-19 for [internists in the outpatient and inpatient setting](#)
  - Patients with [psoriasis who require immunosuppressive therapy](#)
  - Protective measures for staff and therapeutic measures for patients in cases of [acute coronary syndrome](#)
  - Surgeries, treatments, and prevention of SARS-CoV-2 in [lung cancer patients](#)
  - Triage of [bariatric surgery](#)

- Out of 1,067 out-of-hospital cardiac arrests (OHCA), there were 2.2% PCR-confirmed COVID-19 cases and 1.2% COVID-like-illness cases between January 1 and April 15, 2020 at the University of Washington Medical Center, with the prevalence of OHCA higher during the active period of COVID-19 after February 26.
  1. After combining their data with previously reported [transmission rates in CPR without use of PPE](#) (approximately 5%), the authors conclude that the rate of rescuer death would be about 1 in 10,000, and thus more lives will be saved with rapid identification of cardiac arrest and immediate use of chest compressions and defibrillation by bystanders without delay for implementation of PPE.

R&D: Diagnosis and Treatment
- Detection rates of an [enhanced fluorescence assay (CEFA) and a microsphere immunoassay (MIA)](#) for IgM/IgG antibodies against SARS-CoV-2 (87 patients at initial emergency visits, 28 subsequently hospitalized patients, and 145 convalescent patients) were ~26% in emergency department (ED) patients but improved to 100% after 21 days from symptom onset, showing promising clinical utility in serological testing except for in early screening at initial ED visits.

TABLE OF CONTENTS

YOUTUBE AS A SOURCE OF INFORMATION ON COVID-19 AND RHEUMATIC DISEASE LINK

BLUF

This observational study conducted in Turkey during 4/2020 reviewed 46 YouTube videos on the topic of COVID-19 and rheumatic disease. These were ranked by the Global Quality Scale (high, moderate or low-quality) and further analyzed to determine source, content, views per day, comments per day, and like ratios.

Results showed:
- Separate analyses indicated the main sources of high-quality videos were academic/universities and these high quality videos generally had the most views per day (Table 2 and Table 3).
- Content in the videos raised concerns about misleading information on treatment therapy for rheumatologic patients due to potential side effects and risks of COVID-19 (Table 4).

The authors recommend universities and physicians create more high-quality and informative videos to properly educate the public and prevent misleading information on the implications of COVID-19 and rheumatologic patients.

ABSTRACT

INTRODUCTION/OBJECTIVES: The current 2019 novel coronavirus outbreak is continuing to spread rapidly despite all efforts. Patients with rheumatic disease may have higher levels of anxiety due to their disease characteristics and medications. The web-based platforms are widely used sources for gaining medical information. YouTube presents a wide range of medical information, but there are concerns on its quality. Therefore, we aimed to evaluate the quality of the YouTube videos about COVID-19 and rheumatic diseases link.
METHOD: This is a descriptive study. A total of 360 videos listed by the YouTube search engine (www.youtube.com) in response to six search terms were evaluated. The Global Quality Scale (GQS) was performed to evaluate video quality. Three groups were formed according to GQS scores: high quality, moderate quality, and low quality. Video parameters were compared between these groups.
RESULTS: After the exclusion criteria, 46 videos were reviewed. Of the videos, 41.4% (n = 19) were of high-quality group, 21.7% (n = 10) were moderate-quality group, and 36.9% (n = 17) were of low-quality group. Significant difference was detected between the quality groups in terms of views per day (p = 0.004). No significant difference was detected in comments per day (p = 0.139) and like ratio (p = 0.232).
CONCLUSIONS: Besides high-quality videos, there were substantially low-quality videos that could cause misleading information to spread rapidly during the pandemic. Videos from trustworthy sources such as universities, academics, and physicians should be kept in the foreground. Key Points Web-based platforms have become an important source of health-related information. One of the most important online sources is YouTube because it is easy accessible and free. Of the videos evaluating the link between COVID-19 and rheumatic diseases, 41.4% (n = 19) were of high quality. The main sources of high-quality videos were academics/universities and physicians. The most frequently discussed topics in videos were the place of hydroxychloroquine in the treatment of COVID-19 and whether to continue the use of existing rheumatological drugs.

FIGURES

Video quality	DS[a] Median (min-max)	Views per day[b] Median (min-max)	Comments per day[c] Median (min-max)	Like ratio[d] Median (min-max)
Low	2 (1–3)	35.80 (2–241.40)	0.2 (0–1.6)	0.94 (0–1)
Moderate	2 (1–4)	41.93 (8–166.63)	0.4 (0–14.18)	1 (0–1)
High	4 (2–5)	248.60 (3–50,859.50)	1 (0–254)	0.99 (0–1)

[a]$p < 0.0001$, [b]$p = 0.004$
[c]$p = 0.139$, [d]$p = 0.232$

DS modified DISCERN tool, min minimum, max maximum

Table 3: DS, views per day, comments per day, and like ratio of videos according to video quality.

Video contents[*]	Total, n (%)
Symptoms of COVID-19	11 (23.9)
Relationship between rheumatological diseases and risk of COVID-19	12 (26.1)
Whether to continue the use of existing rheumatological drugs	19 (41.3)
COVID-19 prevention practices for those with rheumatological disease	14 (30.4)
The place of hydroxychloroquine in the treatment of COVID-19	21 (45.6)
Conditions that should be consulted to a doctor or hospital	3 (6.5)
Psychological effects of COVID-19 on rheumatology patients	6 (13)

*More than one topic can be mentioned in a video

n number, % percentage

Source	Low quality	Moderate quality	High quality	Total
Society/non-profit organization	3 (50)	0 (0)	3 (50)	6
Physician	1 (6.2)	6 (37.5)	9 (56.3)	16
Health-related website	2 (20)	4 (40)	4 (40)	10
Academic/university	0 (0)	0 (0)	2 (100)	2
Patient/independent user	4 (100)	0 (0)	0 (0)	4
News agency	7 (87.5)	0 (0)	1 (12.5)	8

n number, % percentage

Table 2 Categorization of the videos according to sources, n (%)

AFFECTING THE HEALTHCARE WORKFORCE

THE RISK OF HAND ECZEMA IN HEALTHCARE WORKERS DURING THE COVID-19 PANDEMIC: DO WE NEED SPECIFIC ATTENTION OR PREVENTION STRATEGIES?

Erdem Y, Altunay IK, Aksu Çerman A, Inal S, Ugurer E, Sivaz O, Kaya HE, Gulsunay IE, Sekerlisoy G, Vural O, Özkaya E..

BLUF

A case series conducted in Istanbul, Turkey at Sisli Hamidiye Etfal Training and Research Hospital during 15 May to 25 May 2020 found that of 107 healthcare providers working in the COVID-19 care hospital unit, 54 (50.5%) developed hand eczema, suggesting that the increased hand hygiene techniques used to combat the transmission of COVID-19 may be responsible for the increase in prevalence compared to the 12-50% prevalence of hand eczema prior to the pandemic. Additional findings of

the study includes:

- Certain features, such as female gender (p=0.033), hand washing more than 20 times daily (p=0.04), and previous history of hand eczema in the past year (p>0.001), were over represented in the sample (Table 1A).
- The most common clinical features were location on the hand dorsum (85.2%), irritant contact dermatitis type (96.3%), and erythemato-squamous morphology (75.9%; Table 3).
- Previous history in the past year of hand eczema (OR: 18.5; 95%CI: 3.82-89.9), washing hands more than 20 times per day (OR: 3.28; 95%CI: 0.995-10.8), and daily use of hand cream independently carried a higher risk for developing hand eczema (OR: 22.1; 95%CI: 6.33-77.0; Table 2).

FIGURES

Demographic features	Total number of patients (n=107)	Patients with hand eczema (n=54)	Patients without hand eczema (n=53)	P-value
Patients with hand eczema, n (%)	54 (50.5)	54 (100)	0 (0)	NA
Gender				.033
Male, n (%)	35 (32.7)	12 (22.2)	23 (43.4)	
Female, n (%)	72 (67.3)	42 (77.8)	30 (56.6)	
Age, median (range)	28 (21-48)	29 (21-46)	27 (21-48)	.003
Mean	29.6±6.3	30.5±5.7	28.6±6.8	
Profession				
Physician, n (%)	47 (43.9)	24 (44.4)	23 (43.4)	
Nurse, n (%)	48 (44.9)	23 (42.6)	25 (47.2)	.41
Medical caretaker, n (%)	2 (1.9)	2 (3.7)	0 (0)	
Other, n (%)	10 (9.3)	5 (9.3)	5 (9.4)	
Workplace				
Inpatient clinic, n (%)	93 (86.9)	45 (83.3)	48 (90.6)	
Intensive care unit, n (%)	5 (4.7)	5 (9.3)	0 (0)	.028
Emergency unit, n (%)	9 (8.4)	4 (7.4)	5 (9.4)	
Work years, median (range)	3 (0.5-29)	5 (0.5-25)	2 (0.5-29)	<.001
Weekly work hours, median (range)	45 (24-80)	42.5 (24-80)	45 (24-80)	.44
Length of stay at COVID-19 units (day), median (range)	45 (7-90)	50 (10-70)	42 (7-90)	.99
History of personal atopy, n (%)	42 (39.3)	25 (46.3)	17 (32.1)	.19
Atopic dermatitis and/or atopic skin, n (%)	32 (29.9)	19 (35.2)	13 (24.5)	.32
History of familial atopy, n (%)	25 (23.4)	15 (27.8)	10 (18.9)	.39
History of metal allergy, n (%)	16 (15.0)	11 (20.4)	5 (9.4)	.19

History of glove allergy (Type 4), n (%)	13 (12.1)	6 (11.1)	7 (13.2)	.97
Generalized dry skin, n (%)	39 (36.4)	27 (50.0)	12 (22.6)	.006
History of hand eczema in the past year, n (%)	32 (29.9)	29 (53.7)	3 (5.7)	<.001
Additional housework at home, n (%)	58 (54.2)	41 (75.9)	17 (32.1)	<.001
Smoking status				
Nonsmoker, n (%)	68 (63.6)	35 (64.8)	33 (62.3)	.94
Smoker (current or ex-smoker), n (%)	39 (36.4)	19 (35.2)	20 (37.7)	

Online supplemental Table 1A: The description of the overall demographics and the comparison of demographical parameters between groups. Categorical variables were compared using chi square test and non-parametric continuous variables were compared using Mann Whitney U test. P<.05 was accepted as statistical significant. NA: not applicable

Online supplemental Table 2. Multivariate analysis for identifying independent risk factors associated with hand eczema. Logistic regression analysis was used to define indepent risk factors. OR: Odds ratio, 95%CI: 95% confidence interval.

Variables	P-value	OR	95%CI
Female gender	.89	0.90	0.20-4.12
Age >28	.11	2.68	0.80-8.93
Working years >3	.62	1.46	0.33-6.48
Generalized dry skin	.91	1.10	0.24-4.92
Hand washing >20 per day at work	.051	3.28	0.995-10.8
Use of moisturizing hand cream at work	.18	2.49	0.66-9.30
Use of moisturizing hand cream at daily life	<.001	22.1	6.33-77.0
Houseworking	.75	1.26	0.31-5.15
History of hand eczema in the past year	<.001	18.5	3.82-89.9

Online supplemental Table 3. Clinical characteristics of hand eczema

☐ According to patient's history of a confirmed diagnosis by patch testing in the past

HECSI: Hand eczema severity index

§HECSI 0-11 points: mild eczema, 12-27 points: moderate eczema, >27 points: severe eczema

Clinical features	n=54
One hand, n (%)	2 (3.7)
Both hand, n (%)	52 (96.3)
Clinical type	
Irritant contact dermatitis, n (%)	52 (96.3)
☐Allergic contact dermatitis, n (%)	2 (3.7)
Morphology	
Dyshidrotic/vesicular, n (%)	3 (5.6)
Erythema-squamatous, n (%)	41 (75.9)
Hyperkeratotic/rhagadiform, n (%)	7 (12.9)
Combined morphology, n (%)	3 (5.6)
Localizations	
Palm, n (%)	11 (20.4)
Dorsum, n (%)	46 (85.2)
Finger webs, n (%)	10 (18.5)
Sides of finger, n (%)	4 (7.4)
Fingertips, n (%)	8 (14.8)
Hand and wrist, n (%)	4 (7.4)
Periungual eczema and nail eczema, n (%)	2 (3.7)
Pruritus, n (%)	39 (72.2)
HECSI, median (range)	24 (3-84)
§Eczema severity	
Mild, n (%)	13 (24.1)
Moderate, n (%)	20 (37.0)
Severe, n (%)	21 (38.9)

SICKNESS ABSENCE IN HEALTHCARE WORKERS DURING THE COVID-19 PANDEMIC

BLUF

The authors identify direct and indirect factors associated with sickness absence in healthcare workers and present a conceptual framework for addressing this absence, which includes sufficient healthcare staffing and increased managerial and collegial support.

SUMMARY

This paper highlights issues surrounding sickness absence (SA), defined as "a leave of absence approved by an employer as a result of a worker's physical or mental health problems," in healthcare workers. The authors discuss how the COVID-19 pandemic will likely exacerbate the direct and indirect factors leading to SA. Direct factors are sudden and unpredictable, such as becoming sick with the flu and needing extended sick leave. Indirect factors are described as slowly developing, multi-level issues which become more burdensome with prolonged demands from work. These include:

1. Staff shortages
2. Personal (i.e. age, work experience) and occupational factors (i.e. hospital vs. long term care setting)
3. A "detectable" identifier such as musculoskeletal pain and physical fatigue

Additionally, staff shortages were found to be associated with shift work, overtime work, and perceived lack of organizational support. The authors present some solutions which may help mitigate challenges in SA, including sufficient staffing and more leadership and collegial support.

"MASKED" EMPATHY- A POST-PANDEMIC REALITY: PSYCHODERMATOLOGICAL PERSPECTIVE

BLUF

An opinion piece written in May 2020 by physicians in the Departments of Dermatology and Psychiatry at IRQAA International Hospital in Kerala, India and the Department of Psychiatry at Central Michigan University expresses concern that PPE and masks conceal health providers' facial expressions, which can compromise patient-doctor interactions. They suggest the use of transparent face shields combined with appropriate distancing to make facial expressions visible and restore normal patient-doctor interactions.

COVID-19: LEGAL IMPLICATIONS FOR CRITICAL CARE

BLUF

This review discusses the legal and ethical burden that the COVID-19 pandemic has placed on clinicians, specifically on critical care providers. The authors call for new public policies and succinct guidelines that allow physicians to make clinical decisions that are legally and ethically justified.

ABSTRACT

The COVID-19 pandemic has caused an unprecedented challenge for the provision of critical care. Anticipating an unsustainable burden on the health service, the UK government introduced numerous legislative measures culminating in the Coronavirus Act, which interfere with existing legislation and rights. However, the existing standards and legal frameworks relevant to critical care clinicians are not extinguished but anticipated to adapt to a new context. This new context influences the standard of care that can be reasonably provided and yields numerous human rights considerations, for example in the use of restraints or the restrictions placed upon patients and visitors under the Infection Prevention and Control guidance. The changing landscape, has also highlighted previously unrecognised legal dilemmas. The perceived difficulties in the provision of PPE for employees pose a legal risk for trusts and a regulatory risk for clinicians. The spectre of rationing critical care poses a number of legal issues. Notably, the flux between clinical decisions based on best interests towards decisions explicitly based on resource considerations should be underpinned by an authoritative public policy decision to preserve legitimacy and lawfulness. Such a policy should be medically coherent, legally robust and ethically justified. The current crisis yields numerous challenges for clinicians aspiring to remain faithful to medico-legal and human rights principles developed over many decades, especially when such considerations could easily be dismissed. However, it is exactly at such times that these principles are needed the most and clinicians play a disproportionate role in safeguarding such principles for the most vulnerable.

DISPARITIES

UNMET HEALTHCARE NEEDS AMONG MIGRANTS WITHOUT MEDICAL INSURANCE IN MONTREAL, CANADA

Level of Evidence: 3-

BLUF

A cross-sectional survey conducted in Montreal, Canada from June 2016 to September 2017 administered to 806 migrant adults without healthcare coverage found that over two-thirds of the participants (n = 541, 69.0%) reported unmet healthcare needs, with the most common reasons including:
- Lack of money for fees (n = 437, 80.6%)
- Concerns about being overcharged (n = 398, 73.4%)
- Concerns about a health consultation impacting migration status (n = 119, 22.0%)
- Fear of being rejected by the hospital (n = 35, 6.5%).
As the Quebec government recently announced that COVID-19 related healthcare will be covered for all residents, regardless of migration status, the authors express hope that migrants' access to healthcare can continue after the pandemic.

ABSTRACT

While access to healthcare for permanent residents in Canada is well known, this is not the case for migrants without healthcare coverage. This is the first large-scale study that examines the unmet healthcare needs of migrants without healthcare coverage in Montreal. 806 participants were recruited: 436 in the community and 370 at the NGO clinic. Proportions of individuals reporting unmet healthcare needs were similar (68.4% vs. 69.8%). The main reason invoked for these unmet needs was lacking money (80.6%). Situations of not working or studying, not having had enough food in the past 12 months, not having a medical prescription to get medication and having had a workplace injury were all significantly associated with higher odds of having unmet healthcare needs. Unmet healthcare needs were more frequent among migrants without healthcare coverage than among recent immigrants or the citizens with health healthcare coverage (69%, 26%, 16%). Canada must take measures to enable these individuals to have access to healthcare according to their needs in order to reduce the risk of worsening their health status, something that may have an impact on the healthcare system and population health. The Government of Quebec announced that all individuals without any healthcare coverage will have access to COVID-19 related health care. We hope that this right, the application of which is not yet obvious, can continue after the pandemic for all health care.

DIFFICULTIES FACED BY SEXUAL AND GENDER MINORITIES DURING COVID 19 CRISIS

Level of Evidence: Other - Expert Opinion

BLUF

Physicians in Kozhikkod, India address several difficulties faced by sexual and gender minorities (SGM) during the COVID-19 pandemic, including decreased peer support due to the closing of gay hostels and clubs and lack of safe sex education to reduce risk of possible COVID-19 sexual transmission. They advocate for timely interventions to help the SGM population during this period.

SUMMARY

Sexual and gender minorities (SGM) have faced several difficulties during the COVID-19 pandemic, such as:
-Decreased peer support due to the closing of gay hostels and clubs where SGM members would frequently gather
-Prolonged exposure to hostile environments without an emotional outlet
-Increased anxiety, depression, domestic violence, and anticipated suicidal ideation
-Lack of culturally sensitive isolation wards and treatment facilities in many countries
-Economic difficulties in finding work
-Lack of education to the SGM community about safe sex practices and possible COVID-19 sexual transmission
By highlighting these difficulties, the authors hope to bring awareness of the issues that are disproportionately affecting the SGM community during the COVID-19 pandemic.

NOT ONLY VIRUS SPREAD: THE DIFFUSION OF AGEISM DURING THE OUTBREAK OF COVID-19

Level of Evidence: Other - Opinion

BLUF

The authors argue that "use of chronological age is an unjustified threshold for the creation of public policies to control the spreading of the virus; doing so reinforces intrapersonal and interpersonal negative age stereotypes and violates older persons' human rights to autonomy, proper care treatment, work, and equality." They suggest intergenerational solidarity and use of collaborative efforts between all people to effectively care for vulnerable populations.

ABSTRACT

During the COVID-19 pandemic, we face an exacerbation of ageism as well as a flourish of intergenerational solidarity. The use of chronological age is an unjustified threshold for the creation of public policies to control the spreading of the virus; doing so reinforces intrapersonal and interpersonal negative age stereotypes and violates older persons' human rights to autonomy, proper care treatment, work, and equality. By overlooking differences within age groups, measures formulated solely on the basis of age are unable to target beneficiaries' needs. Concurrently, several initiatives are trying to overcome ageist practices by providing different types of assistance to older adults on the basis of need rather than chronological age. The Marie Sklodowska-Curie Innovative Training Network EuroAgeism calls on policymakers to refrain from ageist practices and language, as they exacerbate our ability to meet the COVID-19 crisis and future emergencies.

THE EFFECTS OF COVID-19 ON THE HEALTH AND SOCIO-ECONOMIC SECURITY OF SEX WORKERS IN NAIROBI, KENYA: EMERGING INTERSECTIONS WITH HIV

Kimani J, Adhiambo J, Kasiba R, Mwangi P, Were V, Mathenge J, Macharia P, Cholette F, Moore S, Shaw S, Becker M, Musyoki H, Bhattacharjee P, Moses S, Fowke KR, McKinnon LR, Lorway R.. Glob Public Health. 2020 May 27:1-10. doi: 10.1080/17441692.2020.1770831. Online ahead of print.
Level of Evidence: Other -

BLUF

In the midst of the COVID-19 pandemic, sex workers and other groups in the informal labor sectors of Kenya face considerable challenge from pre-existing stigmas, poor income, lack of access to health services, infectious disease (HIV), and most recently, strict nationwide restrictions on travel, social services, and workplaces. Relief programs that focus on supporting Kenyan sex workers will be foundational for sustaining their health and basic needs.

ABSTRACT

The COVID-19 pandemic, and its attendant responses, has led to massive health, social, and economic challenges on a global scale. While, so far, having a relatively low burden of COVID-19 infection, it is the response in lower- and middle- income countries that has had particularly dire consequences for impoverished populations such as sex workers, many of whom rely on regular income in the informal economic sector to survive. This commentary captures the challenges in Kenya posed by daily curfews and lost economic income, coupled with further changes to sex work that increase potential exposure to infection, stigmatisation, violence, and various health concerns. It also highlights the ways in which communities and programmes have demonstrated resourcefulness in responding to this unprecedented disruption in order to emerge healthy when COVID-19, and the measures to contain it, subside.

FIGURES

Figure 1a and b. HOYMAS (Health Options for Young Men against STIs) staff training session practice physical distancing while learning about protective procedures and the proper use of a handwashing station in a CBO.

EVIDENCE FOR LIMITED EARLY SPREAD OF COVID-19 WITHIN THE UNITED STATES, JANUARY-FEBRUARY 2020

CDC COVID-19 Response Team, Jorden MA, Rudman SL, Villarino E, Hoferka S, Patel MT, Bemis K, Simmons CR, Jespersen M, Iberg Johnson J, Mytty E, Arends KD, Henderson JJ, Mathes RW, Weng CX, Duchin J, Lenahan J, Close N, Bedford T, Boeckh M, Chu HY, Englund JA, Famulare M, Nickerson DA, Rieder MJ, Shendure J, Starita LM..
Level of Evidence: Other - Review / Literature Review

BLUF

A review conducted by the Centers for Disease Control (CDC) COVID-19 Response Team in June 2020 characterizes the initial spread of COVID-19 in the United States (findings described below; see Figure) and concludes that community transmission of COVID-19 began in late January or early February 2020, with the primary strain originating in China with some additional strains likely from Europe.

SUMMARY

1. Review of emergency room records in 14 counties affected with early community-acquired cases of COVID-19 did not show an increase in cases of respiratory symptoms before February 28, 2020.
2. Retrospective testing of 5,270 respiratory specimens from January 1, 2020 did not find any positive results before February 21, 2020.
3. RNA sequencing of SARS-CoV-2 showed a single lineage that originated in China arrived in the United States between January 18 and February 9, and was followed by several importations from Europe.
4. There were three known cases of COVID-19 (two in Santa Clara, California, one on a cruise ship that departed from San Francisco, California) who became symptomatic between January 31 and February 17 that did not have known relevant travel history.

ABSTRACT

From January 21 through February 23, 2020, public health agencies detected 14 U.S. cases of coronavirus disease 2019 (COVID-19), all related to travel from China (1,2). The first nontravel-related U.S. case was confirmed on February 26 in a California resident who had become ill on February 13 (3). Two days later, on February 28, a second nontravel-related case was confirmed in the state of Washington (4,5). Examination of four lines of evidence provides insight into the timing of introduction and early transmission of SARS-CoV-2, the virus that causes COVID-19, into the United States before the detection of these two cases. First, syndromic surveillance based on emergency department records from counties affected early by the pandemic did not show an increase in visits for COVID-19-like illness before February 28. Second, retrospective SARS-CoV-2 testing of approximately 11,000 respiratory specimens from several U.S. locations beginning January 1 identified no positive results before February 20. Third, analysis of viral RNA sequences from early cases suggested that a single lineage of virus imported directly or indirectly from China began circulating in the United States between January 18 and February 9, followed by several SARS-CoV-2 importations from Europe. Finally, the occurrence of three cases, one in a California resident who died on February 6, a second in another resident of the same county who died February 17, and a third in an unidentified passenger or crew member aboard a Pacific cruise ship that left San Francisco on February 11, confirms cryptic circulation of the virus by early February. These data indicate that sustained, community transmission had begun before detection of the first two nontravel-related U.S. cases, likely resulting from the importation of a single lineage of virus from China in late January or early February, followed by several importations from Europe. The widespread emergence of COVID-19 throughout the United States after February highlights the importance of robust public health systems to respond rapidly to emerging infectious threats.

FIGURE. Percentage of emergency department (ED) visits for COVID-19-like illness (CLI),* in 14 counties†,§ (three in California and Washington [A]; four in Illinois, Louisiana, Massachusetts, and Michigan [B]; and seven in New York [C]) — National Syndromic Surveillance Program,¶ February 1–April 7, 2020
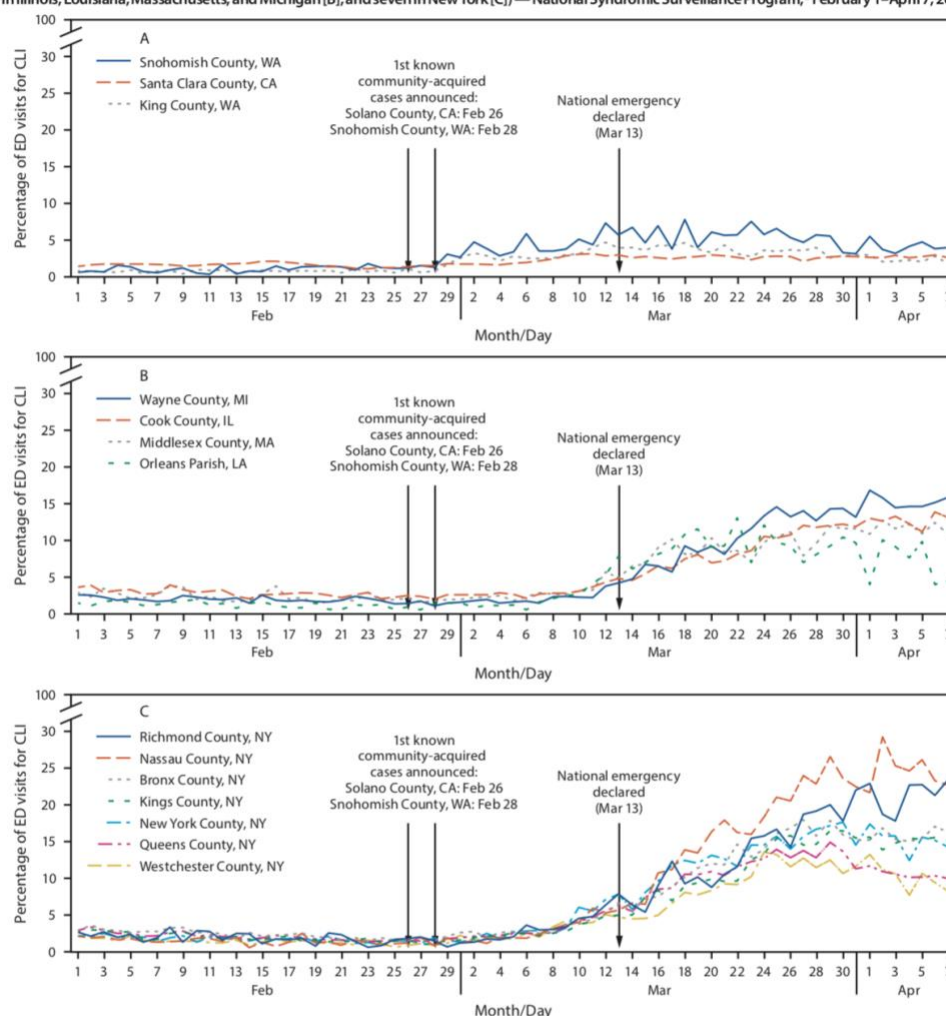
Abbreviation: COVID-19 = coronavirus disease 2019.
* Fever and cough or shortness of breath or difficulty breathing or presence of a coronavirus diagnostic code.
† *California:* Santa Clara County; *Washington:* King County, Snohomish County; *Illinois:* Cook County; *Louisiana:* Orleans Parish; *Massachusetts:* Middlesex County; *Michigan:* Wayne County; *New York:* Bronx County, Kings County, Nassau County, New York County, Richmond County, Queens County, Westchester County.
§ King County, Washington includes Seattle; Cook County, Illinois includes Chicago and many of its suburbs; Wayne County, Michigan includes Detroit and many of its suburbs; Orleans Parish includes New Orleans; Kings County (Brooklyn), Queens County (Queens), Bronx County (Bronx), Richmond County (Staten Island), and New York County (Manhattan) are all within New York City.
¶ From the subset of emergency departments in each county that participate in the National Syndromic Surveillance Program.

MODELING

ESTIMATING THE SERIAL INTERVAL OF THE NOVEL CORONAVIRUS DISEASE (COVID-19) BASED ON THE PUBLIC SURVEILLANCE DATA IN SHENZHEN, CHINA FROM JANUARY 19 TO FEBRUARY 22, 2020

Wang K, Zhao S, Liao Y, Zhao T, Wang X, Zhang X, Jiao H, Li H, Yin Y, Wang MH, Xiao L, Wang L, He D.. Transbound Emerg Dis. 2020 May 26. doi: 10.1111/tbed.13647. Online ahead of print.
Level of Evidence: Other -

BLUF

This epidemiological study conducted from January 19 to February 22, 2020 identifies the serial interval of COVID-19 cases in Shenzhen, China based on records of transmission chains and using three parametric models. The mean estimated serial interval was 5.9 (SD, 4.8) days, which is shorter than that reported for SARS and MERS. These findings support a rapid transmission that necessitates social isolation to control disease spread.

ABSTRACT

BACKGROUNDS: The novel coronavirus disease (COVID-19) poses serious threat to global public health and economics. Serial interval (SI), time between the symptom onsets of a primary case and a second case, is a key epidemiological parameter. We estimated SI of COVID-19 in Shenzhen, China based on 27 records of transmission chains.
METHODS: We adopted three parametric models: Weibull, Lognormal and Gamma distributions and an interval censored likelihood framework. The three models were compared using the corrected Akaike information criterion (AICc). We also fitted the epidemic curve of COVID-19 to the exponential growth to estimate the reproduction number.
FINDINGS: Using a Weibull distribution, we estimated mean SI at 5.9 days (95%CI: 3.9-9.6) and a standard deviation (SD) at 4.8 days (95%CI: 3.1-10.1). Using a logistic growth model, we estimated the basic reproduction number in Shenzhen at 2.6 (95%CI: 2.4-2.8). CONCLUSION: The SI of COVID-19 is relative shorter than that of SARS and MERS, other two beta coronavirus diseases, which suggests the iteration of the transmission was rapid. It is crucial to isolate close contacts promptly to control the spread of COVID-19 effectively.

FIGURES

(SI) of COVID-19 in Shenzhen.			
Distribution	Mean (95%CI)	SD (95%CI)	AICc
Gamma	5.9 (3.9 – 9.7)	5.0 (3.1 – 9.7)	152.0
Weibull	5.9 (3.9 – 9.6)	4.8 (3.1 – 10.1)	151.8
Lognormal	6.5 (3.9 – 15.1)	7.9 (3.9 – 37.3)	153.5

Table 1. The summary of mean and standard deviance (SD) estimates of the serial interval (SI) of COVID-19 in Shenzhen
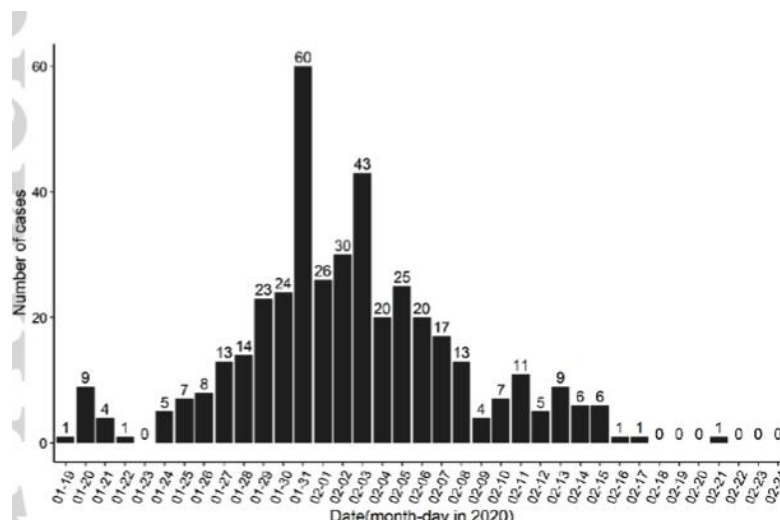

Figure 1. Daily number of COVID-19 cases from January 19 to February 22, 2020, in Shenzhen.
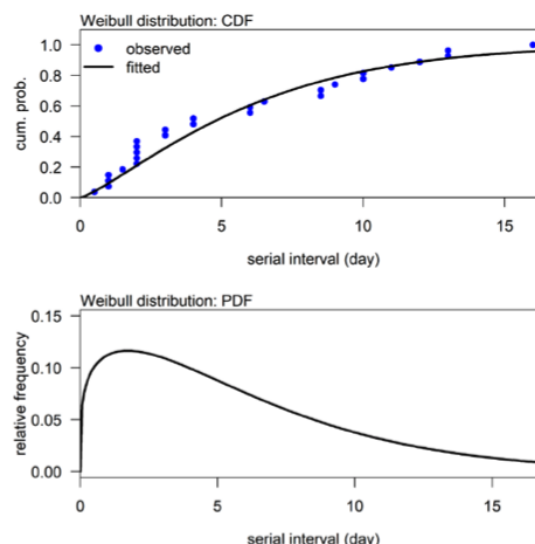

Figure 1. Daily number of COVID-19 cases from January 19 to February 22, 2020, in Shenzhen.

ADULTS

PATTERN OF LIVER INJURY IN ADULT PATIENTS WITH COVID-19: A RETROSPECTIVE ANALYSIS OF 105 PATIENTS

Wang Q, Zhao H, Liu LG, Wang YB, Zhang T, Li MH, Xu YL, Gao GJ, Xiong HF, Fan Y, Cao Y, Ding R, Wang JJ, Cheng C, Xie W.. Mil Med Res. 2020 Jun 7;7(1):28. doi: 10.1186/s40779-020-00256-6.
Level of Evidence: 3 - Local non-random sample

BLUF

This single-center retrospective case study conducted at Beijing Ditan Hospital from 1/12/2020 - 3/17/2020 by Capital Medical University investigated liver function in two groups with COVID-19 [n=105, mild group (n=79), severe group (n=26)]. They found 56.2% of COVID-19 patients had abnormal ALT (alanine transaminase), AST (aspartate transaminase), or TBil (total bilirubin). However, 96.4% of the patients had indices less than three times the upper limit of the normal reference range (Figure 2). Elevation of both ALT and AST was seen in 12.7% of mild cases and 46.2% of severe cases (p=0.001), suggesting it is common for COVID-19 patients to have an elevated liver function index and abnormal liver function is more likely with increased severity of the disease.

ABSTRACT

BACKGROUND: Recent studies reported that patients with coronavirus disease-2019 (COVID-19) might have liver injury. However, few data on the combined analysis and change patterns of alanine aminotransferase (ALT), aspartate aminotransferase (AST) and total bilirubin (TBil) have been shown.
METHODS: This is a single-center retrospective study. A total of 105 adult patients hospitalized for confirmed COVID-19 in Beijing Ditan Hospital between January 12, and March 17, 2020 were included, and divided into mild group (n = 79) and severe group(n = 26). We compared liver functional test results between the two groups. Category of ALT change during the disease course was also examined.
RESULTS: 56.2% (59/105) of the patients had unnormal ALT, AST, or total TBil throughout the course of the disease, but in 91.4% (96/105) cases the level of ALT, AST or TBil <=3 fold of the upper limit of normal reference range (ULN). The overall distribution of ALT, AST, and TBil were all significantly difference between mild and severe group (P < 0.05). The percentage of the patients with elevated both ALT and AST was 12.7% (10/79) in mild cases vs. 46.2% (12/26) in severe cases (P = 0.001). 34.6% (9/26) severe group patients started to have abnormal ALT after admission, and 73.3% (77/105) of all patients had normal ALT before discharge.
CONCLUSIONS: Elevated liver function index is very common in patients with COVID-19 infection, and the level were less than 3 x ULN, but most are reversible. The abnormality of 2 or more indexes is low in the patients with COVID-19, but it is more likely to occur in the severe group.

LIPASE ELEVATION IN PATIENTS WITH COVID-19

McNabb-Baltar J, Jin DX, Grover AS, Redd WD, Zhou JC, Hathorn KE, McCarty TR, Bazarbashi AN, Shen L, Chan WW.. Am J Gastroenterol. 2020 Jun 3. doi: 10.14309/ajg.0000000000000732. Online ahead of print.
Level of Evidence: 3 - Local non-random sample

BLUF

A group of researchers evaluated the frequency of hyperlipasemia in this retrospective cohort study of 71 hospitalized patients with COVID-19. While 2 of the 9 patients who developed hyperlipasemia had severely elevated lipase levels (>3x upper limit; see Tables 1-2), none of the patients developed acute pancreatitis or severe symptoms, suggesting that the presence of hyperlipasemia does not significantly affect clinical outcomes in patients with the virus.

ABSTRACT

INTRODUCTION: Although coronavirus disease (COVID-19) has been associated with gastrointestinal manifestations, its effect on the pancreas remains unclear. We aimed to assess the frequency and characteristics of hyperlipasemia in patients with COVID-19. METHODS: A retrospective cohort study of hospitalized patients across 6 US centers with COVID-19. RESULTS: Of 71 patients, 9 (12.1%) developed hyperlipasemia, with 2 (2.8%) greater than 3 times upper limit of normal. No patient

developed acute pancreatitis. Hyperlipasemia was not associated with poor outcomes or symptoms. DISCUSSION: Although a mild elevation in serum lipase was observed in some patients with COVID-19, clinical acute pancreatitis was not seen.

FIGURES

Table 1. Severity of hyperlipasemia (serum lipase upper limit of normal: 60 U/L) among patients hospitalized for COVID-19 from January 23, 2020, to April 2, 2020, across 6 hospitals in Massachusetts

Increased serum lipase n = 9/71 (12.1%)	
Serum lipase level, n (% of total cohort), U/L	
60–120	6 (7.4)
120–180	1 (1.4)
>180	2 (2.8)

Table 2. Demographics, gastrointestinal symptoms, and hospitalization course of patients with COVID-19 admitted betweeen January 23, 2020, to April 2, 2020, across 6 hospitals in Massachusetts

	All COVID-19 (N = 71)	Increased lipase (n = 9)	Normal lipase (n = 62)	P value
Age, yr ±SD	64.9 ± 15.8	62.4 ± 15.4	65.3 ± 15.9	0.62
Female, n (%)	38 (53.5)	5 (55.6)	33 (53.2)	0.90
BMI, kg/m² ±SD	29.5 ± 6.6	29.2 ± 1.7	29.6 ± 6.9	0.87
Serum lipase, U/L ±SD	44.6 ± 66.3	151.8 ± 148.4	29.1 ± 14.9	<0.0001
Serum creatinine, mg/dL ±SD	1.16 ± 0.85	1.48 ± 1.00	1.12 ± 0.83	0.24
Gastrointestinal symptoms, n (%)				
Nausea	29 (40.9)	5 (55.6)	24 (38.7)	0.34
Anorexia	34 (47.9)	6 (66.7)	28 (45.2)	0.23
Abdominal discomfort	25 (35.2)	3 (33.3)	22 (35.5)	0.90
Diarrhea	36 (50.7)	5 (55.6)	31 (50.0)	0.76
Hospital course (n, %)				
Intensive care unit hospitalization	17 (24.3)	4 (44.4)	13 (21.3)	0.13
Intubation	17 (24.6)	4 (44.4)	13 (21.3)	0.13
Death	18 (25.4)	3 (33.3)	15 (24.2)	0.56

INFLUENZA AND COVID-19 CO-INFECTION: REPORT OF 6 CASES AND REVIEW OF THE LITERATURE

Ozaras R, Cirpin R, Duran A, Duman H, Arslan O, Bakcan Y, Kaya M, Mutlu H, Isayeva L, Kebanlı F, Deger BA, Bekeshev E, Kaya F, Bilir S.. J Med Virol. 2020 Jun 4. doi: 10.1002/jmv.26125. Online ahead of print.
Level of Evidence: 4 - Case-series

BLUF

Turkish doctors report a case series of six COVID-19 patients co-infected with influenza who showed mild to moderate symptoms. A chest imaging protocol designed by another group (Wang et al., 2020) was used to identify six different parameters that may be promising in differentiating between influenza and COVID-19-related lung pathology: lesion distribution, lobe predomination, lesion margin, ground-glass opacification involvement, lesion contour, and bronchial wall thickening. Given the high mortality seen with other respiratory viral co-infections and the upcoming influenza season, the authors urge clinicians to screen more COVID-19 patients for co-infection and recommend patients receive the influenza vaccine.

ABSTRACT

COVID-19 pandemic caused infection in a season when influenza is still prevalent. Both viruses have similar transmission characteristics and common clinical manifestations. Influenza has been described to cause respiratory infection with some other respiratory pathogens. However the information of COVID-19 and influenza co-infection is limited. In this study, we reported our co-infected cases and reviewed the literature. We included all COVID-19 diagnosed patients. All patients with a

presumed diagnosis of COVID-19 were routinely screened for influenza. Their thorax radiology was reviewed for COVID-19 - influenza differentiation. During the study period, 1103 patients have been diagnosed COVID-19. Among them, 6 patients (0.54%) were diagnosed co-infected with influenza. There have been 28 more co-infected patients reported. Laboratory-based, screening studies reported more patients. Thorax radiology findings were compatible with COVID-19 in 5 and with influenza in 1 one of our patients. Our cases were mild-to-moderate in severity. The reported cases in the literature included patients died (n=2) and those living ventilator dependent or under mechanical ventilation. COVID-19 and influenza co-infection is rare. Screening studies report more cases, suggesting that unless screening COVID-19 patients, the co-infection remains undiagnosed and underestimated. Increasing experience in thoracic radiology may contribute to diagnose the responsible virus(es) from the clinical illness. Influenza vaccine for larger population groups can be recommended to simplify clinicians' work.

PEDIATRICS

MULTISYSTEM INFLAMMATORY SYNDROME RELATED TO COVID-19 IN PREVIOUSLY HEALTHY CHILDREN AND ADOLESCENTS IN NEW YORK CITY

BLUF

A retrospective case series conducted at Columbia University by a group of clinicians describe a cohort of 17 COVID-19 positive children and adolescents (median age of 8 years old) who presented with symptoms of a COVID-19-related inflammatory syndrome. Authors describe the clinical course, characterize inflammatory markers, discuss treatments, and present the collective hospital course. Authors also suggest that the pattern of inflammatory markers follows closely with that of Kawasaki disease and that the pattern of abnormal cardiac findings (dysrhythmias, ST/T-wave abnormalities, decreased LV function on echo) suggest the need for long-term follow-up in these patients.

SUMMARY

"Severe coronavirus disease 2019 (COVID-19) has been reported rarely in children. International data suggest the development of a proinflammatory syndrome with features of Kawasaki disease (KD) or toxic shock syndrome (TSS) in children, possibly related to COVID-19." This study looked at 17 previously healthy individuals 21 years of age and under with COVID-19 and aimed to characterize their inflammatory symptoms. The pattern of cytokine expression was IL-6 and IL-10 dominant, white the lack of TNF-alpha and IL-13 signaling differentiated this inflammatory COVID-19 syndrome from traditional acute pulmonary COVID-19 disease. More research is needed to more fully elucidate the pathological mechanisms behind this inflammatory syndrome seen in children with COVID-19.

CHARACTERISTICS OF HOSPITALIZED PEDIATRIC COVID-19 CASES - CHICAGO, ILLINOIS, MARCH - APRIL 2020

BLUF

A case series conducted in Chicago, Illinois from March to April of 2020 by Rush University Children's Hospital and the Chicago Department of Public Health investigated the presentation and complications of pediatric patients with COVID-19. The authors conclude that pediatric patients with comorbidities were more prone to hospitalization and complications of COVID-19 and that they most likely contracted the disease from a family member during quarantine.

SUMMARY

The authors of this case series worked to compile information regarding how pediatric patients (aged 0-17) presented with COVID-19 and how existing comorbidities affected the presentation of the disease (see Table and Figure 1). Data was collected from 64 pediatric patients who tested positive for SARS-CoV-2 over a month period between March and April. Analysis found the following:
1. Reported symptoms included:
    a. 75% presented with cough.

b. 56% presented with fever.
    c. 5% denied any symptoms.
    d. See attached Table for complete list of symptoms
2. Of these patients, 50 had data on comorbidities available:
    a. 26% with one or more preexisting conditions.
    b. 10% with chronic lung disease.
    c. 6% with cardiac or congenital heart disease.
    d. 4% with Trisomy 21.
    e. 4% with immunocompromising conditions.
    f. 4% with atopy.
    g. 2% with a history of prematurity.
3. Of the 64 pediatric patients, 10 (16%) were hospitalized:
    a. The median length of stay was 4 days.
    b. Reported fever and dyspnea were higher in hospitalized patients vs. non-hospitalized patients (9/10 vs. 28/54, p = 0.04 and 7/10 vs. 10/54, p = 0.002, respectively).
    c. Hospitalized patients were younger than non-hospitalized patients (median, 3.5 years vs. 12 years; p = 0.03).
    d. All hospitalized patients had comorbidity or co-infection.

The authors suggested that pediatric patients who contracted COVID-19, especially infants, most likely contracted the disease from family members. They recommend increased caution be exercised in families who have infected members especially when children have comorbid conditions.

ABSTRACT

BACKGROUND: To date, no report on COVID-19 pediatric patients in a large urban center with data on underlying comorbidities and co-infection for hospitalized cases has been published.
METHODS: Case series of Chicago COVID-19 patients aged 0-17 years reported to Chicago Department of Public Health (CDPH) from 3/5/20-4/8/20. Enhanced case investigation performed. Chi-square and Wilcoxon two-sample tests to compare characteristics among hospitalized and non-hospitalized cases.
RESULTS: During March 5-April 8, 2020, 6369 lab-confirmed cases of COVID-19 were reported to CDPH; 64 (1.0%) were among children 0-17 years. Ten patients (16%) were hospitalized, seven (70%) required intensive care (ICU); median length of hospitalization 4 days (range: 1-14). Reported fever and dyspnea were significantly higher in hospitalized patients compared to non-hospitalized patients (9/10 vs. 28/54, p = 0.04 and 7/10 vs. 10/54, p = 0.002, respectively). Hospitalized patients were significantly younger than non-hospitalized patients (median, 3.5 years vs. 12 years; p = 0.03) and all either had an underlying comorbidity or co-infection. Among the 34 unique households with multiple laboratory-confirmed infections, median number of laboratory-confirmed infections was 2 (range: 2-5), and 31 (91%) households had at least one COVID-19 infected adult. For 15 households with available data to assess transmission, 11 (73%) were adult-to-child, 2 (13%) child-to-child, and 2 (13%) child-to-adult.
CONCLUSIONS: Enhanced case investigation of hospitalized patients revealed that underlying comorbidities and co-infection might have contributed to severe disease. Given frequency of household transmission, healthcare providers should consider alternative dispositional planning for affected families of children living with comorbidities.

FIGURES

TABLE. Characteristics of children aged ≤17 years with laboratory confirmed COVID-19 (N=64) — Chicago, Illinois, March–April 2020

Characteristics	No. (%)
Age, median, years [IQR]	11 [7–16]
Age groups	
0–4 years	15 (23)
5–9 years	11 (17)
10–13 years	10 (16)
14–17 years	29 (45)
Gender	
Female	28 (44)
Male	36 (56)
Race/Ethnicity	
Hispanic	16 (25)
Black, non-Hispanic	20 (31)
White, non-Hispanic	22 (34)
Asian, non-Hispanic	3 (5)
Other, non-Hispanic	2 (3)
Unknown	1 (2)
Exposure/risk history	
Travel outside Illinois*	2 (7)
Lab-confirmed case in household member	40 (63)
Underlying comorbidity†	13 (26)
Symptoms	
Cough	48 (75)
Nasal congestion/rhinorrhea/anosmia	19 (30)
Sore throat	16 (25)
Dyspnea§	17 (27)
Fever	36 (56)
Headache	18 (28)
Myalgia	15 (23)
Chills	5 (8)
Abdominal pain	8 (13)
Diarrhea	10 (16)
Nausea/vomiting	4 (6)
Disease severity	
Hospitalized	10 (16)
Hospitalized in ICU¶	7 (70)
Underlying comorbidity¶**	7 (70)
Co-infection¶††	4 (40)

Table. Characteristics of children aged ≤17 years with laboratory confirmed COVID-19.
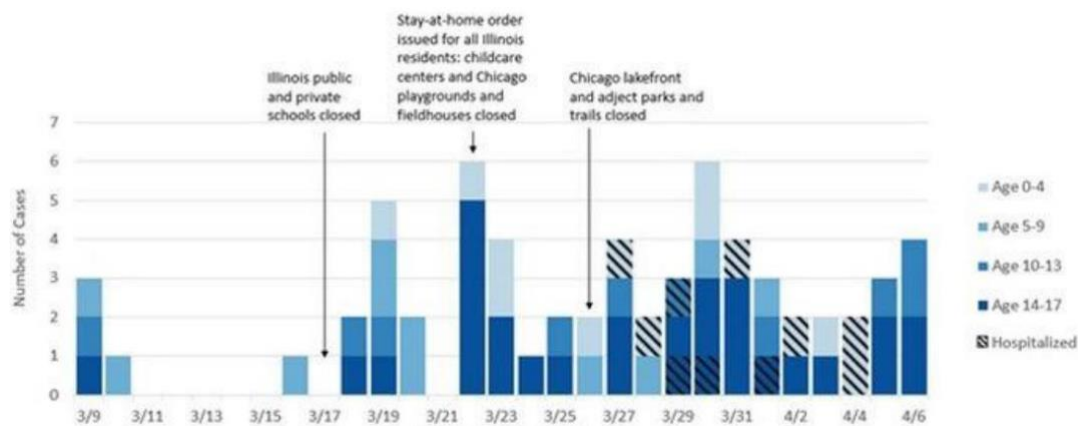
Figure 1: Number of lab-confirmed COVID-19 cases among children ≤ 17 years (n = 64) by age, hospitalization status, and specimen collection date – Chicago, Illinois, March – April 2020.

ERYTHEMA MULTIFORME-LIKE LESIONS IN CHILDREN AND COVID-19

Torrelo A, Andina D, Santonja C, Noguera-Morel L, Bascuas-Arribas M, Gaitero-Tristán J, Alonso-Cadenas JA, Escalada-Pellitero S, Hernández-Martín Á, de la Torre-Espi M, Colmenero I.. Pediatr Dermatol. 2020 May 23. doi: 10.1111/pde.14246. Online ahead of print.
Level of Evidence: 4 -

BLUF

A case series at a university hospital in Madrid, Spain found the dermatological presence of erythema multiforme (EM) in four pediatric patients, only one of whom tested positive for SARC-CoV-2 via RT-PCR. All patients had what appeared to be COVID-19-related chilblain lesions that have been described in previous observational studies (Figure 2). This link between two separate dermatological lesions, along with the positive SARS-CoV-2 spike protein immunohistochemistry results seen in the skin biopsies of two of these patients, suggests a link between EM lesions and SARS-CoV-2 that may aid in diagnosis.

ABSTRACT

During examination of cases of chilblains in children and adolescents, we identified four patients who also showed skin lesions similar to erythema multiforme (EM). They had no other known triggers for EM. One of them had a positive PCR for SARS-CoV-2, while the other 3 were negative. Skin biopsies from two patients showed features not typical of EM, such as deep

perivascular and perieccrine infiltrate and absence of necrosis of keratinocytes. Immunohistochemistry for SARS-CoV/SARS-CoV-2 spike protein showed granular positivity in endothelial cells and epithelial cells of eccrine glands in both biopsies. All patients had an excellent outcome, and had minimal or no systemic symptoms. The coincidence of EM, a condition commonly related to viruses, and chilblains in the setting of COVID-19, as well as the positivity for SARS-CoV/SARS-CoV-2 spike protein by immunohistochemistry strongly suggest a link between EM-like lesions and SARS-CoV-2.

FIGURES

Figure 2: A, B, Case 2. Targetoid lesions on dorsum of hands and knees. C, Case 3. Targetoid lesions on the hands and forearms. Also, note perniotic erythema on the fingertips

UNDERSTANDING THE PATHOLOGY

DOES THE NEWLY OBSERVED INFLAMMATORY SYNDROME IN CHILDREN DEMONSTRATE A LINK BETWEEN UNCONTROLLED NEUTROPHIL EXTRACELLULAR TRAPS FORMATION AND COVID-19?

BLUF

An expert opinion from an author at Montpellier University in France discusses the similarities between Kawasaki Disease (KD) and the "multisystem inflammatory" disease, potentially caused by SARS-CoV-2, which has been described in the United Kingdom and several other countries. It is hypothesized that the dysregulation of neutrophil extracellular traps (NETS), which are DNA structures with antimicrobial proteins to trap and kill microorganisms, could be a link between the development of KD and COVID-19. Pediatric providers should remain aware of the possibility of this inflammatory condition developing in children as a result of the COVID-19 pandemic.

IN SILICO

FRAGMENT TAILORING STRATEGY TO DESIGN NOVEL CHEMICAL ENTITIES AS POTENTIAL BINDERS OF NOVEL CORONA VIRUS MAIN PROTEASE

BLUF

This in silico modeling study conducted in India identified 15 novel molecules with the capacity to bind and inhibit the main protease of SARS-CoV-2. These molecules could be further researched as potential COVID-19 treatments.

SUMMARY

This in silico modeling study conducted by India's Department of Experimental Medicine and Biotechnology used fragment libraries to design 487 biomolecules that could potentially inhibit of the main protease of SARS-CoV-2. These biomolecules' ability to bind to the subpockets of the protease was assessed based on Absorption, Distribution, Metabolism, Excretion, and Toxicity (ADMET) filters and binding energy calculations. Of the 487 novel molecules produced, they identified 15 molecules that were able to stably bind and inhibit the enzyme just as efficiently as a reference peptide inhibitor. They conclude that these 15 molecules could provide a starting point for pharmacologic research to create a antiviral for use in COVID-19 treatment.

ABSTRACT

The recent pandemic of severe acute respiratory syndrome-coronavirus2 (SARS-CoV-2) infection (COVID-19) has put the world on serious alert. The main protease of SARS-CoV-2 (SARS-CoV-2-MPro) cleaves the long polyprotein chains to release functional proteins required for replication of the virus and thus is a potential drug target to design new chemical entities in order to inhibit the viral replication in human cells. The current study employs state of art computational methods to design novel molecules by linking molecular fragments which specifically bind to different constituent sub-pockets of the SARS-CoV-2-MPro binding site. A huge library of 191678 fragments was screened against the binding cavity of SARS-CoV-2-MPro and high affinity fragments binding to adjacent sub-pockets were tailored to generate new molecules. These newly formed molecules were further subjected to molecular docking, ADMET filters and MM-GBSA binding energy calculations to select 17 best molecules (named as MP-In1 to MP-In17), which showed comparable binding affinities and interactions with the key binding site residues as the reference ligand. The complexes of these 17 molecules and the reference molecule with SARS-CoV-2-MPro, were subjected to molecular dynamics simulations, which assessed the stabilities of their binding with SARS-CoV-2-MPro. Fifteen molecules were found to form stable complexes with SARS-CoV-2-MPro. These novel chemical entities designed specifically according to the pharmacophoric requirements of SARS-CoV-2-MPro binding pockets showed good synthetic feasibility and returned no exact match when searched against chemical databases. Considering their interactions, binding efficiencies and novel chemotypes, they can be further evaluated as potential starting points for SARS-CoV-2 drug discovery.

IN VITRO

DISTRIBUTION OF ACE2, CD147, CD26 AND OTHER SARS-COV-2 ASSOCIATED MOLECULES IN TISSUES AND IMMUNE CELLS IN HEALTH AND IN ASTHMA, COPD, OBESITY, HYPERTENSION, AND COVID-19 RISK FACTORS

Radzikowska U, Ding M, Tan G, Zhakparov D, Peng Y, Wawrzyniak P, Wang M, Li S, Morita H, Altunbulakli C, Reiger M, Neumann AU, Lunjani N, Traidl-Hoffmann C, Nadeau K, O'Mahony L, Akdis CA, Sokolowska M.. Allergy. 2020 Jun 4. doi: 10.1111/all.14429. Online ahead of print.
Level of Evidence: 5 - Mechanism-based reasoning

BLUF

The authors utilized both ex vivo and in vitro techniques to perform RNA sequencing on human tissue and immune cells from both pediatric and adult patients to identify patterns of expression of the genes for ACE-2, CD-26, and CD-147, which are utilized by SARS-CoV-2, suggesting that increased expression of these genes resulting from risk factors such as increased age, elevated body mass index (BMI), hypertension, asthma, smoking, chronic obstructive pulmonary disease (COPD), male gender, and atopic dermatitis may cause increased susceptibility to the development of COVID-19. The findings of the study are as follows:

- Higher expression of ACE-2 related genes and CD-147 related genes were seen in male, obese, COPD, hypertensive, asthmatic, and smoking patients (Figure 3).

- Higher expression of CD-147 related genes with increased BMI and older age (Figure 4).

- Increased CD-147 and ACE-2 related genes were expressed in atopic dermatitis skin lesions.

- Children had lower expression of ACE-2 related genes, but higher expression of CD-147 related genes.

- Lung and skin epithelial tissue co-expressed ACE-2 and TMPRSS2 (Figure 6).

- Epithelial tissue and immune cells expressed CD-26, CD-147, and cyclophilins (Figure 6).

ABSTRACT

BACKGROUND: Morbidity and mortality from COVID-19 caused by novel coronavirus SARS-CoV-2 is accelerating worldwide and novel clinical presentations of COVID-19 are often reported. The range of human cells and tissues targeted by SARS-CoV-2, its potential receptors and associated regulating factors are still largely unknown. The aim of our study was to analyze the expression of known and potential SARS-CoV-2 receptors and related molecules in the extensive collection of primary human cells and tissues from healthy subjects of different age and from patients with risk factors and known comorbidities of COVID-19.
METHODS: We performed RNA sequencing and explored available RNA-Seq databases to study gene expression and co-expression of ACE2, CD147 (BSG), CD26 (DPP4) and their direct and indirect molecular partners in primary human bronchial epithelial cells, bronchial and skin biopsies, bronchoalveolar lavage fluid, whole blood, peripheral blood mononuclear cells (PBMCs), monocytes, neutrophils, DCs, NK cells, ILC1, ILC2, ILC3, CD4+ and CD8+ T cells, B cells and plasmablasts. We analyzed the material from healthy children and adults, and from adults in relation to their disease or COVID-19 risk factor status.
RESULTS: ACE2 and TMPRSS2 were coexpressed at the epithelial sites of the lung and skin, whereas CD147 (BSG), cyclophilins (PPIA and PPIB), CD26 (DPP4) and related molecules were expressed in both, epithelium and in immune cells. We also observed a distinct age-related expression profile of these genes in the PBMCs and T cells from healthy children and adults. Asthma, COPD, hypertension, smoking, obesity, and male gender status generally led to the higher expression of ACE2- and CD147-related genes in the bronchial biopsy, BAL or blood. Additionally, CD147-related genes correlated positively with age and BMI. Interestingly, we also observed higher expression of ACE2- and CD147-related genes in the lesional skin of patients with atopic dermatitis.
CONCLUSIONS: Our data suggest different receptor repertoire potentially involved in the SARS-CoV-2 infection at the epithelial barriers and in the immune cells. Altered expression of these receptors related with age, gender, obesity and smoking, as well as with the disease status might contribute to COVID-19 morbidity and severity patterns.
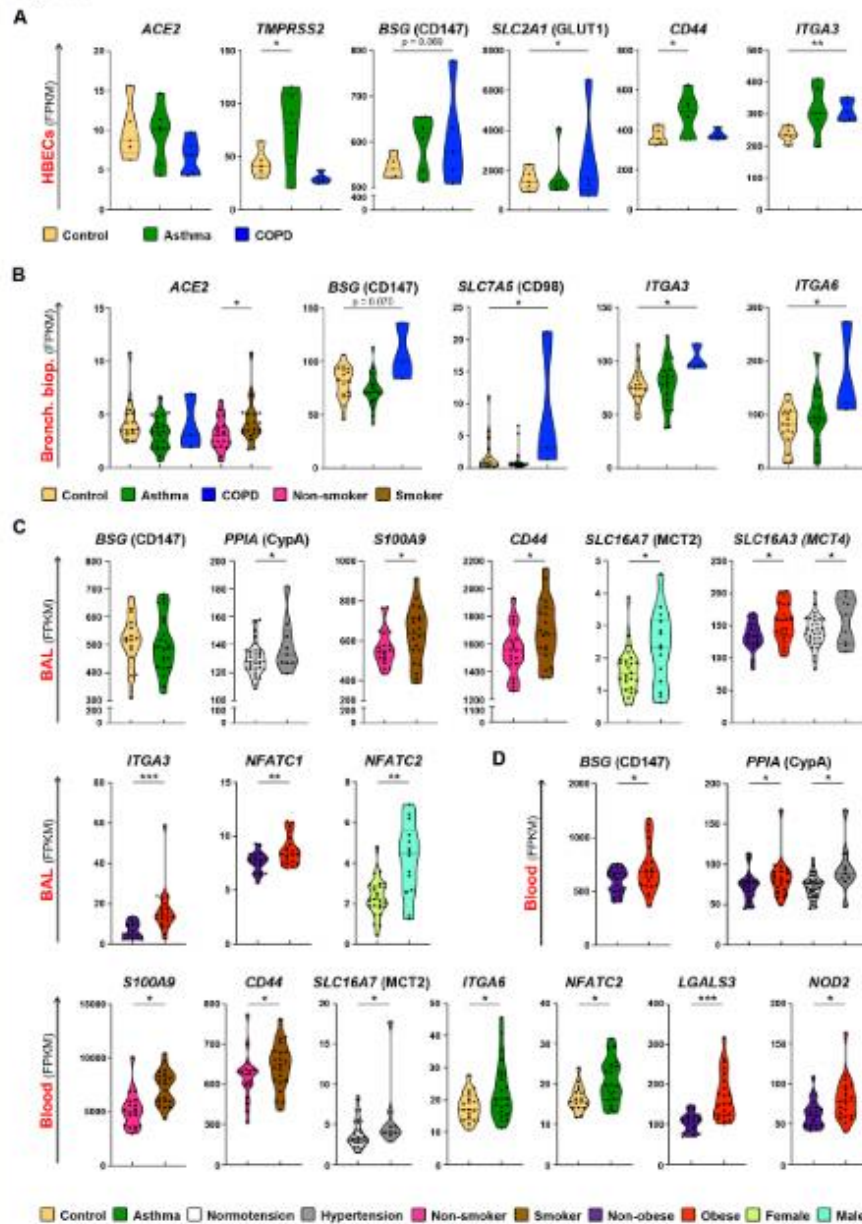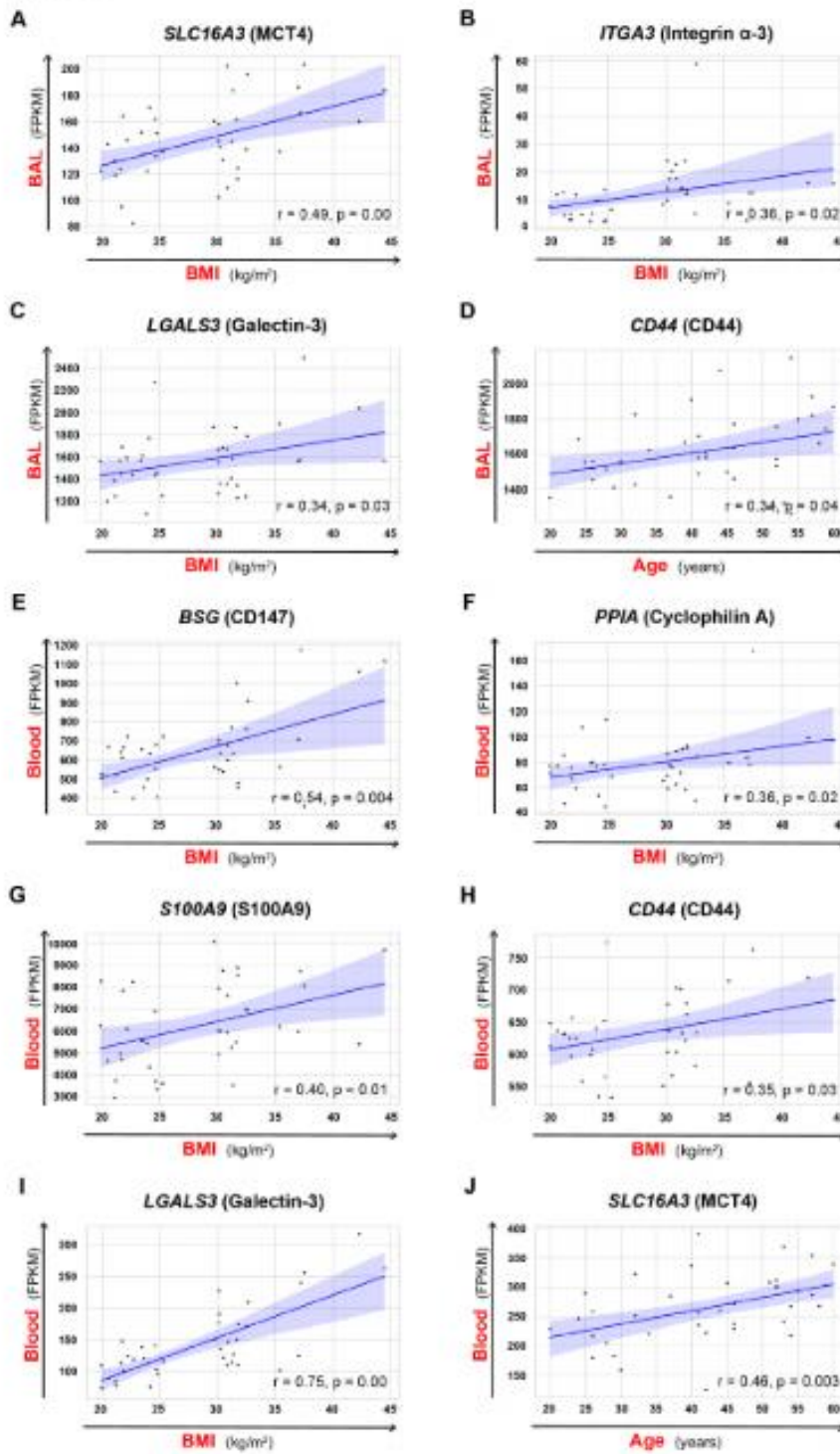
FIGURES

Figure 3: Asthma, COPD, hypertension, smoking, obesity and gender is associated with differential expression of ACE2-, CD147-, and CD26-related genes in immune cells and tissues. A) Differential expression of ACE2, TMPRSS2, BSG, SLC2A1, CD44 and ITGA3 genes in in vitro Air Liquid Interface (ALI) – differentiated human primary bronchial epithelial cells from non-diseased controls (n=5), asthma (n=6) and COPD (n=5) patients. B) Differential expression of ACE2, BSG, SLC7A5, ITGA3, ITGA6 genes in bronchial biopsies from non-diseased controls (n=16), patients with asthma (n=22) and COPD (n=3), or in comparison of smokers (n=21) with non-smoking individuals (n=19). C) Differential expression of BSG, PPIA, S100A9, CD44, SLC16A7, SLC16A3, ITGA3, NFATC1, NFATC2 genes in the bronchoalveolar fluid (BAL) from the control individuals (n=16), patients with asthma (n=22) and COPD (n=2), or in comparison of hypertensive (n=9) with normotensive (n=31) individuals; smokers (n=20) with non-smokers (n=19); obese (n=21) with non-obese (n=19); and males (n=26) with females (n=14). D) Differential expression of BSG, PPIA, S100A9, CD44, SLC16A7, ITGA6, NFATC2, LGALS3 and NOD2 genes in the whole blood of non-diseased controls (n=17), patients with asthma (n=21) and COPD (n=3), or in comparison of hypertensive (n=9) with normotensive (n=32) individuals; smokers (n=21), with non-smokers (n=19); obese (n=21) with non-obese individuals (n=20); and males (n=27) with females (n=14). Names of the proteins encoded by analyzed genes are stated in the brackets. *p < 0.05, **p < 0.01, ***p < 0.001, ****p< 0.0001. HBECS, human bronchial epithelial cells; Bronch. biop., bronchial biopsy; BAL, bronchoalveolar fluid cells; COPD, chronic obstructive pulmonary disease

Figure 4

A — SLC16A3 (MCT4) — BAL (FPKM) vs BMI (kg/m²); r = 0.49, p = 0.00

B — ITGA3 (Integrin α-3) — BAL (FPKM) vs BMI (kg/m²); r = 0.36, p = 0.02

C — LGALS3 (Galectin-3) — BAL (FPKM) vs BMI (kg/m²); r = 0.34, p = 0.03

D — CD44 (CD44) — BAL (FPKM) vs Age (years); r = 0.34, p = 0.04

E — BSG (CD147) — Blood (FPKM) vs BMI (kg/m²); r = 0.54, p = 0.004

F — PPIA (Cyclophilin A) — Blood (FPKM) vs BMI (kg/m²); r = 0.36, p = 0.02

G — S100A9 (S100A9) — Blood (FPKM) vs BMI (kg/m²); r = 0.40, p = 0.01

H — CD44 (CD44) — Blood (FPKM) vs BMI (kg/m²); r = 0.35, p = 0.03

I — LGALS3 (Galectin-3) — Blood (FPKM) vs BMI (kg/m²); r = 0.75, p = 0.00

J — SLC16A3 (MCT4) — Blood (FPKM) vs Age (years); r = 0.46, p = 0.003

Figure 4: Expression of certain CD147-related genes correlates with BMI and age in the BAL and blood. Correlation of A) SLC16A3 expression and BMI, B) ITGA3 expression and BMI, C) LGALS3 expression and BMI, and D) CD44 expression and age in the bronchoalveolar fluid (BAL). Correlation of E) BSG expression and BMI, F) PPIA expression and BMI, G) S100A9 expression and BMI, H) CD44 expression and BMI, I) LGALS3 expression and BMI, J) SLC16A3 and age in the whole blood. Spearman correlation coefficient (r) was calculated, with the threshold set to p = 0.05. Names of the proteins encoded by analyzed genes are stated in the brackets. BAL, bronchoalveolar fluid cells; BMI, body-mass index.

DEVELOPMENTS IN TRANSMISSION & PREVENTION

STUDY ON THE CLEANING EFFECT OF MEDICAL PROTECTIVE POSITIVE PRESSURE AIR SUPPLY RESPIRATOR DURING COVID-19

Level of Evidence: Other - Expert Opinion

BLUF

A letter to the editor detailed an experiment comparing two methods of disinfection: manual cleaning vs. mechanical boiling for 60 hospital 3MTMTR-600 series positive pressure air supply respirators used from February to April 2020. Study of these methods found that the mechanical boiling method was more efficient (10 masks every 120 minutes vs. 10 masks every 300 minutes) and provided cleaner results (greater pass rate) when screened with a test rod protein residue. Their findings suggest that mechanical boiling may be a more suitable method of disinfection for respiratory masks during the COVID-19 pandemic.

PREVENTION IN THE COMMUNITY

WHAT TYPE OF FACE MASK IS APPROPRIATE FOR EVERYONE-MASK-WEARING POLICY AMIDST COVID-19 PANDEMIC?

Level of Evidence: Other -

BLUF

In this review from the University of Ulsan College of Medicine and Asan Medical Center in Seoul, Korea, the author compares the efficacy of different types of masks that are reasonable for the general population during the COVID-19 pandemic (Table 1) and states that the most important factor in mask selection is droplet containment, but also acknowledges that comfort will dictate compliance. Although cotton masks have only one-third the efficacy of surgical masks, they will still reduce droplet/particle transmission, making them adequate for persons without respiratory symptoms to wear in public as communities begin to reopen and allowing for better allocation of medical grade masks.

SUMMARY

During the COVID-19 pandemic, as there continues to be no current curative treatment or vaccine, the most important way to control the spread of infection is through hand hygiene, environmental control, quarantine, and personal protective equipment (PPE). Proper hygiene should continue to be strictly observed during this pandemic, as most respiratory viruses are transmitted more commonly through contact rather than droplets. However, SARS-CoV-2 poses a unique challenge as it is highly infectious, and many people show little to no symptoms making it difficult to know when to self-isolate. Due to this, new policies have been implemented for mandatory masks in public areas as more communities start to reopen, however long-term use of medical grade masks by the public is not practical. Adequate medical grade PPE, specifically high efficiency particulate air (HEPA) masks (such as KF94 or N95) and surgical masks, have been a sparse resource for those who need it most, partially due to being overused by the general public. Comparison of a KF94 verses a surgical mask after droplet inoculation is depicted in Figure 1. The applications and features of numerous types of masks, including surgical masks, HEPA masks, and cotton masks, are outlined in Table 1. Although both surgical masks and HEPA masks provide better control of droplet transmission, given scarce resource allocation, especially when considering long-term logistics of this pandemic, cotton masks have been shown to prevent some droplet and particle transmission and therefore maybe worn as a last resort for those who are not displaying respiratory symptoms.

FIGURES

Table 1. Features of surgical mask, HEPA filter mask and cotton mask

Features	Surgical mask	Cotton mask	HEPA filter mask	
			KF80	KF94/N95
Approval by FDA	Therapeutic device 32100	None	Therapeutic device 32200 Fine dust mask	Therapeutic device 32200[a] Respirator
Intended use	To protect the patient from large particles expelled from the wearer-such as spit and mucous.	To avoid touching nose and mouth.	To help reduce the wearer's exposure to fine dust particles.	To help reduce the wearer's exposure to fine dust particles and infectious airborne particles.
	To use as a fluid barrier.	To help contain spit or mucous expelled by the wearer, similar to covering a cough or sneeze with a face tissue.	Filter efficiency 80%, small and large particles.	Filter efficiency 95%, small particle aerosols to large droplets.
Fit	Fits loosely, leaving gaps between face and the mask.	Fits loosely, leaving gaps between face and the mask.	Designed to fit tightly, creating a seal between face and the mask.	Designed to fit tightly, creating a seal between face and the mask. Requires fit testing and user seal checks.
Cautions	Disposable	Reuse after cleaning	1. Conduct a user seal check every time. 2. Respirators can be worn until they are dirty/wet, damaged/deformed or difficult to breathe. 3. Disposable: possible contamination of filter with bioaerosols after use. 4. Relative contraindication: pregnancy, respiratory illness, children/elderly, closed space in low oxygen air < 18%. 5. Do not insert anything (tissue, gauze, etc.) between face and boundary of mask. 6. Hand hygiene before and after wearing. 7. No routine decontamination and reuse. 8. Cleanshaven in the respiratory seal area. 9. Medical evaluation required for occupational (long-term) users.	
Basic structure	3-layer construction	Usually rectangular mask with earloop	4-layer construction	
	Pleated rectangular mask		3-fly flat fold or cup shaped	
	Nosepiece wire		Nosepiece wire	
	Tie or earloop		Headband or earloop with hook fastener	
Filter materials	Non-woven fibrous filter	Cotton	Non-woven fibrous filter	
Fluid Resistance	Yes	No	No	No/Yes[b]

HEPA = high efficiency particulate air, FDA = Ministry of Food and Drugs.
[a]N95 cleared for use as surgical mask by FDA in US; [b]The highest level of fluid resistance is required for surgical N95 respirator.
This table was adapted from Korea Ministry of Food and Drugs information (https://nedrug.mfds.go.kr) and 3M PPE information and guidelines (https://www.3m.com/3M/en_US/medical-us/coronavirus/ppe-information-and-guidance/#protection).

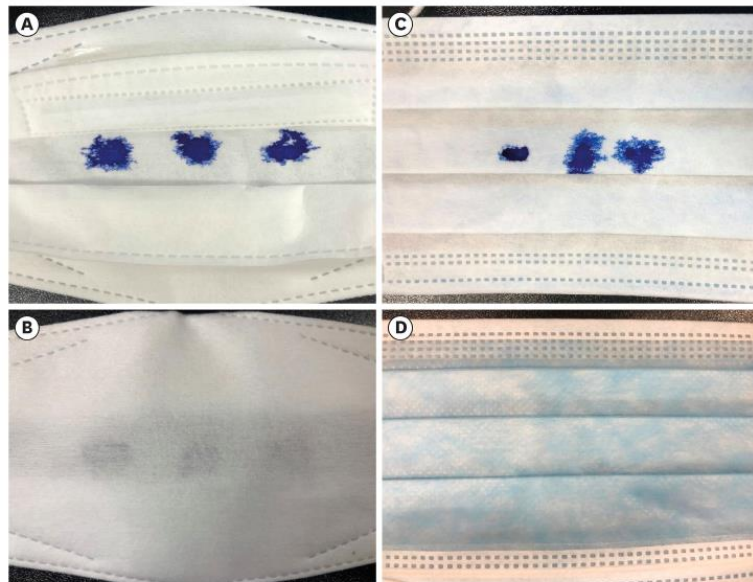**Fig. 1.** The inner and outer surfaces of the KF94 mask and surgical mask after inoculating 3 drops of 5 μL of methylene blue dye on the inner surfaces of both masks. The dye diffused from the inner surfaces (**A**) of the KF94 mask to the extent that it was visible on the outer surface (**B**), while the dye diffused only in inner layer (**C**) of the surgical mask, leaving the outer surface (**D**) dry.

PREVENTION IN THE HOSPITAL

COVID-19-DEFINING AN INVISIBLE ENEMY WITHIN HEALTHCARE AND THE COMMUNITY

BLUF

A retrospective cohort study conducted in North London from 3/1/2020 - 4/15/2020 investigated the prevalence of hospital-acquired COVID-19 and found 80/631 were hospital associated (Figure 1). The authors implied the need to reduce healthcare associated COVID-19 and suggests frequent sequential screening (at onset and weekly up to 14 days post hospital discharge) for non COVID-19 patients who were recently hospitalized. Measures of statistical significance were not reported for this dataset.

SUMMARY

The authors emphasized the concerns for healthcare associated COVID-19 cases in a North London hospital and proposed the following algorithm to describe COVID-19 cases based on length of stay in the hospital:
- Patients who test positive for COVID-19 after at least 14 days in the hospital are defined as "hospital onset healthcare associated (HoHA)."
- Patients who test positive for COVID-19 after 3-14 days are defined as "hospital onset possible healthcare associated (HoPHA)."
- Patients who test positive for COVID-19 within 14 days of discharge are defined as "community onset healthcare associated (CoHA)."
- Patients who test positive for COVID-19 within 2 days of admission are defined as "community associated (CA)."

These definitions were retrospectively applied to 631 COVID-19 positive patients and results showed 80/631 (12.68%) total COVID-19 cases could be classified as HoHA (32/1818 total admissions), HoPHA (32/1818 total admissions), or CoHA (16/1818 total admission) (Figure 1). The 16 CoHA patients presented a median of 8 days post-discharge. The authors recommend COVID-19 screening of recently discharged patients to allow for better management of COVID-19. Of note, measures of statistical significance were not reported for this dataset.

FIGURES
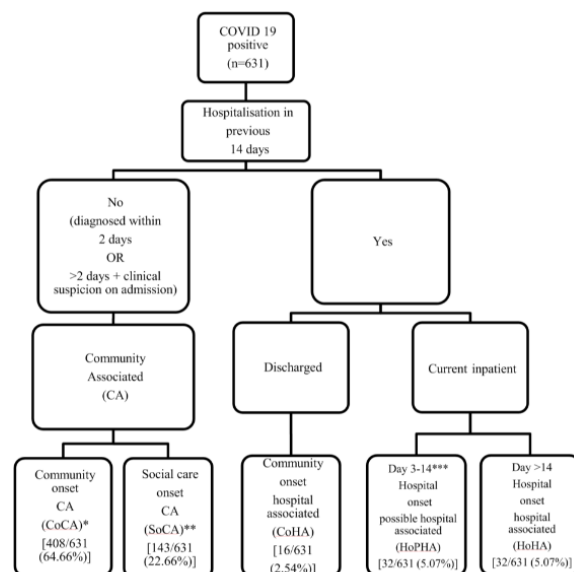
Figure 1: Algorithm describing COVID 19 cases presenting at our institution from 1st March 20th 2020 -15th April 2020

HEALTHCARE PERSONNEL EXPOSURE TO A PATIENT WITH ASYMPTOMATIC SARS-COV2 INFECTION DURING A PROLONGED SURGICAL INTERVENTION

BLUF

Infectious disease specialists from the University of Mississippi Medical Center report a case involving a 17 year old orthopedic trauma patient with no COVID-19 symptoms who underwent an emergent orthopedic surgery in March 2020 and was subsequently found to be SARS-CoV-2 positive. Of the 11 operating room healthcare workers exposed, all were wearing standard surgical PPE and none were wearing respirators. These 11 healthcare providers were monitored for 14 days with no reported COVID-19 symptoms (therefore formal RT-PCR testing was not performed), suggesting that further research is needed to understand transmission risk in the perioperative environment.

ABSTRACT

There is ongoing debate regarding the role of aerosols in the transmission of SARS-CoV2 in the healthcare environment. Here we report a case in which multiple operating room healthcare providers were exposed to a patient with asymptomatic SARS-CoV2 infection during a prolonged orthopedic surgical intervention and had no evidence of COVID-19 during the 14-day post-exposure period.

ACUTE CARE

ASSOCIATION OF VIRAL LOAD WITH SERUM BIOMAKERS AMONG COVID-19 CASES

BLUF
With data from 114 COVID-19 patients, researchers affiliated with the Jiangsu Provincial Center for Disease Control and Prevention in Nanjing, China found hints that viral load, C-reactive protein (CRP), and serum amyloid A (SAA) may be associated with more severe COVID-19. The authors suggest more research into the utility of these markers for assessment of viral load and clinical condition.

SUMMARY
Specific findings included:

1. Positive rates of anti-SARS-CoV-2 immunoglobin M (IgM), CRP, and SAA, as measured by dry immunoassay, were 80.7%, 36% and 75.4%, respectively;
2. There was a statistically significant positive association between the severity of the disease (pneumonia and non-pneumonia patients) and viral load; and
3. Positive CRP and SAA were associated with increased viral load and disease severity (statistically significant), but no statistically significant association with anti-SARS-CoV-2 IgM was identified.

ABSTRACT
Since SARS-CoV-2 spreads rapidly around the world, data have been needed on the natural fluctuation of viral load and clinical indicators associated with it. We measured and compared viral loads of SARS-CoV-2 from pharyngeal swab, IgM anti-SARS-CoV-2, CRP and SAA from serum of 114 COVID-19 patients on admission. Positive rates of IgM anti-SARS-CoV-2, CRP and SAA were 80.7%, 36% and 75.4% respectively. Among IgM-positive patients, viral loads showed different trends among cases with different severity, While viral loads of IgM-negative patients tended to increase along with the time after onset. As the worsening of severity, the positive rates of CRP and SAA also showed trends of increase. Different CRP/SAA type showed associations with viral loads in patients in different severity and different time after onset. Combination of the IgM and CRP/SAA with time after onset and severity may give suggestions on the viral load and condition judgment of COVID-19 patients.

EMERGENCY MEDICINE

INCIDENTALLY DISCOVERED COVID-19 IN LOW-SUSPICION PATIENTS-A THREAT TO FRONT LINE HEALTH CARE WORKERS

BLUF
A case series conducted at a single site in the USA reviewed imaging from seven patients with a low suspicion of COVID-19 (no respiratory symptoms, fever or exposure) at the time of presentation, but who exhibited imaging characteristics of the virus and were ultimately diagnosed via RT-PCR. Six of the seven patients presented with abdominal complaints, and received abdominal CT scan which showed evidence of COVID-19 at the lung bases and prompted further work-up. Chest CT followed by RT-PCR confirmed COVID-19 in these patients. Five of the seven patients eventually developed respiratory symptoms, which progressed to respiratory failure and intubation. This study emphasizes that incidental imaging findings consistent with COVID-19, even in low suspicion cases, is should be an indication for follow-up RT-PCR testing.

ABSTRACT

PURPOSE: The COVID-19 pandemic has been responsible for thousands of deaths worldwide. Testing remains at a premium, and criteria for testing remains reserved for those with lower respiratory infection symptoms and/or a known high-risk exposure. The role of imaging in COVID-19 is rapidly evolving; however, few algorithms include imaging criteria, and it is unclear what should be done in low-suspicion patients with positive imaging findings.
METHODS: From 03/01/2020-03/20/2020, a retrospective review of all patients with suspected COVID-19 on imaging was performed. Imaging was interpreted by a board-certified, fellowship-trained radiologist. Patients were excluded if COVID-19 infection was suspected at the time of presentation, was the reason for imaging, or if any lower respiratory symptoms were present.
RESULTS: Eight patients with suspected COVID-19 infection on imaging were encountered. Seven patients received testing due to suspicious imaging findings with subsequent lab-confirmed COVID-19. No patients endorsed prior exposure to COVID-19 or recent international travel. COVID-19 was suggested in six patients incidentally on abdominal CT and two on chest radiography. At the time of presentation, no patients were febrile, and seven endorsed gastrointestinal symptoms. Five COVID-19 patients eventually developed respiratory symptoms and required intubation. Two patients expired during the admission.
CONCLUSIONS: Patients with imaging findings suspicious for COVID-19 warrant prompt reverse transcription polymerase chain reaction (RT-PCR) testing even in low clinical suspicion cases. The prevalence of disease in the population may be underestimated by the current paradigm of RT-PCR testing with the current clinical criteria of lower respiratory symptoms and exposure risk.

CRITICAL CARE

THERAPEUTIC TEMPERATURE MODULATION FOR A CRITICALLY ILL PATIENT WITH COVID-19

BLUF

This case report presents a COVID-19 patient diagnosed by RT-PCR and admitted to the ICU at Seoul National University Bundang Hospital in South Korea on 5 March 2020 due to acute hypoxemic respiratory failure who subsequently developed shock and hyperpyrexia, likely due to cytokine storm. The case demonstrates that significant stabilization of body temperature and blood oxygenation can be achieved through external therapeutic temperature modulation (TTM) and subsequent reduction in metabolic stress (Figure 2). This case also suggests increased use of TTM in patients experiencing cytokine storm and hyperpyrexia due to COVID-19 can help avoid more aggressive interventions such as extracorporeal membrane oxygenation (ECMO).

ABSTRACT

We report a rapidly deteriorating coronavirus disease 2019 (COVID-19) patient, a-58-year-old woman, with severe acute respiratory distress syndrome and shock with hyperpyrexia up to 41.8 C, probably due to the cytokine storm syndrome. Considering extracorporeal membrane oxygenation (ECMO) as the last resort, we applied therapeutic temperature modulation for management of hyperpyrexia. The patient demonstrated rapid improvement in oxygenation and shock after achieving normothermia, and fully recovered from COVID-19 three weeks later. Therapeutic temperature modulation may have successfully offloaded the failing cardiorespiratory system from metabolic cost and hyperinflammation induced by hyperpyrexia. The therapeutic temperature modulation can safely be applied in a specific group of patients with cytokine storm syndrome and hyperpyrexia, which may reduce the number of patients requiring ECMO in the global medical resource shortage.
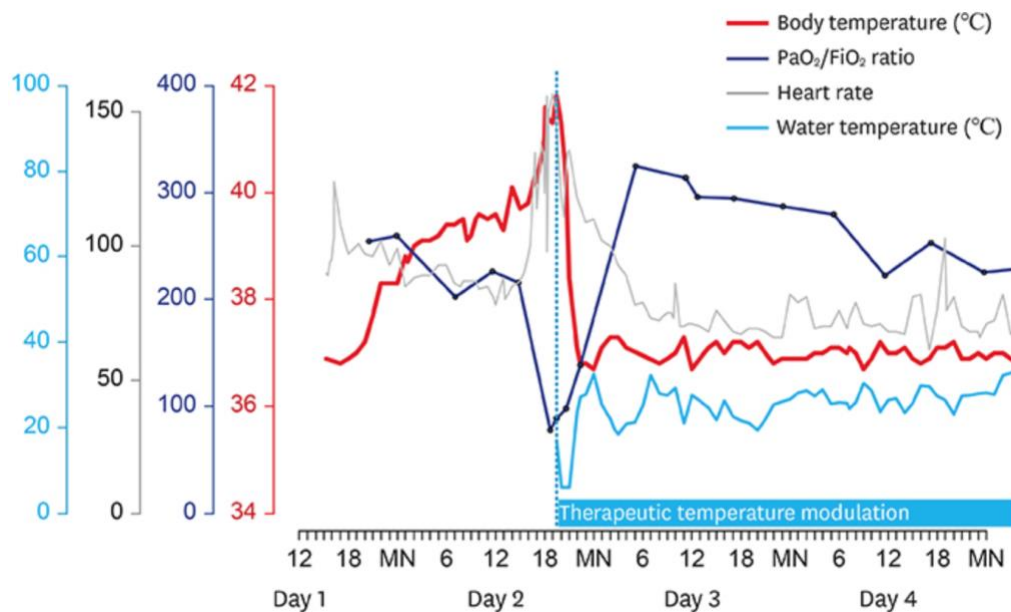
FIGURES

Figure 2. Body temperature, the ratio of partial pressure of arterial oxygen and fraction of inspired oxygen (PaO2/FiO2), and heart rate during hyperpyrexia with subsequent changes indicating the effect of therapeutic temperature modulation.

PROSTHETIC AORTIC VALVE ENDOCARDITIS COMPLICATED BY COVID-19 AND HEMORRHAGE

BLUF

A 69 year old woman initially admitted for prosthetic valve endocarditis was found to be COVID-19 positive later in her hospital course, required intubation and ultimately died. The authors indicate this case report highlights the importance of a team-centered approach to high risk cardiac cases during the COVID-19 pandemic.

SUMMARY

A 69 year old woman with a history of porcine aortic valve replacement presented on March 17th, 2020 to the Emergency Department with complaints of a one week history of a cough and fever. The patient was initially diagnosed with infectious endocarditis and had a negative RT-PCR for COVID-19. Initial management included antibiotics, pending transfer for surgery. Repeat testing was performed when the patient arrived to the cardiac surgery center, at which point the patient was positive for COVID-19 via RT-PCR and the CT scan of the chest showed bilateral reticular enhancement of the lung parenchyma. The decision was made to postpone surgery because of radiographic findings. Unfortunately, the patient required intubation 9 days after her first positive RT-PCR. The patient deteriorated with multiple conditions, including gastrointestinal bleed, atrial fibrillation, multiorgan failure, and an intracerebral hematoma. Despite appropriate management for her complications, the patient died.

ABSTRACT

The novel coronavirus, now termed SARS-CoV-2, has caused a significant global impact in the space of 4 months. Almost all elective cardiac surgical operations have been postponed with only urgent and emergency operations being considered in order to maximise resource utilisation. We present a case of a 69-year old lady with an infected prosthetic aortic valve for consideration of urgent inpatient surgery. Despite being asymptomatic and testing negative initially for COVID-19 RT-PCR swab, further investigations with CT revealed suspicious findings. She subsequently tested positive on a repeat swab and unfortunately deteriorated rapidly with complications including gastro-intestinal and intracerebral haemorrhage.

SURGICAL SUBSPECIALTIES

TRANSPLANT SURGERY

WHAT SOLID ORGAN TRANSPLANT HEALTHCARE PROVIDERS SHOULD KNOW ABOUT RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM INHIBITORS AND COVID-19

BLUF

This review from the Departments of Surgery and Medicine at Stanford University discussed the topic of renin angiotensin aldosterone system (RAAS) inhibitors (ace inhibitors {ACEIs} and angiotensin renin blockers {ARBs}) and their potential to increase infection with SARS-CoV-2. They detail the RAAS cascade and how SARS-CoV-2 enters cells via ACE2 receptors (Figure 2). Finally, they conclude that there is no compelling indication to discontinue RAAS inhibitors in COVID-19 positive solid organ transplant recipients at this time and they cautiously support the continuation of ACEIs and ARBs in this population. However, the authors note these recommendations are limited by the research that is presently available on this topic.

ABSTRACT

The data on the outcomes of solid organ transplant recipients who have contracted coronavirus disease 2019 (COVID-19) are still emerging. Kidney transplant recipients are commonly prescribed renin-angiotensin-aldosterone system (AAS) inhibitors given the prevalence of hypertension, diabetes, and cardiovascular disease. As the angiotensin-converting enzyme 2 (ACE2) facilitates the entry of coronaviruses into target cells, there have been hypotheses that preexisting use of Renin-Angiotensin-Aldosterone System (RAAS) inhibitors may increase the risk of developing severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Given the common use of RAAS inhibitors among solid organ transplant recipients, we sought to review the RAAS cascade, the mechanism of SARS-CoV-2 entry, and pertinent data related to the effect of RAAS inhibitors on ACE2 to guide management of solid organ transplant recipients during the COVID-19 pandemic. At present there is no clear evidence to support the discontinuation of RAAS inhibitors in solid organ transplant recipients during the COVID-19 pandemic.
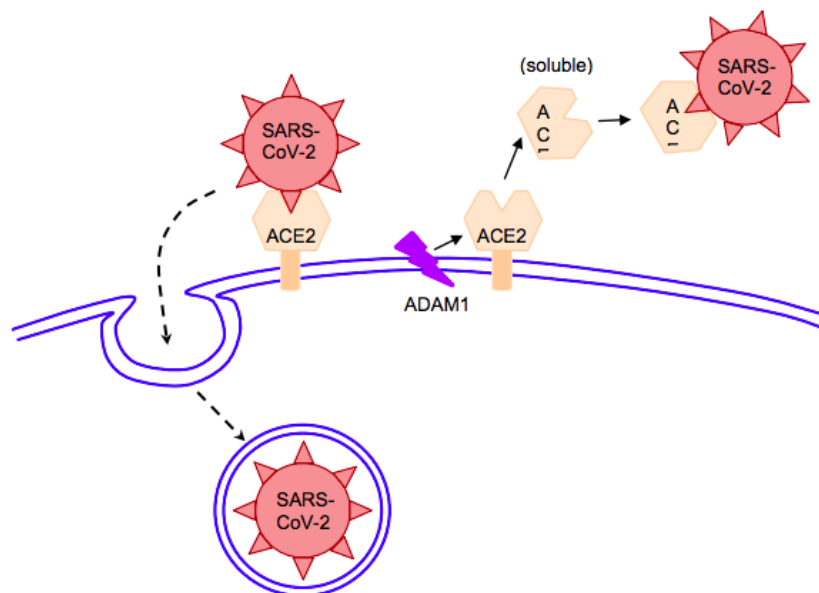
FIGURES

Figure 2. (LEFT) Membrane-bound ACE2 is required to facilitate cellular entry of SARS-CoV-2. (RIGHT) When cleaved by ADAM17, ACE2 is released extracellularly. The soluble form of ACE2 is shown to prevent SAR-CoV-2 entry in preclinical experiments.

ADJUSTING PRACTICE DURING COVID-19

DEAFNESS AND MENTAL HEALTH: CLINICAL CHALLENGES DURING THE COVID-19 PANDEMIC

BLUF

An expert at the Biocruces Bizkaia Health Research in Barakaldo, Spain Institute proposes greater consideration for deaf patients especially in regards to their mental health during the COVID-19 pandemic.

SUMMARY

The authors discuss access to telemedicine during the COVID-19 pandemic and discuss how the isolation imposed by quarantine is adversely affecting the mental health of deaf patients, who do not benefit from telemedicine in the same way as non deaf patients. The authors worry that the isolation and quarantine will further exacerbate the lack of access to health services experienced by deaf patients. They suggest that even small changes that take into account deaf patients such as increased sign-language interpreters in telehealth visits would benefit deaf communities while certain necessary policies such as wearing a mask (thereby preventing lip reading) may pose a currently insurmountable barrier.

ABSTRACT

The current health crisis scenario has exposed the negative impact on mental health. This commentary highlights the main challenges and barriers that the Deaf community faces in access to health care resources and psychological support during the COVID-19 pandemic.

FOR HEALTHCARE PROFESSIONALS

IMPACT OF CORONAVIRUS PANDEMIC IN APPOINTMENTS AND ANXIETY/CONCERNS OF PATIENTS REGARDING ORTHODONTIC TREATMENT

BLUF

An anonymous online survey completed by 354 orthodontic patients in the states of São Paulo and Rondônia, Brazil found that the majority of patients are following quarantine guidelines and that patients who have fear or anxiety surrounding the COVID-19 pandemic are less willing to be treated during the pandemic. Orthodontists should ensure proper PPE and hand sanitizer for staff and patients to alleviate some of this anxiety.

SUMMARY

An anonymous online survey completed by 354 orthodontics patients in the states of São Paulo and Rondônia, Brazil evaluated their concerns and anxiety level regarding the COVID-19 pandemic and their orthodontia treatment. 91.2% of survey participants are either not leaving their home or only going out when needed. 26.8% reported fear or panic about the COVID-19 pandemic, with women reporting higher levels of anxiety than men. The greatest concerns regarding orthodontic treatment were a delay in the end of their treatment (48.3%) and breakage of their brackets worsening their dental problems (13.3%). 60.2% of patients would attend an appointment if the dentist called to schedule one, and there was a significant correlation between level of anxiety and unwillingness to attend an appointment as seen in Table 4. These findings indicate that orthodontic patients who feel anxiety regarding the COVID-19 pandemic or fear delays/problems with their orthodontic treatment may be less willing to be treated during the pandemic. Ensuring proper PPE and hand sanitizer for staff and patients may help alleviate some of their anxiety in the orthodontist's office.

ABSTRACT

OBJECTIVE: To evaluate the impact of the coronavirus pandemic and the quarantine in orthodontic appointments, and patients' anxiety and concerns about their ongoing orthodontic treatment. Settings and sample population Patients from private dental clinics of two orthodontists that were undergoing active orthodontic treatment.

MATERIAL AND METHODS: An online anonymous questionnaire regarding their anxiety about the coronavirus situation, availability/acceptance to attend an appointment, among others, was answered by orthodontic patients. Descriptive statistics with percentages was performed and responses were compared between sexes, cities, and association of the feelings/level of anxiety of patients and willingness to attend an appointment, were performed with chi-square, independent t-test, one-way ANOVA and Tukey tests.

RESULTS: The questionnaire was answered by 354 patients (231 female; 123 male) with mean age of 35.49 years. Most patients are respecting the quarantine, 44.7% related to be calm and 46.3% afraid or anxious. The level of anxiety was greater for females than males. There was significant association of the level of anxiety and the willingness to attend an appointment. The greatest concern of patients was delay in the end of treatment.

CONCLUSION: The quarantine and coronavirus pandemic showed to have impact on orthodontic appointments and patients' anxiety. Patients willing to attend an orthodontic appointment presented significantly lower level of anxiety than patients that would not go or would go only in urgency/emergency. Females were more anxious than males about coronavirus pandemic, quarantine and impact on their orthodontic treatments. Delay in treatment was the greatest concern of patients undergoing orthodontic treatment.

FIGURES

Levels of anxiety	Do not leave home N (%)	Stay home as much as possible N (%)	Go out normally N (%)	P
Level of anxiety / coronavirus	Mean (s.d.) 5.28 (2.37)[a]	Mean (s.d.) 5.17 (2.41)[a]	Mean (s.d.) 2.87 (1.61)[b]	P=0.000*
Level of anxiety / impact on orthodontic treatment	Mean (s.d.) 4.30 (2.34)[a]	Mean (s.d.) 4.21 (2.34)[a]	Mean (s.d.) 2.10 (1.37)[b]	P=0.000*

* Statistically significant for $P<0.05$

Different lowercase letters in the same row indicates the presence of a statistically significant difference.

Table 4: Results of the comparison of the observance of quarantine measures and the anxiety about the coronavirus pandemic and impact on orthodontic treatment (one-way ANOVA and Tukey tests).

DECISION SUPPORT TOOL AND SUGGESTIONS FOR THE DEVELOPMENT OF GUIDELINES FOR THE HELICOPTER TRANSPORT OF PATIENTS WITH COVID-19

Bredmose PP, Diczbalis M, Butterfield E, Habig K, Pearce A, Osbakk SA, Voipio V, Rudolph M, Maddock A, O'Neill J.. Scand J Trauma Resusc Emerg Med. 2020 May 25;28(1):43. doi: 10.1186/s13049-020-00736-7.
Level of Evidence: Other -

BLUF

A systematic review conducted by the authors yielded one result related to the proper aeromedical transport patients with known or suspected COVID-19. The resultant article served as the basis for a decision-making framework for emergency services that transport COVID-19 patients, focusing on infection control strategies and decisions at the referring hospital, in flight, at mission control, and in the community.

SUMMARY

Infection control strategies
- Personal protective equipment (PPE): Ensure appropriate supply of PPE to maintain service delivery, and verify that staff are trained in donning and doffing to avoid contamination. Aerosol-level PPE may be incompatible with rotary flight PPE, and alternatives may be necessary. No specific recommendations are made on the level of PPE appropriate for patient transfer.
- Reducing exposure to people: At the pilot's discretion, crew members may be omitted from flights to reduce the number of personnel involved.
- Reducing exposure to equipment: Contact with equipment should be minimized to limit contamination and avoid extensive decontamination measures.

Key decisions: at the referring hospital
- Route: Minimize cross-contamination by coordinating with the hospital on arrival time, transit in the hospital, and use of hospital PPE.
- Intubation: Reduce the risk of potential aerosolization of particles, and minimize the number of personnel and PPE required.
- Packaging: Reduce patients' infectivity potential by disinfecting as needed.
- Ground handling: Minimize the staff responsible for handling the patient. Transport patients to the intensive care units immediately from the helipad as necessary.

Key decisions: in flight
- Non-intubated patients: Ask patients to assist in disinfecting their hands to minimize surface contamination.
- Intubated patients: Ensure patients are under appropriate sedation and muscle relaxation to prevent coughing. Maintain airway connections.

Key decisions: at mission control
- Waste disposal planning: Appropriately sort contaminated waste from non-contaminated waste. Safely doff contaminated PPE.
- Decontamination: Clean and disinfect surfaces immediately. Decontaminate the cabin before doffing PPE. Cleaning procedures may vary.

Key decisions: in the community
- Accidental exposure: HEMS crews should practice social isolation and appropriate hygienic practices. Keep an accurate log of those with COVID-19 exposure.
- Base living: Manage the risk of cross-infection amongst teams operating from the same base.

ABSTRACT

The novel coronavirus SARS-CoV2 emerged in December 2019 and is now pandemic. Initial analysis suggests that 5% of infected patients will require critical care, and that respiratory failure requiring intubation is associated with high mortality.Sick patients are geographically dispersed: most patients will remain in situ until they are in need of critical care. Additionally, there are likely to be patients who require retrieval for other reasons but who are co-incidentally infected with SARS-CoV-2 or shedding virus.The COVID-19 pandemic therefore poses a challenge to critical care retrieval systems, which often depend on small teams of specialists who live and work together closely. The infection or quarantining of a small absolute number of these staff could catastrophically compromise service delivery.Avoiding occupational exposure to COVID-19, and thereby ensuring service continuity, is the primary objective of aeromedical retrieval services during the pandemic. In this discussion paper we collaborated with helicopter emergency medical services(HEMS) worldwide to identify risks in retrieving COVID-19 patients, and develop strategies to mitigate these.Simulation involving the whole aeromedical retrieval team ensures that safety concerns can be addressed during the development of a standard operating procedure. Some services tested personal protective equipment and protocols in the aeromedical environment with simulation. We also incorporated experiences, standard operating procedures and approaches across several HEMS services internationally.As a result of this collaboration, we outline an approach to the safe aeromedical retrieval of a COVID-19 patient, and describe how this framework can be used to develop a local standard operating procedure.

INPATIENT MEDICINE

DOES THIS PATIENT HAVE COVID-19? A PRACTICAL GUIDE FOR THE INTERNIST

Bertolino L, Vitrone M, Durante-Mangoni E.. Intern Emerg Med. 2020 May 23. doi: 10.1007/s11739-020-02377-1. Online ahead of print.
Level of Evidence: Other -

BLUF

This review article from Italian authors focuses on the diagnosis of COVID-19 for internists in the outpatient and inpatient setting. The authors outline the most common presenting symptoms (Table 1) and recommend combining this information with severity of illness, travel or exposure, medical history, and medication list when considering SARS-CoV-2 testing in the outpatient setting. The authors suggest a treatment algorithm (Figure 1) for nasal swab testing for any patient with fever and new cough and/or dyspnea for management within the inpatient setting (Figure 1), noting that lymphopenia, hypoalbuminemia, elevated CRP and LDH, high ESR, and normal procalcitonin suggest COVID-19 infection.

ABSTRACT

Coronavirus disease 2019 (COVID-19) is currently causing a pandemic and will likely persist in endemic form in the foreseeable future. Physicians need to correctly approach this new disease, often representing a challenge in terms of differential diagnosis. Although COVID-19 lacks specific signs and symptoms, we believe internists should develop specific skills to recognize the disease, learning its 'semeiotic'. In this review article, we summarize the key clinical features that may guide in differentiating a COVID-19 case, requiring specific testing, from upper respiratory and/or influenza-like illnesses of other aetiology. We consider two different clinical settings, where availability of the different diagnostic strategies differs widely: outpatient and inpatient. Our reasoning highlights how challenging a balanced approach to a patient with fever and flu-like symptoms can be. At present, clinical workup of COVID-19 remains a hard task to accomplish. However, knowledge of the natural history of the disease may aid the internist in putting common and unspecific symptoms into the correct clinical context.
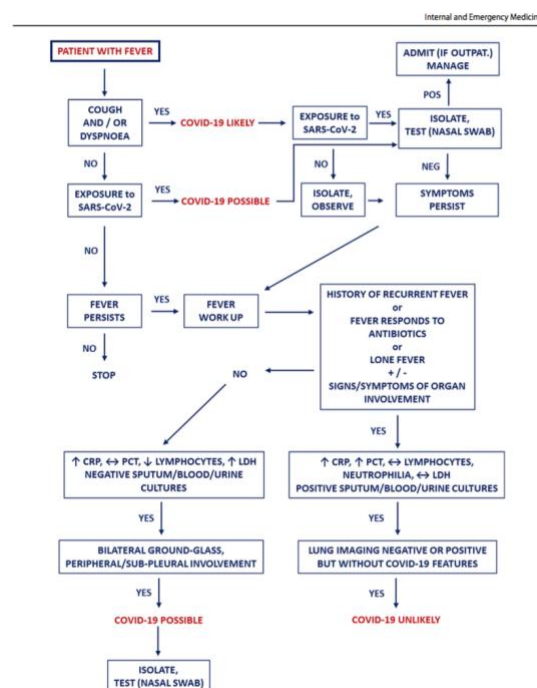
FIGURES

Fig. 1 Practical algorithm for the initial diagnostic approach to outpatients and inpatients with suspected COVID-19

	COVID-19	SARS	Influenza A (H1N1 2009)			Seasonal Influenza	Non-influenza ARI
			All	Community	Hospitalized		
Incubation period, days	4–14	2–10	1.4–4			1–5	1–5
Fever, %	75.6–98.6	99.3	84.7	81.8	85.8	94.3	87.5
Cough, %	69.6	69.4	84.9	83	81.2	85.5	65.5
Shortness of breath, %	45.6	41.7	31.2	14.8	51.6	9.8	8.6
Myalgia, %	31	49.3	58.1	59.5	23.6	76.3	72
Fatigue, %	38	NA	25.3	6.9	18.4	81.6	77.7
Headache, %	8	35.4	66.5	65.8	18.7	69	63
Rhinorrhea, %	4	22.5	60.1	59	25.7	76	55
Sore throat, %	1.7	12.5	49.5	51.4	29.9	63.5	61.3
Diarrhoea, %	6.3	23.6	13	11.2	14.5	15.3	17.2
Nausea and vomiting, %	5	19.4	19.9	22.2	11.3	41	29
Fatality rate, %	1.8–3.4	15	0.02			0.09	NA
Hospitalization rate, %	20.7–31.4	NA	8.2			1.38	NA
ICU admission, %	4.9–11.5	23.2	3.2–44			NA	NA
Median age, years	NA	39.3	18.1			28.9	31.27

NA not available

DERMATOLOGY

USE OF SYSTEMIC THERAPIES FOR PSORIASIS IN THE COVID-19 ERA

BLUF

Based on a review of guidelines published by various dermatological societies, these authors suggest management strategies for patients with psoriasis who require immunosuppressive therapy during the COVID-19 pandemic. While these medications should be halted in patients with active COVID-19 infections, the authors otherwise suggest adjusting treatment plans on cases by case basis, weighing the risk of COVID-19 infection against the risk of decreased psoriasis control with temporary immunosuppressive therapy discontinuation.

ABSTRACT

BACKGROUND: In late 2019 a viral pneumonia began to spread across the world. The viral disease, COVID-19, is now officially a pandemic, causing concern for the potential risk of systemic therapies for patients with psoriasis.
OBJECTIVE: The purpose of this review is to analyze what is currently known about COVID-19 in regard to the safety of systemic treatment, and to provide guidelines for use in psoriasis during this pandemic.
METHODS: Review of guidelines from various dermatologic regulatory bodies regarding the use of systemic medications during the COVID-19 pandemic was performed and summarized. RESULTS: The AAD,NPF and IPC are in agreement regarding their recommendation that patients with active COVID-19 infection should discontinue any biologic therapy.
CONCLUSION: Patients with active COVID-19 infections should discontinue systemic treatment for psoriasis. Patients with risk factors should discuss continuing treatment on a case by case basis.

CARDIOLOGY

ACUTE CORONARY SYNDROMES DURING COVID-19

BLUF

A guide written by physicians in Siena, Italy provides an algorithm (Figure 1) to follow for both protective measures for staff and therapeutic measures for patients in cases of acute coronary syndrome in light of the COVID-19 pandemic to help prevent the spread of SARS-CoV-2 among hospital populations.

SUMMARY

This article gives indications on how to properly handle acute coronary syndrome patients presenting as either STEMI, high risk NSTEMI and low or intermediate risk NSTEMI in regards to their COVID-19 status and how their presentation directs both PPE protocols and therapeutic protocols. In regards to therapeutic protocols, the authors state that "On arrival at the Cath lab, vital signs, with particular attention to body temperature and SaO2, should be measured. Furthermore, blood gas analysis and biological specimens (swab) collection for COVID-19 testing should be performed using the necessary PPE according to the severity of respiratory symptoms: (i) low COVID-19 risk, surgical mask; (ii) high COVID-19 risk, PPE with FFP2 or FFP3 mask, depending on the gravity of respiratory impairment. The percutaneous procedure should be performed following the standard protocols of the Centre." They additionally state that COVID-19 patients should be housed in COVID units, and patients with suspected COVID-19 should be isolated until test results prove otherwise. The author make special note of hospitalized COVID-19 patients presenting with STEMI indications stating that: "... the risk and benefits of a possible coronary revascularization should be assessed, evaluating the patient's clinical condition and comorbidities and the risk in transport to the Cath lab...Thrombolysis could be considered as an alternative to percutaneous coronary intervention; however, it should be considered that COVID-19 patients, especially those with severe conditions, are at high risk of haemorrhagic and disseminated intravascular coagulation."
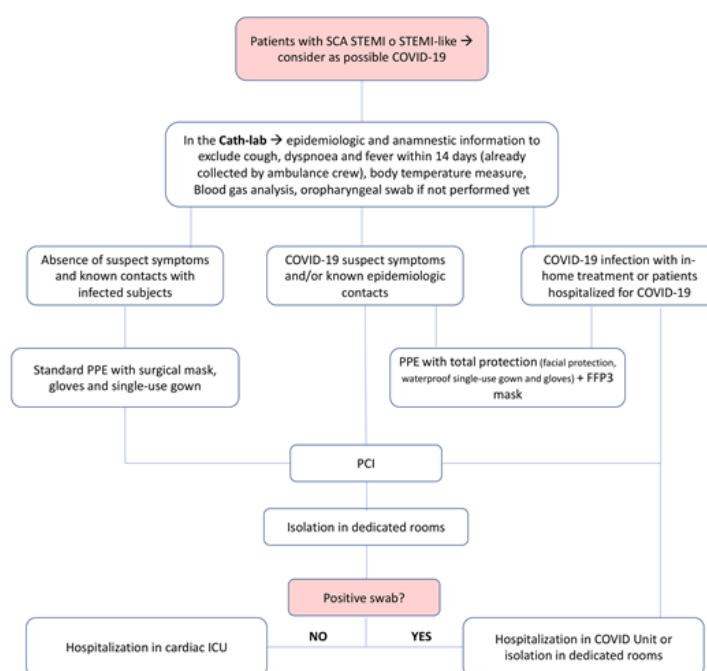
FIGURES

Figure 1: Algorithm for the management of patients presenting with high-risk acute coronary syndrome (ACS) at the time of COVID-19. ICU, intensive care unit; NSTEMI, non-ST-segment elevation myocardial infarction; PCI, percutaneous coronary angiography; PPE, personal protective equipment; STEMI, ST-segment elevation myocardial infarction.

HEMATOLOGY AND ONCOLOGY

CLINICAL RECOMMENDATIONS ON LUNG CANCER MANAGEMENT DURING THE COVID-19 PANDEMIC

BLUF

A study conducted in Beijing, China in 5/2020 by the Peking Union Medical College Hospital and Chinese Academy of Medical Sciences proposes clinical guidelines for surgeries, treatments, and prevention of SARS-CoV-2 in lung cancer patients. The authors emphasize individual management on a case by case basis and make the following recommendations:
1. Surgeries:

- Delay previously scheduled elective surgeries on pulmonary nodules or early stage lung cancer until pandemic conditions improve, in the meantime Telehealth services can be used to stay in communication.
- Patients undergoing surgery should utilize local hospitals to reduce travel.
- Emergence of symptoms consistent with COVID-19 should prompt 14 day quarantine and no surgery until that period is over.

2. Radiotherapy:
- Patients should stay where they are receiving therapy and avoid social contacts, minimize travel, and monitor daily vitals.

3. Targeted Therapy:
- Stable patients should maintain their current drug regimen, utilize Telehealth services whenever possible.
- Longer prescriptions may be written to minimize frequency of prescription filling.

4. Chemotherapy/Immunotherapy:
- Receive treatment at the closest local hospital or preferably outpatient clinic.
- All laboratory tests should be done outpatient to reduce duration of treatment.

ABSTRACT

Coronavirus disease 2019 (COVID-19) is spreading worldwide, and has been declared as an international public health concern. Patients with lung cancer are highly susceptible to infection compared to healthy individuals because of systemic immunosuppression induced by malignancy and anticancer therapy. Furthermore, patients with cancer demonstrate poorer outcomes following infection. Hence, patients with lung cancer should be considered a priority group for COVID-19 prevention. Furthermore, the routine treatment of patients with cancer has been affected during the COVID-19 pandemic, and patients may not have been able to undergo timely and effective antitumor treatment, thereby indicating a poor prognosis. Here, we provide some suggestions for early identification of COVID-19 and differential diagnosis in patients with lung cancer who have fever and respiratory symptoms. Our medical team also provide clinical recommendations on lung cancer management during the COVID-19 pandemic, for carrying out meticulous and individualized clinical management of lung cancer patients and maximum protection to effectively prevent COVID-19. KEY POINTS: Significant findings of the study This article provides suggestions for early identification of COVID-19 and differential diagnosis in patients with lung cancer with fever and respiratory symptoms. What this study adds This article makes clinical recommendations on lung cancer management during the COVID-19 pandemic.

NEPHROLOGY

RECOMMENDATIONS FOR THE MANAGEMENT OF PATIENTS WITH IMMUNE-MEDIATED KIDNEY DISEASE DURING THE SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 PANDEMIC

Anders HJ, Bruchfeld A, Fernandez Juarez GM, Floege J, Goumenos D, Turkmen K, van Kooten C, Tesar V, Segelmark M..

BLUF

The authors provide recommendations on behalf of the Immunonephrology Working Group of the European Renal Association - European Dialysis and Transplant Association to address the needs of patients with immune-mediated kidney disease as this demographic is particularly susceptible to COVID-19 (Table 1). The authors suggest individual risk assessment (Figure 1) to assist in decision making and outline key recommendations in Box 2.

ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic has created major challenges for all countries around the globe. Retrospective studies have identified hypertension, cardiovascular disease, diabetes and older age as risk factors for high morbidity and mortality from COVID-19. There is a general concern that patients with immune-mediated kidney diseases, namely those on immunosuppressive therapies and/or those with more advanced kidney failure, could particularly be at risk for adverse outcomes due to a compromised antiviral immunity. Uncertainties exist on how management routines should be reorganized to minimize the risk of severe acute respiratory syndrome coronavirus 2 infection and what measures are necessary for infected patients. The aim of the present review of the Immunonephrology Working Group of the European

Renal Association-European Dialysis and Transplant Association is to provide recommendations for the management of patients with immune-mediated kidney diseases based on the available evidence, similar circumstances with other infectious organisms and expert opinions from across Europe. Such recommendations may help to minimize the risk of encountering COVID-19 or developing complications during COVID-19 in patients with immune-mediated kidney disease.
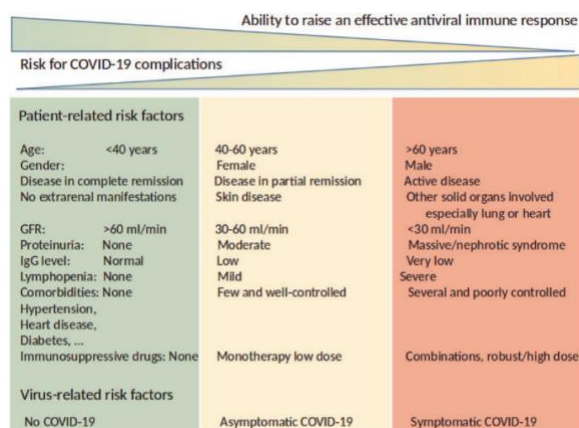
FIGURES

Table 1. Some of the concerns regarding COVID-19 in patients with immune-mediated kidney disease

- Accessibility to necessary care and drugs during the pandemic
- Closed or limited outpatient or inpatient services for non-emergency visits
- Shortage of maintenance therapy (e.g. hydroxychloroquine for lupus nephritis) or prophylactic drugs (e.g. co-trimoxazole)
  Susceptibility to infection
- Physical distancing difficult to maintain in certain household constellations or workplace settings
- Exposure to the contagion during follow-up visits (travel, waiting area, hospital staff)
  Worse prognosis once infected
- CKD-related immunodeficiency unable to mount the necessary humoral and cellular antiviral immunity
- Nephrotic syndrome–related hypogammaglobulinaemia compromising humoral antiviral immunity
- Therapy-related immunosuppression compromising the necessary humoral and cellular antiviral immunity
- Known risk factors for poor outcomes: hypertension, cardiovascular disease and kidney disease

Box 2. Some of the key recommendations for the management of patients with immune-mediated kidney disease

1. General recommendations on hygiene, physical distancing, safe transfers and masks.
2. Replace physical patient visits with telemedicine options to ensure the necessary care.
3. Individual risk stratification depends on COVID-19 status, age, gender, comorbidities, type of kidney disease, CKD stage, immunosuppressive drugs (yes or no), which drugs,. . . .
4. Do not generally stop or postpone maintenance treatments in patients without COVID-19 without an individual risk–benefit assessment.
5. Perform individual risk–benefit assessments for necessity of hospital visits and diagnostic procedures, including kidney biopsy, depending on the acuity of the disease process and therapeutic consequences.
6. Consider COVID-19 when patients present with a 'flare'.
7. Perform individual risk–benefit assessments in terms of starting, continuing or stopping immunosuppressive drugs.
8. Be aware of the psychosocial implications of the pandemic on patients.
9. Patients with COVID-19 may benefit from hospitalization, adjusting their immunosuppressive therapy, stress-dose hydrocortisone, monitoring of drug levels and dose adjustments according to excretory kidney function.

Ability to raise an effective antiviral immune response

Risk for COVID-19 complications

Patient-related risk factors		
Age: <40 years	40-60 years	>60 years
Gender:	Female	Male
Disease in complete remission	Disease in partial remission	Active disease
No extrarenal manifestations	Skin disease	Other solid organs involved especially lung or heart
GFR: >60 ml/min	30-60 ml/min	<30 ml/min
Proteinuria: None	Moderate	Massive/nephrotic syndrome
IgG level: Normal	Low	Very low
Lymphopenia: None	Mild	Severe
Comorbidities: None	Few and well-controlled	Several and poorly controlled
Hypertension, Heart disease, Diabetes, …		
Immunosuppressive drugs: None	Monotherapy low dose	Combinations, robust/high dose
Virus-related risk factors		
No COVID-19	Asymptomatic COVID-19	Symptomatic COVID-19

A STRUCTURED APPROACH FOR SAFELY REINTRODUCING BARIATRIC SURGERY IN A COVID-19 ENVIRONMENT

BLUF

A qualitative study conducted in Ohio during May of 2020 by the Cleveland Clinic sought to create a protocol for the triage of bariatric surgery to increase safety and decrease transmission of COVID-19 and help reintroduce non-urgent surgery. The proposed protocol makes the following recommendations:

- Stratify surgery candidates based on risks that are divided into Tier 1, Tier 2, and Tier 3 (Table 1).
- Start cases in the lowest risk group (Tier 1) to minimize time spent in recovery and minimize transmission of COVID-19.
- Lower patient volume to ensure adequate safety analysis and prepare for unknown risks.
- Provide COVID-19 testing for all patients close to surgery with quarantine regulations. If positive then proceed with chest CT.
- Continuously monitor and analyze real-time data and use outpatient-based postoperative care (virtual or in-person).

Although the authors have not put this protocol into place at the time of writing they believe, "The core principles of this protocol can be applied to any surgical specialty."

ABSTRACT

Due to the profound effect of novel coronavirus disease 2019 (COVID-19) on healthcare systems, surgical programs across the country have paused surgical operations and have been utilizing virtual visits to help maintain public safety. For those who treat obesity, the importance of bariatric surgery has never been more clear. Emerging studies continue to identify obesity and several other obesity-related comorbid conditions as major risk factors for a more severe COVID-19 disease course. However, this also suggests that patients seeking bariatric surgery are inherently at risk of suffering severe complications if they were to contract COVID-19 in the perioperative period. The aim of this protocol is to utilize careful analysis of existing risk stratification for bariatric patients, novel COVID-19-related data, and consensus opinion from multiple academic bariatric centers within our organization to help guide the reanimation of our programs when appropriate and to use this template to prospectively study this risk-stratified population in real time. The core principles of this protocol can be applied to any surgical specialty.

Condition	Tier 1	Tier 2	Tier 3
	Low risk	Intermediate risk	High risk
	Must meet all conditions below	If not considered as tier 1 and tier 3 Other eligibility criteria are listed below	If meets any of these conditions below
Type of surgery	Primary bariatric procedure without other major concurrent procedures	Lower risk revisional procedures: - Conversion of gastric band or sleeve to other procedures	- Revisional surgery in patients with prior open bariatric surgery - Conversion of VBG to other procedures - Concurrent procedures such as paraesophageal hernia repair - Procedures with higher than average risk for conversion to open surgery, blood transfusion, and prolonged length of stay (e.g., hostile abdomen)
Suggested age cutoff	< 60 years		≥ 60 years
Suggested BMI cutoff	< 55 kg/m^2		≥ 55 kg/m^2
ASA class	No ASA class 4		
Mobility	No mobility restriction		
Diabetes	No diabetes or controlled type 2 diabetes	- Poorly controlled diabetic (HbA1c > 8%) - Need for high-dose insulin - Type 1 diabetes	
Hypertension	No hypertension or controlled (< 140/90 mmHg) with one or two antihypertensive agents		
Cardiac disease	No underlying heart disease	Stable heart disease: - Stable coronary artery disease - Controlled atrial fibrillation or other arrhythmias	Significant history of heart disease: - Previous myocardial infarction - Heart failure - Ejection fraction < 40% - Previous cardiac stents requiring continuing perioperative antiplatelet medications
Lung disease	No underlying lung disease	Mildly impaired pulmonary function tests (FEV1 ≥ 80% predicted value)	- Moderately or severely impaired pulmonary function tests (FEV1 < 80% of predicted value) - Need for home oxygen
Obstructive sleep apnea	No severe OSA (AHI ≥ 30)		
Renal disease	No CKD stage 3, 4, or 5		On dialysis
Liver disease			Cirrhosis ± portal hypertension
Immunosuppression including steroids	Not on immunosuppressive medications		On immunosuppressive medications
Anticoagulant	Not on anticoagulant		
Cleveland clinic cases to be scheduled (N = 98)*			
N (%)	38 (39%)	24 (25%)	36 (37%)
Age (years), mean ± SD	41.1 ± 8.4	48.3 ± 7.9	54.5 ± 12.0
BMI (kg/m^2), mean ± SD	44.4 ± 4.4	43.3 ± 5.1	49.0 ± 10.1
Bariatric procedures			
SG	15	5	19
RYGB	23	15	14
DS	0	1	0
SG to RYGB	0	3	0
RYGB and HHR	0	0	2
Open reversal of RYGB	0	0	1

AHI apnea hypopnea index, *ASA* American Society of Anesthesiologists, *BMI* body mass index, *CKD* chronic kidney disease, *DS* duodenal switch, *FEV1* forced expiratory volume in 1 s, *HbA1c* glycated hemoglobin, *HHR* hiatal hernia repair, *OSA* obstructive sleep apnea, *RYGB* Roux-en-Y gastric bypass, *SG* sleeve gastrectomy, *VBG* vertical banded gastroplasty

Table 1: Risk stratification for reintroducing bariatric surgery after the peak of COVID-19 at the Cleveland Clinic

THORACIC SURGERY

TRANSCATHETER AORTIC VALVE REPLACEMENT IN THE CORONAVIRUS DISEASE 2019 (COVID-19) ERA

BLUF

An opinion piece written by two cardiologists from academic medical centers in the US notes that many cardiac surgeries, namely transcatheter aortic valve replacement (TAVR), have been put on hold over the past several months due to the threat of COVID-19 infection and the burdens it has put on the hospitals and health care personnel. They recommend that decisions to delay surgeries should be made on a case-by-case basis, and suggest using their algorithm (Figure 1) to help hospitals and practices decide which patients qualify for emergent care and which surgeries can be delayed.
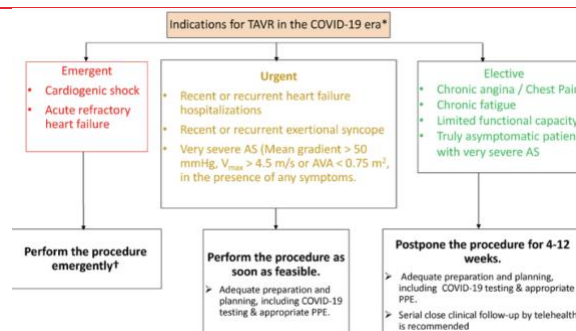
FIGURES

Figure 1. Proposed algorithm for timing of a planned transcatheter aortic valve replacement (TAVR) procedure.
*In case the patient has a severe illness attributable to coronavirus disease 2019 (COVID-19) or other noncardiac conditions, and if no COVID-19 personal protective equipment (PPE) is available in a patient with a definite infection, the heart team and

the hospital ethics committee should carefully deliberate the futility and safety of the TAVR procedure, while engaging the patient and family in a process of shared decision making. †As COVID-19 testing is usually not feasible given an emergency situation; all COVID-19 PPE and precautions should be taken, assuming the patient has COVID-19. AS indicates aortic stenosis; AVA, aortic valve area; and Vmax, maximum transvalvular flow velocity.

COVID-19 TARGET: A SPECIFIC TARGET FOR NOVEL CORONAVIRUS DETECTION

BLUF

Authors in Iran use comparative genomic analysis to identify a gene, ORF8 (Figure 1), that could be used as a potential target for reverse transcription polymerase chain reaction (RT-PCR) to detect COVID-19 as it is specific to bat SARS-like coronaviruses and can be isolated to COVID-19 with specific primers created for this study (Table 1). This may confer more accurate testing for COVID-19 as the current genes used to identify SARS-CoV-2 (Table 2) have overlapping sequences with other coronaviruses and may produce false positive results.

ABSTRACT

An ongoing outbreak of pneumonia associated with a novel coronavirus has been reported worldwide and become a global health problem; hence, the diagnosis and differentiation of this virus from other types of coronavirus is essential to control of the disease. To this end, the analysis of genomics data plays a vital role in introducing a stronger target and consequently provides better results in laboratory examinations. The modified comparative genomics approach helps us to find novel specific targets by comparing two or more sequences on the nucleotide collection database. We, for the first time, detected ORF8 gene as a potential target for the detection of the novel coronavirus. Unlike previous reported genes (RdRP, E and N genes), ORF8 is entirely specific to the novel coronavirus (COVID-19) and has no cross-reactivity with other kinds of coronavirus. Accordingly, ORF8 gene can be used as an additional confirmatory assay.
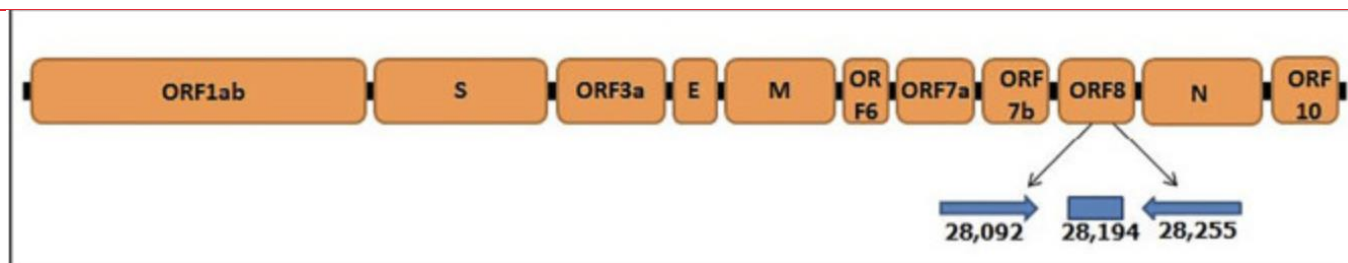
FIGURES

Figure 1: The position of ORF8 target, primer, and probe on Wuhan-CoV genome.

Table 1

Sequences and other character of designed primers and probe in this study.

Assay/use	Oligonucleotides	Sequence (5′- > 3′)	Length	Tm	GC%	product length
ORF8	K_COV-F1	TCTAAATCACCCATTCAGTACATC	24	56.26	37.50	164 bp
	K_COV-R1	ATGAAATCTAAAACAACACGAACG	24	56.79	33.33	
	K_COV-P1	CGTTGTTCGTTCTATGARGACTT	23	57.18	39.13	–

Table 2

Reported probes for detection of COVID-19 (Corman et al., 2020a; Corman et al., 2020b).

Assay/use	Oligonucleotide ID	Sequence (5′–3′)
RdRP gene	RdRP_SARSr-P2	CAGGTGGAACCTCATCAGGAGATGC
	RdRP_SARSr-P1	CCAGGTGGWACRTCATCMGGTGATGC
E gene	E_Sarbeco_P1	ACACTAGCCATCCTTACTGCGCTTCG
N gene	N_Sarbeco_P1	ACTTCCTCAAGGAACAACATTGCCA

COVID-19 UNDER SPOTLIGHT: A CLOSE LOOK AT THE ORIGIN, TRANSMISSION, DIAGNOSIS, AND TREATMENT OF THE 2019-NCOV DISEASE

Sheervalilou R, Shirvaliloo M, Dadashzadeh N, Shirvalilou S, Shahraki O, Pilehvar-Soltanahmadi Y, Ghaznavi H, Khoei S, Nazarlou Z.. J Cell Physiol. 2020 May 26. doi: 10.1002/jcp.29735. Online ahead of print.
Level of Evidence: Other -

BLUF

A review conducted in Iran reports on the current knowledge on the COVID-19 pandemic, including, but not limited to, the following topics:

Pathogenesis: basic pathology to infection and involvement of multiple organs and systems, such as the respiratory system (the progressive course of radiological findings in COVID-19 associated pneumonia), immune system (cytokine storm, IL-6 as a potential biomarker, etc), liver (possible mechanisms for tissue damage) and myocardial, gastrointestinal, and renal symptoms (related to disrupted role of ACE2 in electrolyte homeostasis, leading to associated hypokalemia)

Factors possibly correlate with COVID-19: specifically discussing COVID-19 in men vs. women, pregnancy, and in specific blood types

Sources and mode of transmission: origin of the virus, transmission from human to human, and asymptomatic carrier-based transmission of COVID-19

Diagnosis: specific criteria for diagnosis, including clinical signs/symptoms, history of traveling or exposure, positive test result for COVID-19 with RT-PCT, and findings on CT imaging (with possibility for AI-based technology to analyze radiological characteristics of COVID-19)

Prediction: predictions based on different reports' findings, including COVID-19 RNA load correlating to prognosis and cytokine release storm and serum markers for disease severity (IL-6 and RNAemia)

Therapy: 2020 studies on treatment of COVID-19 and therapeutic options including chloroquine phosphate, lopinavir/ritonavir, leronlimab, galidesivir, RAAS inhibitors, combination therapy

Other future therapeutic options: convalescent blood therapy, mesenchymal stem cell therapy, nano drug delivery systems, psychological interventions

Patients recovered from COVID-19: criteria for discharge of a patient recovered from COVID-19, including being afebrile for 3 consecutive days, remission of respiratory distress, regression of CT findings, and 2 consecutive negative RT-PCR screenings performed 1 day apart

ABSTRACT

Months after the outbreak of a new flu-like disease in China, the entire world is now in a state of caution. The subsequent less-anticipated propagation of the novel coronavirus disease, formally known as COVID-19, not only made it to headlines by an overwhelmingly high transmission rate and fatality reports, but also raised an alarm for the medical community all around the globe. Since the causative agent, SARS-CoV-2, is a recently discovered species, there is no specific medicine for downright treatment of the infection. This has led to an unprecedented societal fear of the newly born disease, adding a psychological aspect to the physical manifestation of the virus. Herein, the COVID-19 structure, epidemiology, pathogenesis, etiology, diagnosis, and therapy have been reviewed.
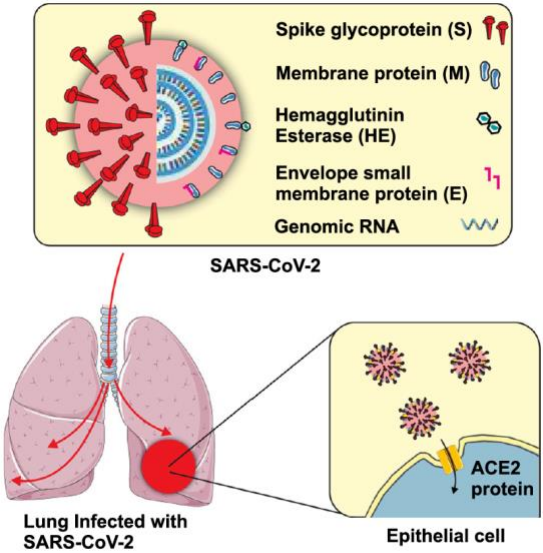
FIGURE 1   Presents a schematic of viral structure and the entry mechanism of SARS-CoV-2

Figure 1. Presents a schematic of viral structure and the entry mechanism of SARS-CoV-2

ACKNOWLEDGEMENTS