Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

rate 109 per minute, oxygen saturation 90 %. The chest CT Scan showed multiple ground-glass opacities and the serological antibodies tests against SARS-COV-2 were found positive for immunoglobulin M (IgM) and immunoglobulin G (IgG), confirming the diagnosis of COVID-19.
Discussion: Various medical conditions may mimic uncontrolled asthma. Patients unresponsive to asthma treatment should be evaluated for the presence of an asthma mimic, in this case COVID-19 infection. A chest CT Scan should be performed on the patient with serological virus specific IgG and IgM antibodies against SARS-COV-2 to diagnosis COVID-19 despite the negativity of the RT-PCR assay. This case highlights the complexity and the multifaceted presentation of coronavirus disease 2019 (COVID-19).

M409

ELECTRONIC CIGARETTE OR VAPING PRODUCT USE-ASSOCIATED LUNG INJURY AMIDST THE COVID-19 PANDEMIC

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Introduction: Electronic cigarette or vaping product use-associated lung injury (EVALI) is currently a diagnosis of exclusion. Given the pro-inflammatory and partly immune-mediated pathogenesis, EVALI and SARS-CoV-2 infection share several clinical features, potentially posing a diagnostic challenge.
Case Description: A 24-year-old man without significant medical history presented with fever, worsening cough, dyspnea, vomiting and diarrhea during a local peak of COVID-19 cases. He required 10 liters of supplemental oxygen due to hypoxemic respiratory failure. Laboratory workup revealed: leukocytosis (ANC 15,200 cells/microliter), elevated ESR/CRP, ferritin-1030 ng/mL, d-dimer-791 ng/mL, procalcitonin-0.8 ng/mL, mild transaminitis, elevated IL-6 (173 pg/mL). Six nasopharyngeal PCR assays did not detect SARS-CoV-2 (2 prior to admission). Chest computed tomography delineated diffuse patchy ground glass opacities with shotty mediastinal and hilar lymphadenopathy. The working diagnosis was COVID-19 disease, however the patient subsequently admitted to frequent vaping of cannabis and THC-oils. He clinically improved after receiving antibiotics and steroids for treatment of EVALI.
Discussion: Similar to COVID-19, EVALI has a broad spectrum of pulmonary findings and may be accompanied by gastrointestinal or constitutional manifestations, elevated inflammatory markers and non-specific imaging. Leukocytosis with neutrophilic predominance is found in EVALI. The proposed immunopathology of lung damage in EVALI is via a cytokine cascade of IL-1, IL-6, and IL-13. COVID-19 may portend a detrimental cytokine storm syndrome. Elevated peripheral IL-6 levels can be detected in both diseases; this patient had a markedly elevated level suggesting a cytokine storm-like picture. The overall features of this case suggested EVALI, illustrating the importance of its consideration in the differential diagnosis of SARS-CoV-2 infection.

M410

COVID-19 INFECTION IN A PATIENT WITH SECONDARY HYPOGAMMAGLOBULINEMIA

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Introduction: We present a case of a 51-year-old male with hypogammaglobulinemia and COVID-19 infection.
Case Description: A 51-year-old male with hypogammaglobulinemia secondary to a history of diffuse large B-cell lymphoma treated with R-CHOP, presented to the ED after 3 weeks of fevers, myalgias and dyspnea in the setting of known COVID-19 infection. Labs revealed low IgG (despite IVIg infusion 3 days prior), elevated D-dimer, CRP, and a low lymphocyte count which was normal 1 month prior. Chest x-ray showed hazy bilateral opacities concerning for atypical or viral pneumonia. On admission he required supplemental oxygen. He received IVIg (500 mg/kg), was started on therapeutic anticoagulation and enrolled into a clinical trial, which randomized giving hydroxychloroquine versus placebo. Throughout his hospital course he received convalescent plasma and two doses of methylprednisolone, meanwhile his oxygen requirements remained high. On day 12 of admission, he was found with abdominal pain and severe hypotension, and an abdominal/pelvic CT revealed a new retroperitoneal bleed. He required intubation, ICU-level care, initiation of vasopressors and a massive transfusion protocol. Despite these measures, he rapidly decompensated approximately 45 days after initial diagnosis and died.
Discussion: Fill et al hypothesized a cell-mediated response as being more important than a humoral response. Maybe our patient's earlier history of malignancy, specifically having developed DLCBL, disrupted his T-cell response beyond ability in fighting against COVID-19. Additionally, the benefits of the treatments he received have not yet been fully demonstrated. As further studies and understanding emerges, hopefully more answers will be provided.

M411

ACTIVE TUBERCULOSIS (TB) MASQUERADING AS AN ASTHMA EXACERBATION DURING A SARS-COV-2 (COVID 19) PANDEMIC

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Introduction: TB rarely presents as asthma. Clinical symptoms of COVID-19 and asthma can mask a diagnosis of TB.
Case Description: A sixty-year old male presented to the allergy clinic in the spring of 2019 complaining of nasal congestion and cough associated with shortness of breath. Skin prick testing confirmed tree pollen allergy. The patient was treated for seasonal asthma and allergic rhinitis with nasal fluticasone spray, montelukast and inhaled albuterol. His symptoms improved, and he did well until this spring, when he contacted us with similar complaints without fever. Patient was evaluated at a televisit, medications were renewed and he was referred for COVID 19 testing which was negative. Since cough and shortness of breath persisted he was prescribed prednisone for a possible asthma exacerbation and amoxicillin for sinusitis. The patient did not improve and was seen in person. He was diaphoretic but not febrile or hypoxic. Twenty pounds of unintentional weight loss was recorded, the rest of exam was not contributory. Chest X-ray revealed bilateral pneumonia in upper lung lobes and laboratory data was significant for leukocytosis with lymphopenia, increased inflammatory markers and positive quantiferon. Repeated COVID-19 test was negative. Sputum revealed Mycobacterium Tuberculosis. Patient was treated for TB and improved.
Conclusion: Physicians must be mindful of the rare possibility of TB in patients who present as COVID-19 associated respiratory symptoms or asthma exacerbation. Prompt diagnosis and treatment of TB is crucial for the affected individual and community.

M412

A BALANCING ACT: TREATMENT OF COVID-19 AND CYTOMEGALOVIRUS IN A PATIENT WITH PRIMARY IMMUNODEFICIENCY

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Introduction: Treatment for SARS-CoV-2 has targeted both the infection, and also inflammatory complications of Coronavirus Disease 2019 (COVID-19). Attempts to control associated hyperinflammation can cause significant co-morbidities. Specifically, immunomodulation in the setting of COVID-19 can result in co-infection with other pathogens.
Case Presentation: A 14-year-old female with combined immunodeficiency secondary to NFκB2 haploinsufficiency (p.R853x) complicated by alopecia totalis, granulomatous dermatitis,

arthritis, uveitis, and non-cholestatic hepatitis was diagnosed with COVID-19 pneumonia and cytomegalovirus (CMV) viremia. She presented with fever, cough and acute dyspnea requiring high flow nasal cannula (HFNC). Imaging confirmed multifocal pneumonia and she tested SARS-CoV-2+. Her chronic adalimumab was held, and she was treated with dexamethasone and convalescent plasma. Worsening respiratory distress prompted further immunomodulation with anakinra. Remdesivir was administered only after improvement in her liver biochemistries. She was weaned to room air, but abruptly developed new fevers and tachypnea again requiring HFNC; further testing revealed CMV viremia and pneumonitis. Ganciclovir, foscarnet, CMV-IgG and additional anakinra therapy led to clinical improvement.

Discussion: Although immunomodulation may play an important role in COVID-19 treatment, broad immunomodulation herein likely contributed to reactivation of CMV. Dexamethasone further weakened our patient's already dysregulated T-cell response, increasing vulnerability to CMV reactivation. Anakinra appeared to dampen her presumed dysregulated pulmonary inflammation and did not hinder the clearance of CMV. This case highlights that it is critical to perform a detailed infectious evaluation in at-risk patients. Additionally, anakinra is a promising immunomodulator for COVID-19, even in patients with concomitant infections.

M413

COVID-19 IN A PATIENT WITH CVID AND CONTRAINDICATIONS TO SEVERAL POTENTIAL TREATMENTS

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Introduction: Despite nearly 18 million cases of SARS-CoV-2 thus far, there is minimal information regarding treatment in patients with common variable immunodeficiency (CVID), such as presented here.

Case Description: A 59-year-old male with CVID was receiving IVIG infusion when RN noted lethargy, fever, and cough. Chest Xray showed bilateral lower lobe opacities. Labs significant for lymphopenia to 0.5, CRP 4.9, CK 23, ESR 22. SARS-CoV-2 testing positive. Given history of atrial fibrillation, hypertension, severe back pain, and 10.5-pack-year smoking history, patient requested to be DNR/DNI. Patient eventually required high flow oxygen with 70% FiO2 at 35L/min. Hydroxychloroquine initiated, but Qtc became prolonged. He received vitamin C and enrolled in convalescent plasma trial. Patient's respiratory status worsened with increasing hypoxia. D-dimer increased to 7.63, ferritin to 2862, and LDH to 533. Prone position poorly tolerated. BiPAP recommended, but patient increasingly anxious and declined, requesting to go home to die. Within 2 days of receiving plasma, mentation improved; within 9 days oxygen requirements decreased; discharge occurred after 24 days in the hospital. Patient subsequently admitted for severe back pain and found to be still SARS-CoV-2 positive, 8.5 weeks from initial test. However, he continued asymptomatic on room air with improved chest xray.

Discussion: This patient had contraindications to several potential medications, physical limitations with proning, and slow recovery after receiving convalescent plasma, though he did not require ventilator support. There was evidence of hyperinflammation secondary to COVID-19, and it is unknown to what degree immunodeficiency may have been protective against a severe cytokine storm. Further investigation necessary.

M414

LOMATIUM DISSECTUM RASH: A COMPLICATION OF COVID-19 PROPHYLAXIS THERAPY

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Introduction: During the COVID-19 pandemic, multiple medications and supplements have received consideration for either prophylaxis and/or treatment. This case describes an adverse reaction to the herbal medication *Lomatium dissectum* when it was used for prophylaxis against COVID-19 infection.

Case Description: A 57 y/o female presented with a 1 day history of a diffuse red, itchy rash. She had been in good health prior to this. Her only daily medications were magnesium and vitamins. Six days prior to presentation, on the advice of a physician family member, she began taking *Lomatium dissectum* extract as prophylaxis against COVID-19. The day prior to her visit, she developed rapid onset, body wide rash that was intensely pruritic.

Physical exam: Afebrile patient in moderate distress secondary to pruritis from a diffuse maculopapular rash, sparing only the palms and soles. No urticaria or angioedema. Mucosal membranes without lesion. Exam otherwise unremarkable. Rapid strep was negative.

A literature review found a single case report with similar findings The *Lomatium* medication was stopped and she was treated with high dose antihistamine and prednisone. Her rash resolved in 5 days, during which time she required another physician office visit and an emergency department evaluation for intense itching.

Discussion: In the herbal medication literature, Lomatium dissectum is characterized as an expectorant and treatment for febrile respiratory illnesses. A rash that occurs in the first week of treatment, lasting for 5 days, is described as a possible side effect. Allergists should be aware of this possible adverse drug reaction when evaluating patients for acute rash reactions.

Other

M450

EOSINOPHILIC GRANULOMATOSIS WITH POLYANGIITIS: A UNIQUE DIAGNOSIS MIMICKING ACUTE CORONARY SYNDROME

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Introduction: Eosinophilic granulomatosis with polyangiitis (EGPA) affects small to medium sized arteries of multiple organ systems including pulmonary, integumentary, cardiovascular, gastrointestinal, renal and central nervous system. EGPA classically presents with asthma, rhinosinusitis and peripheral eosinophilia. We describe a unique case of EGPA which presented as acute coronary syndrome (ACS).

Case Presentation: A 55 year-old African American male with poorly controlled asthma, chronic rhinosinusitis with nasal polyps and hypertension presented with chest pain and dyspnea for two weeks. Electrocardiography showed ST segment depressions in the anterolateral leads with troponin of 9.680 ng/mL and N-terminal-pro b-type natriuretic peptide of 5040 pg/mL. Urgent left heart catheterization showed nonobstructive coronary artery disease. Transthoracic echocardiogram demonstrated an ejection fraction of 20-25%. Computed tomography angiography demonstrated an acute right lower lobe subsegmental pulmonary embolism, bibasilar opacities, bilateral pleural effusions and hilar lymphadenopathy. Labs were also notable for leukocytosis of 14570/μL with eosinophilia of 5970/μL. Serum IgE was 1212 kU/L. Otherwise workup for antineutrophil cytoplasmic antibodies, allergic bronchopulmonary aspergillosis and parasites was negative with normal complement and tryptase levels. Bone marrow biopsy was negative for malignancy, no identifiable chromosomal abnormalities, and normal T cell clonality. Endomyocardial biopsy revealed abundant interstitial eosinophilic inflammation. He was subsequently started on systemic steroids followed by azathioprine with symptomatic improvement and resolution of eosinophilia.

Discussion: EGPA is an extremely rare systemic vasculitis. This case highlights the importance of considering EGPA for patients that present with common diagnoses like ACS in the setting of poorly controlled asthma, sinus disease and peripheral eosinophilia.