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waiting list. Nowadays, patient does not require oxygen, is at home and revalidating.

Summary: Here, we report the efficacy of a regimen with high dose corticosteroids as ultimate salvage therapy, despite Meduri scheme attempts, in a patient listed for transplantation. Corticosteroids are beneficial for immunomodulation and may reduce hyperinflammation. Our trial with administration of high dose corticosteroids pulse therapy in COVID-19 ARDS patients refractory to corticosteroids according to “classical schemes” has been successful and is informative. Further studies, will hopefully further elucidate responders and non-responders to high dose corticosteroid pulse therapy and preferably answer the question if prophylactic use of antibiotics and antifungals (in view of possible complications such as pulmonary aspergillosis and mucormycosis) is prudent in this vulnerable group.

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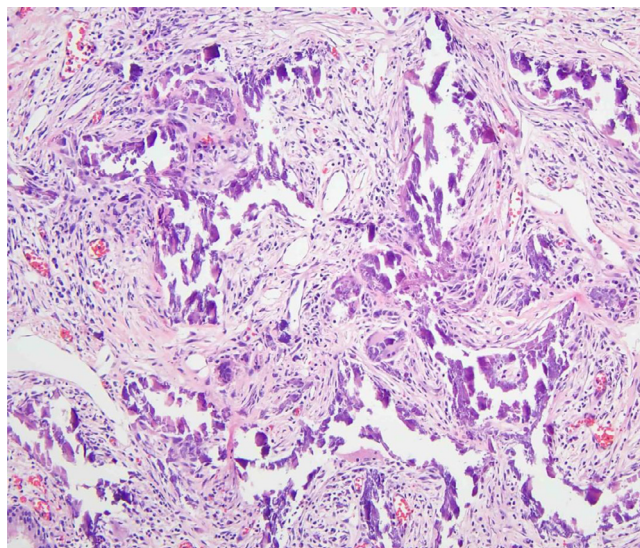
Chronic COVID 19 Related Disease Requiring Lung Transplantation with Calcified Cavitory Lesions in Explanted Lungs

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Introduction: Bilateral cavitory lung lesions with calcification in a patient with chronic COVID requiring transplantation are described.

Case Report: 46-year-old woman presented for lung transplant with respiratory failure due to COVID-19 pneumonia following remdesivir, dexamethasone, tocilizumab and baricitinib therapy. Cavitory upper lobe lung lesions were noted on imaging with negative cultures. She was started on VV ECMO as a bridge to bilateral lung transplant. Explanted lungs were consolidated and fibrotic with bilateral upper lobe calcification surrounding cavitory lesions. Varied microscopic pathology included NSIP pattern of inflammation, and foci of airway centered inflammation with giant cells suggesting chronic hypersensitivity reaction. The calcification was reminiscent of dendriform/metastatic calcification, and involved areas of necrotic/mummified parenchyma.

Summary: Cavitation as a late stage complication of COVID19 has been described in rare cases and is considered atypical. The constellation of findings in our case, including cavitory lesions with associated dendriform like calcifications are unique and maybe attributable to COVID19 itself +/- exacerbation of underlying chronic lung disease +/- intercurrent infection, or COVID19 related cavitation with superimposed secondary changes due to ECMO treatment. Bilateral lung transplantation has a reasonable short-term prognosis for patients with end stage respiratory failure secondary to COVID19; examination of these native lungs may expand our concept of COVID19 related chronic lung injury patterns.



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Peri-Operative Desensitization for Highly Sensitized Lung Transplant Recipients Following COVID-19 Acute Respiratory Distress Syndrome (ARDS) - Report of Two Cases

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Introduction: Sensitized lung transplant (LTx) candidates have longer waiting times, decreased likelihood of transplant, and increased risk of death while on the waitlist. Patients with SARS-Cov-2 ARDS on ECMO support due to end-stage lung disease have a short window of opportunity for LTx. We report two cases in which the Toronto LTx peri-operative strategy was performed with good outcomes in highly sensitized Covid-19 patients.

Case Report: Case 1: 31-yo female patient with Covid-19 ARDS, transferred for LTx evaluation after 46 days on VV-ECMO. She was pregnant when she presented with Covid -19 acute respiratory failure, and underwent an urgent C-section due to fetal distress. She required blood transfusions during ICU stay. At LTx assessment: PRA class I: 95%; class II: 0%. A decision to proceed with LTx with perioperative desensitization was made considering the low probability of finding a suitable donor. After seven days on the waiting list, she underwent bilateral LTx. Virtual cross-match (XM) positive (B35); CDC-XM negative. Desensitization protocol was performed with perioperative plasma exchange (PLEX) without basiliximab induction, followed by five sessions of PLEX and intravenous immunoglobulin 1 mg/kg. Due to postoperative acute cholecystitis with positive cultures after biliary drainage, anti thymocyte globulin (ATG) infusion (3 mg/kg) was held, and infusion postponed until four weeks post LTx. Tacrolimus, mycophenolate, and prednisone were used as maintenance immunosuppression. The patient was discharged home on PO day 53 with excellent graft function. **Case 2:** 35-yo female patient with Covid-19 ARDS, transferred for LTx after 69 days on VV-ECMO. History of 3 previous pregnancies and multiple blood transfusions due to transitory coagulopathy during her ICU stay. PRA class I: 83%; class II: 94%. VCM positive (B7, Cw7, DRB1*11:01, DR52, DQA1*05/DQB1*03). Desensitization protocol was performed, but ATG infusion was held due to *C. albicans* bloodstream infection and colonization with pan-resistant *K. pneumoniae*. DSAs at six weeks were negative. She remains hospitalized for mechanical ventilation withdrawal and inpatient rehabilitation.

Summary: In selected cases, peri-operative desensitization is feasible and can be safely implemented in highly sensitized patients with Covid-19 ARDS.

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Varicella-Zoster Virus Meningoencephalitis in a Lung Transplant Recipient

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Introduction: Solid organ transplant (SOT) recipients are susceptible to an array of infections and atypical clinical presentations. Varicella-zoster virus (VZV) becomes latent in dorsal root ganglia after the initial infection, and reinfection commonly presents with a painful rash. In SOT recipients, VZV can present as meningoencephalitis without an associated rash and is associated with high morbidity and mortality. We present a rare case of VZV meningoencephalitis in a lung transplant recipient.

Case Report: A 71-year-old woman with a history of bilateral lung transplant in 2014 and rheumatoid arthritis presented to an outside hospital with one week of fever and confusion. She was subsequently intubated after suffering a generalized tonic-clonic seizure. Upon transfer to our facility she had an unremarkable exam including skin exam. She was started on vancomycin, ceftriaxone, ampicillin, acyclovir, and fluconazole for presumed meningoencephalitis. Lumbar puncture revealed 100 WBC/mm³, with 93% lymphocytes. The cerebrospinal fluid (CSF) glucose was 125 mg/dL, protein was 233 mg/dL, cultures were negative but qualitative polymerase chain reaction (PCR) was positive for VZV. Electroencephalogram (EEG) revealed status epilepticus and magnetic resonance imaging (MRI) showed a T1 and T2 hypointensity in the right posterior periventricular white matter and scattered foci in bilateral cerebral white matter. Her status epilepticus was treated with antiepileptics and resolved by hospital day eight. She received 14 days of intravenous (IV) acyclovir 10mg/kg every 8 hours and was transitioned to oral valacyclovir for suppression for two months. On discharge her mental status had significantly improved but had not fully returned to her baseline.

Summary: Zoster is a common, benign disease caused by VZV and associated with painful cutaneous lesions. However, neurological manifestations without a rash are possible in SOT patients. Lumbar puncture and CSF analysis are crucial for diagnosis and typically shows lymphocytosis with viral culture, antibody, or PCR positive for VZV. Treatment of choice for VZV encephalitis is IV acyclovir for 7 days in the immunocompetent patient and 14 days in the immunosuppressed patient. This case demonstrates how prompt recognition and treatment of VZV meningoencephalitis can decrease mortality and neurologic disease in the immunocompromised patient.

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Phaeohyphomycoses in Lung Transplant Recipient

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Introduction: Phaeohyphomycoses are fungal infections caused by dematiaceous fungi, mold with dark colored walls due to the presence of melanin, which are found in soil around the world. The melanin acts as a virulent factor contributing to pathogenesis. Despite ubiquity of these organisms and more than 100 causative species known, infection remains rare with increased frequency noted in solid organ transplant recipients (SOTR) due to immunosuppression and their opportunistic nature. The spectrum of disease is wide, ranging from localized skin/soft tissue infection to disseminated disease with high mortality.

Case Report: A 34 year old male with occupational lung disease requiring bilateral lung transplant 1 year prior, on a standard immunosuppressive regimen with no previous augmentation, presented with small, non-

erythematous nodules on his right arm (RUE) and lower leg (RL). Lesions were painful initially at onset 6 months ago; the tenderness resolved but the nodules persisted and enlarged in size with associated development of new onset dyspnea. Imaging revealed mild scattered ground glass opacities with right lower lobe bronchial wall thickening. Bronchoalveolar lavage fungal culture grew *Bipolaris* spp. RUE nodule punch biopsy was obtained with septate hyphae on KOH prep and *Phialemonium* spp. on culture. Excisional biopsy of both nodules revealed seropurulent drainage grossly and invasive filamentous fungal forms on pathology. KOH prep of both again demonstrated septate hyphae, with *Phialemonium* spp. from RUE and *Colletotrichum* spp. from RLE. There were no signs of hematogenous spread. He was started on a prolonged course of posaconazole and temporary decrease in immunosuppression with clinical improvement and no return of nodules after excision.

Summary: Phaeohyphomycoses remain rare though occur with increased incidence in SOTR. Here we present a case of multifocal, but not disseminated, phaeohyphomycoses caused by 3 distinct dematiaceous fungi in a lung transplant recipient and avid gardener. Diagnosis occurs histologically and microbiologically in setting of high clinical suspicion. We suspect inhalation and two separate instances of direct inoculation during time spent gardening resulting in concomitant pneumonia and subcutaneous infection by multiple causative dematiaceous fungi. Infection at non-contiguous sites presented as diagnostically challenging with social history as key.

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Donor Derived Coccidioides in a Lung Transplant Recipient

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Introduction: There are no universal guidelines on screening donors for coccidioides. We describe a fatal case of coccidioides empyema from a donor previously residing in an endemic region.

Case Report: This is a 72 year old male, status post right single lung transplantation 3 weeks prior for chronic hypersensitivity pneumonitis, who presents to clinic with a productive cough. The donor was a 31 year old male with no medical history from the southern inland region of California. A chest X-ray in clinic demonstrated a right pleural effusion. He underwent thoracentesis and bronchoscopy on post-operative day (POD) 22. Pleural fluid was lymphocytic and exudative with negative cultures, and transbronchial biopsies showed mild acute cellular rejection. He was treated with pulse dose steroids. His symptoms worsened one week later when he was seen in the emergency department. Chest CT showed a large right loculated pleural effusion. The patient was started on broad spectrum antibiotics, and a thoracostomy tube was placed, demonstrating a neutrophil predominant exudate. Repeat chest CT showed the effusion extending through the chest wall, and an additional thoracostomy tube was placed. The patient became more hypoxemic requiring mechanical ventilation and VV-ECMO. Pleural cultures taken two-days prior demonstrated mold and the patient underwent irrigation with amphotericin in the operating room, along with intravenous amphotericin. Ultimately, the patient had multi-organ failure and cardiac arrest. Following his passing, pleural fluid cultures confirmed growth of *Coccidioides immitis*.

Summary: This case describes a patient with initial negative serologies to coccidioides and a donor from the southern inland region of California, where the incidence of coccidioides is increasing. Transmission of donor-derived coccidioides has been shown to be 43% within 30 days post-transplant, with a 29% mortality. Given the high mortality and treatment availability, screening donors in endemic areas with serologies may prevent post-transplant complications.