Reference and abbreviation categories: Charlson comorbidity index (CCI) = 0; Age = 18-30; Sex = Female; Race/Ethnicity = White; Insurance = Commercial; Body mass index (BMI) = 18.5-25; Calendar time = 0-25 weeks; Chronic obstructive pulmonary disease (COPD).

Conclusion. Odds of hospitalization or death have decreased since the start of the pandemic, with the steepest decline observed up to mid-August, possibly reflecting changes in both testing and treatment. Older age is the most important predictor of severe COVID-19. Obese and underweight, but not overweight, BMI were associated with increased odds of disease severity when compared to normal weight. Hypertension, despite not being included in many guidelines for vaccine prioritization, is a significant risk factor. Pronounced health disparities remain across race and ethnicity after accounting for comorbidities, with minorities experiencing higher disease severity.

Disclosures. **Shemra Rizzo, PhD**, **F. Hoffmann-La Roche Ltd.** (Shareholder)**Genentech, Inc.** (Employee) **Ryan Gan, PhD**, **F. Hoffmann-La Roche Ltd** (Shareholder)**Genentech, Inc.** (Employee) **Devika Chawla, PhD MSPH**, **F. Hoffmann-La Roche Ltd.** (Shareholder)**Genentech, Inc.** (Employee) **Kelly Zalocusky, PhD**, **F. Hoffmann-La Roche Ltd.** (Shareholder)**Genentech, Inc.** (Employee) **Xin Chen, PhD**, **F. Hoffmann-La Roche Ltd.** (Shareholder)**Genentech, Inc.** (Employee) **Yifeng Chia, PhD**, **F. Hoffmann-La Roche Ltd** (Shareholder)**Genentech, Inc.** (Employee)

323. Distribution of Pathogens in Coinfections of Patients Admitted with COVID-19

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Patients who are admitted to the hospital with Coronavirus Disease 2019 (COVID-19) often have protracted hospitalizations complicated by bacterial or fungal co-infections. This also raises the question whether there is some feature of COVID-19 that predisposes to development of specific co-infections. To begin answering that question, we sought to review the distribution of microorganisms identified in bacterial and respiratory cultures in patients admitted with COVID-19.

Methods. In a retrospective review of all patients admitted with COVID-19 in the year 2020 at a single academic tertiary medical facility, all positive blood and respiratory cultures were reviewed. Common contaminants were removed. Duplicate growth of the same organism within the same patient was not counted as a separate event.

Results. 787 patients were admitted with COVID-19 for the specified time frame. There were 131 and 147 unique events of documented bacterial or fungal growth seen in blood cultures and respiratory tract cultures, respectively. The most commonly identified organism in blood cultures was *Staphylococcus aureus* (3.94% of patients with COVID-19), followed closely by *Enterococcus* (2.41%), *Klebsiella* (1.65%), and *Escherichia* (1.27%). *Staphylococcus aureus* was also the most frequently isolated organism in respiratory cultures (7.24% of patients with COVID-19), followed by *Pseudomonas* (3.43%), *Klebsiella* (1.78%), *Serratia* (0.89%), and *Stenotrophomonas* (0.89%).

Conclusion. This suggests that the distribution of pathogens implicated in coinfections in this patient population may not be substantially different from what might be expected in patients admitted for reasons outside of COVID-19. Further investigation with a larger patient population would provide more generalizable data, including patients admitted for reasons outside of COVID-19.

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324. COVID-19-Associated Pulmonary Aspergillosis (CAPA) at Veterans Affairs (VA) Hospitals in Southern California and Arizona

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. The data on CAPA in the U.S. are limited to date and clinical characteristics unique to this phenomenon have not been widely reported.

Methods. This retrospective observational study was conducted at multiple VA hospitals across southern California and Arizona. CAPA cases were identified in inpatients with laboratory-confirmed COVID-19 based on microbiologic or serologic evidence of aspergillosis and pulmonary abnormalities on imaging, and were classified according to ECMM/ISHAM consensus definitions. Characteristics of interest included immunosuppressive/modulatory agents used prior to onset of CAPA, COVID-19 disease course, length of hospitalization, and mortality.

Results. Seventeen patients with probable (18%) or possible (82%) CAPA were identified from April 2020 to March 2021. Values below reported as medians. All patients were male and 13 (76%) were white, with age 74 years and BMI 26 kg/m^2. Baseline comorbidities included diabetes mellitus (47%), cardiovascular disease (65%), and pulmonary disease (71%). Evidence of aspergillosis was mostly based on respiratory culture, with mainly *A. fumigatus* (75%). Systemic corticosteroids were used in 14 patients, with a total dose of 400 mg prednisone equivalents starting 10 days prior to *Aspergillus* detection. Patients also received tocilizumab (18%), leflunomide (6%), tacrolimus (6%), mycophenolate (6%), and investigational agent LSALT or placebo (6%); 2 patients (12%) did not receive any immunosuppression/modulation. Length of hospitalization for COVID-19 was 22 days. Death occurred in 12 patients (71%), including all patients with probable CAPA, at 34 days after COVID-19 diagnosis and 16 days after CAPA diagnosis. Eight patients (47%) were treated for aspergillosis; mortality did not appear to differ with treatment (75% vs. 67%).

Table 1. COVID-19 Inpatient Characteristics

Event – n (%)	**All Inpatients with COVID-19** (n=1238)	**CAPA Cases** (n=17)
ICU admission	501 (40)	14 (82)
Use of mechanical ventilation	181 (15)	11 (65)
Death	143 (12)	12 (71)

Table 2. Incidence of Aspergillus Growth on Respiratory Culture

Time Frame	**Positive Cultures**		
	All	**Inpatients**	**COVID-19 Inpatients**
2017	70	36	-
2018	68	23	-
2019	75	18	-
Study period	106	60	17

Conclusion. This case series reports high mortality among patients with CAPA; the primary contributor to this outcome is unclear. Frequency of lower respiratory tract sampling in patients with COVID-19 may have limited diagnosis of CAPA. Interestingly, inpatient respiratory cultures with *Aspergillus* spp. increased compared to previous years. Future work will attempt to identify risk factors for CAPA and attributable mortality via comparison to inpatients with COVID-19 without CAPA.

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325. Empiric Antibiotics for COVID-19 and the Utility of Procalcitonin

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Bacterial coinfection in COVID-19 is infrequent, yet empiric antibiotic use is common. The objectives of this study were to investigate the effect of empiric antibiotics on time to resolution of COVID-19 pneumonia, elucidate the impact of COVID-19 on procalcitonin levels, and determine the incidence of respiratory bacterial coinfection.

Methods. This was a retrospective study of adult patients hospitalized with COVID-19 between June 1, 2020 and September 30, 2020. Patients were included if they had at least one procalcitonin level. They were excluded if admitted to an intensive care unit within 24 hours of presentation or received antibiotics for an indication besides pneumonia. Patients were stratified into 4 groups based on procalcitonin level and receipt of antibiotics. The primary outcome was time to clinical resolution of pneumonia. A key secondary outcome was incidence of confirmed respiratory bacterial coinfection.

Results. A total of 199 patients were included. Patients with a procalcitonin greater than 0.25 ng/mL who received antibiotics had a longer median time to clinical resolution of pneumonia, 8 days (95% CI, 4 to 11 days) vs. 3 or 4 days in other groups (P< 0.001). Additionally, this same group required greater baseline oxygen supplementation, had more comorbidities, and increased mortality compared to all other groups. Median time to clinical resolution of pneumonia was also longer in patients who received antibiotics compared to those who did not (5 vs. 4 days, P=0.017) and in those with a procalcitonin greater than 0.25 ng/mL compared to those with PCT less than or equal to 0.25 ng/mL (7 vs. 4 days, P< 0.001). Renal dysfunction was more prevalent in patients with an elevated procalcitonin (45% vs. 17.5%). The overall incidence of confirmed respiratory bacterial coinfection was 1.5%.

Conclusion. Irrespective of procalcitonin level, empiric antibiotics were not associated with a shorter time to resolution of COVID-19 pneumonia in non-critically ill patients. Elevated procalcitonin is likely a reflection of the severity of COVID-19 disease and baseline renal function rather than bacterial infection. Additionally, the

overall incidence of confirmed bacterial coinfection in non-critically ill patients hospitalized with COVID-19 was low.

Disclosures. **Kiya D. Mohadjer, PharmD, BCPS, BCIDP**, **Eli Lilly and Company** (Shareholder)**Gilead Sciences** (Shareholder)

326. Radiologic Findings of COVID-19 Associated Mucormycosis (CAM) from India

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Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. The unique feature of the second wave of the COVID -19 pandemic in India has been the alarming surge of acute invasive fungal infection among COVID -19 patients. The increased incidence of rhino-orbito-cerebral mucormycosis is a matter of concern, as this fulminant infection has high morbidity and mortality. Hence, it is imperative to understand it's imaging features, for early diagnosis, staging and treatment.

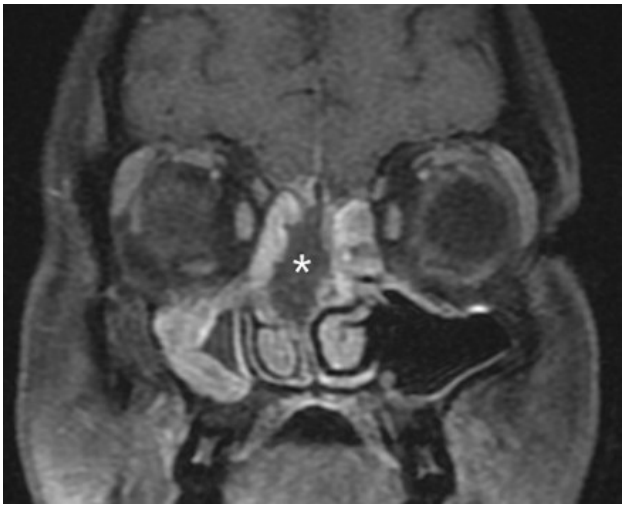
Methods. We systematically reviewed 32 COVID-19 cases with imaging diagnosis of acute invasive fungal rhino-sinusitis or rhino-orbital-cerebral disease between March to May 2021. These patients underwent contrast MRI of the paranasal sinus, orbit and brain. Contrast enhanced CT chest and paranasal sinuses were done as needed.

Results. The age group ranged between 30 to 71 yrs with male preponderance. The most common predisposing factors were intravenous steroid therapy and supplemental oxygen. All cases were confirmed by fungal culture and most common was Mucor. The rhino-orbito-cerebral mucormycosis was staged as below

Stage	No. of cases
1 (Limited to nasal cavity)	2
2 (Involving Paranasal sinuses)	14
3 (Involvement of orbit)	8
4 (Involvement of CNS)	8

In our study we found that the most common site in the nasal cavity was the middle turbinate /meatus and the earliest sign was non-enhancing / "black" turbinate. Premaxillary and retroantral fat necrosis was the earliest sign of soft tissue invasion. Spread via the sphenopalatine foramen and pterygopalatine fossa was more common than bony erosions. Orbital cellulitis and optic neuritis were the most common among stage 3 cases. Of patients with CNS involvement, the most common were cavernous sinus thrombosis and trigeminal neuritis. Two patients with pulmonary mucormycosis showed large necrotic cavitary lesions, giving the characteristic "bird's nest" appearance.

Figure 1. Black turbinate



Contrast enhanced coronal T1 FS images of paranasal sinuses shows necrotic non-enhancing right superior and middle turbinates (*)

Figure 2: Axial contrast enhanced T1 FS image showing necrotic non enhancing premaxillary (arrowhead) and retroantral fat (straight arrow) walled off by thin enhancing rim.

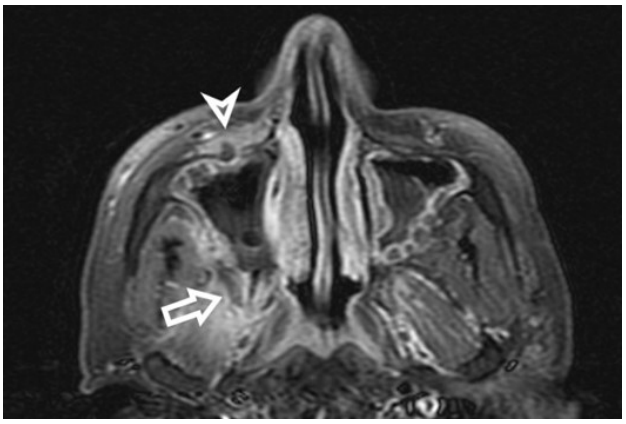
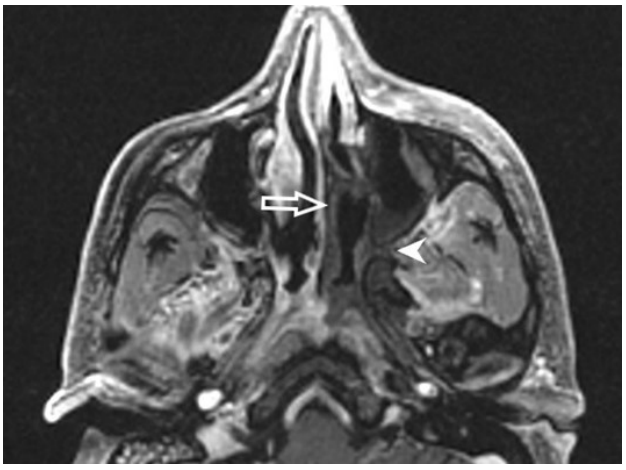


Figure 3: Contrast enhanced axial T1 FS images of paranasal sinuses shows necrotic non-enhancing left middle meatus spreading along sphenopalatine foramen in to pterygopalatine fossa (arrow head)



Conclusion. The mortality rate was 20% in our study. In our short term follow up, 30 % of recovered patients had relapse on imaging due to incomplete clearance and partial antifungal treatment. High clinical suspicion and low imaging threshold are vital for early Mucormycosis detection in COVID-19 patients. Familiarity with early imaging signs is critical to prevent associated morbidity /mortality.

Figure 4: Contrast enhanced coronal T1 FS and diffusion weighted images shows necrotic non-enhancing left middle meatus with left orbital cellulitis (*) and optic neuritis (white arrow)