351. Antibiotic Management Decisions and Use of a Multiplex PCR Panel for Pneumonia Diagnosis Among Critically Ill Patients with COVID-19

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

Background. Antibiotic use among patients with COVID-19 is common, exceeds the prevalence of probable bacterial co-infection, and promotes development of resistant organisms. Lack of diagnostic microbiological data may prolong empiric broad-spectrum therapy. Here we evaluate the use of the BioFire FilmArray pneumonia panel (PP), a novel rapid diagnostic test, and antibiotic decisions among intensive care unit (ICU) patients with COVID-19.

Methods. We conducted a retrospective review of adult ICU patients admitted with COVID-19 between January 2020 and May 2021 at an academic medical center. ICU patients who underwent bronchoscopy/bronchoalveolar lavage (BAL) with PP (PP group) were matched by age (< 65 or ≥65), BMI (< 30 or ≥30), and BAL date (within 60 days) to ICU patients who did not undergo BAL (no-BAL group). PP patients were matched by age and BMI to ICU patients who underwent BAL without PP (no-PP group). Antibiotic use was compared between groups. Chi squared analysis, t-test, and ANOVA were used for comparisons as appropriate.

Results. 65 patients were included; the majority were male (65%), < 65 years (86%), and had BMI ≥30 (54%) (Table 1). Only 17 no-PP matches were identified for PP patients due to infrequent BALs. Similar proportion of patients in PP and no-PP groups had organisms identified from BAL (54% vs. 47%, p=0.65). Among PP patients with a detected organism, all (n=13) had subsequent changes in antibiotic regimen ≤72 hours after BAL; 10/13 (77%) had a change targeted to detected organism and 5/13 (39%) had antibiotic narrowing. Among PP patients with no detected organism, only 4/11 (36%) had antibiotic narrowing or maintenance off antibiotics. In all groups, average antibiotic use exceeded 70% of admission duration.

Table 1. Patient characteristics and antibiotic management. Abbreviations: BAL - bronchoalveolar lavage

Characteristics:	All patient: N = 65 (%)	Underwent bronchoscopy with pneumonia panel ("PP") No24 (%)	Underwent bronchoscopy without pneumonia panel ("No-PP") No17 (%)	Did not undergo bronchoscopy ("No-BAL") No24 (%)	P value (n=0.05)
Male	42 (64.6)	15 (63)	12 (70.6)	12 (50)	0.182
Female	23 (35.4)	9 (25)	5 (29.4)	12 (50)	
Age (years)					
Less than 65	56 (86.2)	21 (87.5)	14 (82.3)	21 (87.5)	0.870
65 or greater	9 (13.8)	3 (12.5)	3 (17.6)	3 (12.5)	
BMI					
Less than 30	35 (53.8)	12 (50)	11 (64.7)	12 (50)	0.579
30 or greater	30 (46.2)	12 (50)	6 (35.3)	12 (50)	
Race					
Declined	26 (40.0)	12 (50.0)	4 (23.5)	10 (41.7)	0.508
Other, not described	10 (20.2)	4 (16.7)	6 (35.3)	0 (37.5)	
White	12 (18.5)	5 (20.8)	4 (23.5)	3 (12.5)	
Black or African American	5 (7.7)	1 (4.2)	2 (11.8)	2 (8.3)	
Asian	3 (4.6)	2 (8.3)	1 (5.9)	0 (0)	
Ethnicity					
Hispanic/Latino	26 (40.0)	8 (33.3)	7 (41.1)	11 (45.8)	0.531
Not Hispanic/Latino	23 (35.3)	8 (33.3)	6 (35.3)	9 (37.5)	
Declined	16 (24.6)	8 (33.3)	4 (23.5)	4 (16.7)	
Organism detected from BAL					
Yes	-	13 (54.2)	8 (47.0)	-	0.654
No	-	11 (45.8)	9 (53.0)	-	
Antibiotic regimen changed after BAL					
Yes	-	13 (54.2)	11 (64.7)	-	0.500
No	-	11 (45.8)	6 (35.2)	-	
Antibiotic management among patient with antibiotic change after BAL		PP N = 13 (%)	No-PP N = 11 (%)	No-BAL	P value (n=0.05)
Antibiotic regimen broadened					
Yes	-	7 (53.8)	4 (36.4)	-	0.365
No	-	6 (46.2)	7 (63.6)	-	
Antibiotic regimen narrowed					
Yes	-	7 (53.8)	8 (72.7)	-	0.341
No	-	6 (46.2)	3 (27.3)	-	
Antibiotic change: targeted to identified organism					
Yes	-	10 (76.9)	6 (54.5)	-	0.204
No	-	3 (23.1)	5 (45.5)	-	
Characterization of antibiotic use		PP N = 24	No-PP N = 17	No-BAL N = 24	P value (n=0.05)
Number of days on antibiotics: from time of inpatient admission Median (IQR)	-	46.5 (27.5-73.0)	39.0 (26.0-58.0)	17.5 (10.5-32.2)	-
Number of days on antibiotics: from time of ICU admission Median (IQR)	-	43.5 (27.5-63.5)	42.0 (28.0-70.0)	13.5 (8.5-23.0)	-
Proportion of days on antibiotics: during inpatient admission Mean (SD)	-	0.791 (0.169)	0.752 (0.166)	0.712 (0.374)	0.830
Proportion of days on antibiotics: from time of ICU admission Mean (SD)	-	0.799 (0.210)	0.752 (0.174)	0.780 (0.347)	0.858

Abbreviations: BAL - bronchoalveolar lavage

Conclusion. Rapid, highly sensitive diagnostic tests have potential to guide clinical decisions and promote antibiotic stewardship among patients with severe viral pneumonia and suspected bacterial co-infection. In this descriptive analysis, antibiotic management did not differ significantly with use of PP. While most patients with detected organism on PP had targeted antibiotic changes, a negative PP did not appear to influence antibiotic narrowing. Larger studies and provider education are needed to evaluate potential of the PP for antibiotic stewardship.

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352. COVID-19 Not a Risk Factor of Alopecia Areata: Results of a National Cohort Study in South Korea

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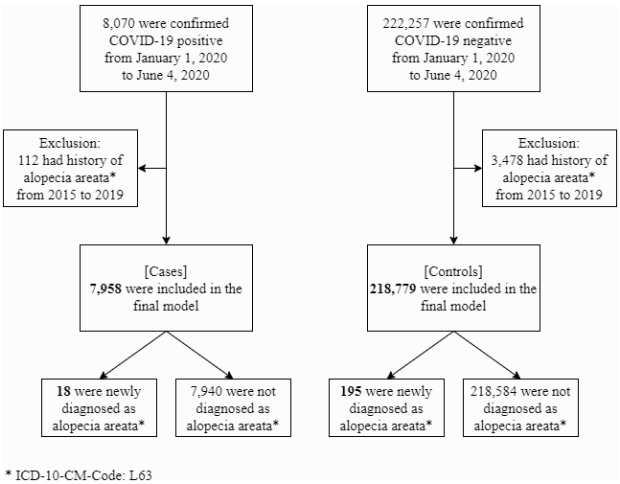
Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. There have been approximately 158 million coronavirus disease 2019 (COVID-19) pandemic survivors worldwide by June 9, 2021. As a result, concerns about hair loss in COVID-19 patients have emerged among dermatologists. However, most of extant literature have limited implications by relying on cross-sectional studies with restricted study subjects without control group. Therefore, our study aims to investigate the risk of developing alopecia areata (AA) among COVID-19 patients in South Korea using adequate control based on national representative data.

Methods. We used the National Health Insurance Service (NHIS) COVID-19 cohort database, comprising COVID-19 patient and control group, all of whom were diagnosed from January 1, 2020 to June 4, 2020. Patients were defined as individuals who were confirmed as COVID-19 positive, regardless of disease severity. Controls were defined as whom confirmed as COVID-19 negative. People with a history of AA during the period 2015–2019 were excluded. The primary endpoint was a new diagnosis of AA (ICD-10-CM-Code: L63). Adjusted incidence rate ratio (IRR) of developing AA was estimated using log-link Poisson regression model based on incidence density of case and control group. The model adjusted for (1) age and sex (2) demographic variables (age, sex, place of residence, and income level). Statistical significance was set at p< 0.05.

Results. A total of 226,737 individuals (7,958 [3.5%] cases and 218,779 [96.5%] controls) were included in the final analysis. There were more females than males, both in test positives and negatives at 59.9% and 52.3%, respectively. The largest test positive population was those in age group 20 to 29 years (25.5%),. The test negatives had the largest population in age group 30 to 39 years (17.1%). The ratio of newly diagnosed AA was 18/7,958 (0.2%) in cases and 195/218,779 (0.1%) in controls. IRRs of COVID-19 patients having newly diagnosed AA compared to controls were 0.78 (0.48-1.27) when age and sex were adjusted for, and 0.60 (0.35-1.03) when all demographic variables were adjusted for.

Flowchart of study subject selection



* ICD-10-CM-Code: L63

Conclusion. Diagnosis of COVID-19 was not significantly associated with development of AA even after appropriately adjusting for covariates.

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353. New-Onset Diabetes as an Acute Complication of COVID-19: A National Population Cohort Analysis

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Background. Diabetes is emerging as one of the complications of coronavirus disease 2019 (COVID-19), but this is hard to be revealed with cross-sectional studies since it is also known as the major predisposing factor for high-risk COVID-19. Therefore, this study aimed to estimate the risk of new-onset diabetes after COVID-19 through a population follow-up study.

Methods. All COVID-19 confirmed cases in Korea from January 20 to June 4, 2020, were matched with national health insurance data and their health screening data, both provided by the National Health Insurance Service of Korea. Controls were selected as the people who received the PCR test for COVID-19 and showed negative results in the same period and followed up until July 19, 2020. We selected the outcome as the diagnosis of diabetes according to the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10, E10 – E14). People who were diagnosed with diabetes in the past five years were excluded from both groups. After performing a log-rank test between groups, adjusted incidence rate and hazard ratio were estimated using Cox proportional hazard modeling. Demographic characteristics (age, sex, region, family histories of hypertension/diabetes, and income) and underlying health conditions such as hypertension, dyslipidemia, heart disease, alcohol consumption, cigarette smoking, and BMI were adjusted. Proportional assumptions were tested by the zph test and the sensitivity analysis by excluding each factor in turn and comparing results.

Results. A total of 6,247 COVID-19 patients and 143,594 controls without diabetes in the past were included for the analysis. The number of new-onset diabetes