measures implemented across the US including masking, improved hand hygiene, and social distancing. Better defining HCoV seasonality can inform clinical preparedness and testing practices and may provide insights into the behavior of emerging coronaviruses.

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1332. Clinical Indicators for When Bronchoalveolar Lavage (BAL) Is Needed Beyond Nasopharyngeal Swab (NP) Testing for Viral Respiratory Infections
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Session: P-74. Respiratory Infections - Viral

Background. This study evaluated the yield of testing NP vs BAL specimens using a multiplex PCR respiratory viral panel (RVP).

Methods. A retrospective chart review was conducted on all patients from 10/2017-3/2021 who had both an NP swab and BAL tested by RVP within a 4-week period.

Results. There were 477 cases where patients had both an NP and BAL specimen tested by RVP. Results were NP-/BAL- for 361 (76%) cases, NP+/BAL+ for 58 (12%), NP-/BAL+ for 40 (8%), and NP+/BAL- for 18 (4%). For NP+/BAL+, NP-/BAL+, and NP+/BAL- respectively, rhinovirus was detected in 23 (40%), 3 (8%), and 16 (89%) cases (<0.01); influenza A or B in 9 (16%), 7 (18%), and 0 (0%) (ns); adenovirus in 3 (5%), 10 (25%), and 2 (11%) (<0.05); metapneumovirus in 9 (16%), 8 (20%), 2 (11%) (ns); RSV in 8 (14%), 6 (15%), and 1 (6%) (ns); and, parainfluenza in 7 (12%), 6 (15%), and 1 (6%) (ns), respectively. Average ages were 48, 48, and 48 years; numbers of males were 34 (58%), 28 (70%), and 11 (61%); immunocompromised were 56 (97%), 37 (92%), and 17 (94%); and, 16 (28%), 10 (25%), and 6 (33%) had an active malignancy, respectively (all ns). Average symptom durations prior to presentation were 7.8 days (ns); pulmonary exams were abnormal in 35 (60%), 24 (60%), and 5 (28%) cases (<0.05); shortness of breath (SOB) was present in 40 (69%), 25 (62%), and 8 (44%) (ns); lower respiratory tract infection (LRTI) symptoms were absent in 1 (2%), 12 (30%), and 8 (44%) (ns); lower respiratory tract infection (LRTI) symptoms were present in 20 (34%), 5 (13%), and 10 (56%) cases (<0.05); and, acute kidney injury was present in 38 (66%), 13 (33%), and 6 (33%) cases (<0.05); respectively.

Conclusion. Most (88%) RVP test results were concordant between NP and BAL. There were significant differences between cases of NP+/BAL+, NP-/BAL+, and NP+/BAL-. Rhinovirus and GI symptoms were more common for NP+/BAL- vs NP-/BAL+. Conversely, pulmonary exams were more often abnormal and spirometry values reduced for NP+/BAL- vs NP+/BAL+. 

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1333. A National Outbreak of Respiratory Syncytial Virus Associated with Emergence of a Genetically Distinct ON1 variant
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Session: P-74. Respiratory Infections - Viral

Background. A national outbreak of respiratory syncytial virus (RSV) has been observed in the community since Fall 2020 in Taiwan.

Methods. We reviewed a national laboratory-based surveillance network established over 20 years by Taiwan Centers for Disease Control (TCDC) for respiratory viral positivity rate and viral pathogen in outpatient department and hospitalized patients. A retrospective study of children younger than 5 years old hospitalized with RSV infections at Chang Gung Memorial Hospital (CGMH) including Lin Kou and Kaohsiung branch between 2016 and 2020 was conducted. Samples positive for RSV A were sequenced. Patients’ clinical data was obtained from medical files and stratified by genotype and year.

Results. 2020 showed a 4-fold surge in RSV cases in Taiwan, in which surpassed both 2011 (the appearance of ON1 strain in Taiwan) and 2013 (ON1 strain predominates in Taiwan)[Figure1,Table1]. Phylogenetic analysis of G protein sequences showed that most strains in 2020 were clustered apart from 2018, 2019 seasons and other ON1 reference strains between 2011 and 2016, indicating a novel ON1 variant had been circulating in the community(Figure2). The novel ON1 variants carried six amino acid changes, of which T113I,V131D,H258Q,H266L,Y304H located in the mucin domains and N178G in central conserved domain. These changes emerged gradually in 2019 and showed a high consistency in 2020. The unique amino acid substitution E257K in the second mucin domain was noticed in 2020 exclusively. Besides, 10 substitutes in F protein were appeared between 2018 and 2020, of which R213S and N276S were in antigenic sites. Furthermore, substitutes T12I and H514N in F protein were first identified since 2020. On multivariate analysis, age (OR 0.97; 95% CI 0.94-0.99; p 0.02) and ON1 variant in 2020 (OR 2.52; 95% CI 1.13-5.63; p 0.025) were independently associated with oxygen saturation < 94% during hospitalization (Table 2).
The phylogenetic tree showed that most strains of the 2020 season clustered apart from those of the previous seasons, which indicated there was a novel ON1 variant circulating in the community associated with 2020 RSV epidemic.

Results. Of the eligible participants, 118 were flu positive (three RSV-influenza co-infections were excluded) and 527 were COVID-19 positive. Median age was lower for the flu cohort at 62 (IQR 56-71) than those with COVID-19 (67, IQR 59-77) (p < 0.0001). Length of stay (LOS) was shorter in flu-infected patients (median 3 d, IQR 2-6), but was longer for COVID-19 patients (median 5 d, IQR 3-10). ICU admission occurred in 20% of those with flu, and among those admitted to the ICU mechan 2-6), but was longer for COVID-19 patients (median 5 d, IQR 3-10). ICU admission occurred more frequently among patients with COVID-19, 8.9% died. This was significantly higher for those with COVID-19, with 28% of patients admitted to the ICU and 47% of those requiring MV. Among patients with COVID-19, 8.9% died. This was significantly higher than that of flu (3.4%) (p=0.008). Hospital discharge occurred more frequently for the flu cohort at 62 (IQR 56-71) than with flu (0%) (p < 0.0001).

Conclusion. COVID-19 resulted in a longer hospital admission, a greater chance of ICU admission and MV as compared to flu. Additionally, COVID-19 participants had a higher rate of discharge to a nursing home or LTCF with COVID-19 (10.3%) than with flu (0%) (p< 0.0001). Length of stay (LOS) was shorter in flu-infected patients (median 3 d, IQR 2-6), but was longer for COVID-19 patients (median 5 d, IQR 3-10). ICU admission occurred more frequently among patients with COVID-19, 8.9% died. This was significantly higher than that of flu (3.4%) (p=0.008). Hospital discharge occurred more frequently for the flu cohort at 62 (IQR 56-71) than with flu (0%) (p < 0.0001).

Variables with p<0.1 in the univariate analysis were included in the multivariate analysis.

Conclusion. An unprecedented RSV epidemic within the last 10 years caused by a novel ON1 variant has occurred in 2020 (Figure 1), suggesting the sets of mutations may confer fitness advantage. Further studies on viral replication, infectivity and virulence is needed to understand the evolution and spread of RSV.

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