CORRESPONDENCE

Research Letter

Non-Appearance of the RSV Season 2020/21 During the COVID-19 Pandemic

Prospective, Multicenter Data on the Incidence of Respiratory Syncytial Virus (RSV) Infection

The incidence of endemic respiratory syncytial virus (RSV) is clearly seasonal: in the moderate climates of the northerly regions the RSV season lasts from November to March in particular. First infections with RSV occur mostly in the first two years of life and constitute one of the main causes of lower respiratory tract infections in infants and toddlers (1). Non-pharmaceutical interventions to control the COVID-19 pandemic—such as social distancing measures and closures of schools and children’s day nurseries—have resulted in a substantial reduction in acute respiratory tract infections in the general population (2). The Pediatric Airway Pathogen Incidence (PAPI) Study investigates the dynamics of respiratory tract infections and the occurrence of RSV infections with severe courses in infants and toddlers before, during, and after the COVID-19 pandemic. We describe for the first time the complete absence of the RSV season in 2020/21 on the basis of systematically collected data.

Methods

The PAPI Study is a multicenter prospective study to collect data on population based incidence rates of RSV infections and their associated disease burden. To this end, participating centers (Hanover, Oldenburg, Flensburg) screen inpatients up to the age of ≤ 24 months for the presence of lower respiratory tract infections according to a case definition (symptom group A: fever, cough, rhinitis, pharyngitis; symptom group B: wheezing, crackles/rales, decreased breath sounds, tachypnea/dyspnea, hypoxemia). Patients with a minimum of one symptom from each group were included in the study. Patients received a nasopharyngeal swab with polymerase chain reaction based diagnostic evaluation for respiratory viruses (RSV A/B, adenovirus, coronavirus 229E/HKU1/NL63/OC43, MERS-CoV, SARS-CoV-2, bocavirus, metapneumovirus, rhino/enterovirus, influenza A/A H1/ A H1–2009/A H3, influenza B, parainfluenza virus 1/2/3/4).

The prospective data collection started with the infection season 2020/21. Additionally, the centers Hannover Medical School and University Children’s Hospital Oldenburg undertook a retrospective analysis of the RSV seasons 2017/18–2019–20 for the presence of the above case definition with confirmed RSV in calendar weeks 41–19. Both centers implemented for this time period a systematic RSV diagnostic evaluation and documentation of the disease course in their clinical routine. The study was approved by local ethics committees ((ethics committee vote 9442_BO_K_2020 MHH).

Discussion

Our data show for the first time the dramatic fall in RSV activity in Germany in 2020/21. Pandemic associated changes in the epidemiology of RSV have also been reported from other European countries (3) and were observed earlier in the southern hemi-

TABLE

Children with RSV infection in hospitals in Hanover and Oldenburg

Season	2017/18	2018/19	2019/20	2020/21
Patients (number)	n = 115	n = 159	n = 126	0
Age (mean, in months [95% CI])	5.6 [4.4; 6.7]	5.7 [4.8; 6.6]	6.3 [5.2; 7.3]	0
Hospitalization (cumulative days)	679	948	712	0
Need for oxygen (cumulative days)	336	443	276	0
Non-invasive ventilation (cumulative days)	66	55	45	0
Invasive ventilation (cumulative days)	33	44	34	0

RSV, respiratory syncytial virus; 95% CI, 95% confidence interval

sphere—with an unexpected RSV epidemic in the Australian summer (4).

The non-appearance of the RSV season in Germany has implications for the care of pediatric patients. It meant the absence of one of the most common reasons for hospital admission in infants and therefore a clear reduction in morbidity in this age group. Furthermore, relevant effects on future RSV activity are to be expected. The crucial risk factor for severe courses of RSV infections in addition to age is the first infection with the virus (1). The non-appearance of the RSV season in 2020/21 means that the numbers of thus far RSV naive children will rise for the coming season. This could lead to an increase in RSV morbidity and hospital admissions (5). The relaxation of social distancing measures additionally means that extra-seasonal RSV outbreaks will be more likely (4). This means that if non-pharmaceutical interventions are reduced, children should be tested for RSV outside the typical RSV season if they are clinically suspected of having this infection. Continuous observation of circulating respiratory pathogens is crucial, as it may be necessary to adapt the seasonal application of passive RSV immunization with palivizumab (monoclonal antibody against RSV) in children with a high risk profile.

The limitations of our study lie in the fact that it reflects only a small and regionally limited segment of the hospital landscape in Germany and that its focus on hospital inpatients with RSV does not allow for extrapolation to general RSV surveillance in infants and toddlers. We hope that our data can contribute to increasing vigilance for possible extra-seasonal and increased appearance of RSV once infectious activity resumes, so that prevention and treatment strategies can be adapted accordingly.

FIGURE

RSV associated hospital admissions in seasons 2017/18–2020/21; Total number of hospital admissions of children with RSV infection in the participating study centers

RSV, respiratory syncytial virus

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Conflict of interest statement

Christine Happle received study funding/support from Novartis and Pari. Mathieu Bangert holds shares in Sanofi. Marcus Panning received lecture honoraria from Siemens Healthineers. Rolf Kramer and Mathieu Bangert are employed by Sanofi-Pasteur. Martin Wetzke received lecture honoraria and consultancy fees from Novartis, GSK, and AstraZeneca.

The remaining authors declare that no conflict of interest exists.

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