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Okayama University research: Respiratory infections and asthma: The COVID-19 connection

(Okayama, 23 December) **In a study recently published in *The Journal of Allergy and Clinical Immunology* : In Practice researchers from Okayama University suggest a link between respiratory viral infections and the diagnosis of asthma in children during the COVID-19 pandemic.**

One of the positive effects of COVID-19 has been a reduction in cases of respiratory viral infections due to increased hygiene measures and social distancing. Now, flare-ups or the development of asthma in children are often associated with the incidence of such viral infections. Children's hospital visits due to asthma were, however, observed to decline as the COVID-19 pandemic escalated. Yet, the relationship between a decline of respiratory viral infections during COVID-19 and its effect on new onset of asthma in children is unclear. A team led by Assistant Professor MATSUMOTO Naomi (M.D.) and Professor YORIFUJI Takashi (M.D.) Okayama University now sheds light on this connection before and after the start of the pandemic.

The researchers used electronic health records from a comprehensive Japanese database, called RWD, to identify children aged 15 years or younger with new diagnoses of asthma. Only patients between the periods of January 2017 to February 2020 (pre-pandemic) and March 2020 to May 2021 (during pandemic) were selected since lockdown measures in schools were implemented in March 2020. Subsequently the impact of the pandemic on the number of new diagnosis of asthma was examined.; national surveillance data on RS virus and rhinovirus were also appended for reference. For comparison, the incidence of children reporting atopic dermatitis, which has no correlation to respiratory infections was also used.

It was found that newly diagnosed asthma cases during the pandemic period dropped by 59%, while this number fell by only 20% for atopic dermatitis. There was seasonality in the incidence of asthma, with a peak in October each year. The patterns for new asthma diagnoses were found closely aligned with reports for respiratory viral infections.

When the team analyzed cases by different age brackets, they discovered the most pronounced decreases in new diagnoses of asthma was seen in younger children, especially children under 2 years of age. What's more, greater decreases in asthma diagnoses were also observed in densely populated regions such as Kanto.

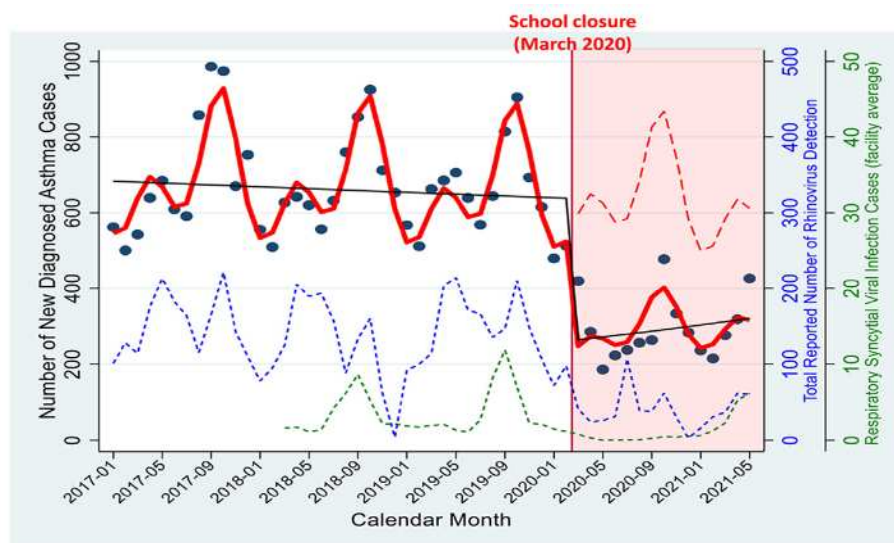
"This study suggested an association between respiratory viral infections and new onset of asthma in children," concludes the team. While contraction of respiratory viral infections can act as a potential predictor of asthma especially in younger children, preventing respiratory

viral infections such as RS virus and rhinovirus may also reduce the incidence of childhood asthma.

Background

Respiratory viral infections and asthma: Respiratory viral infections are commonly caused in children by rhinovirus and respiratory syncytial virus (RSV). They typically result in symptoms such as a runny nose, cough, itchy throat and soreness. These infections spread when one comes in contact with the nasal secretions of an infected individual. Thus, preventive measures implemented during the COVID-19 pandemic such as frequent washing of hands, wearing a mask, and maintaining a distance resulted in a decline in these respiratory viral infections too.

Asthma is a condition caused by inflammation and constriction of the airway passages. It leads to wheezing, shortness of breath, and severe chest congestion. Children are particularly susceptible to asthma when exposed to allergens such as pollen or a cold/respiratory infection. Thus, understanding the patterns between respiratory infections and development of asthma is important. This study suggests how the low incidence of respiratory infections during the COVID-19 pandemic resulted in fewer cases of asthma developing.



Figure

The predicted trend of monthly new cases of asthma (red line) with the trend of national surveillance reports of respiratory viral infections (blue and green lines) before and during the COVID-19 pandemic. The black line shows what asthma cases would look like without seasonal peaks each year.

Reference

Naomi Matsumoto, Tomoka Kadowaki, Satoe Takanaga, Masanori Ikeda, Takashi Yorifuji. Impact of COVID-19 pandemic-associated reduction in respiratory viral infections on childhood asthma onset in Japan. *J Allergy Clin Immunol Pract*, 2022 Dec;10(12):3306-3308.e2. DOI : 10.1016/j.jaip.2022.09.024.

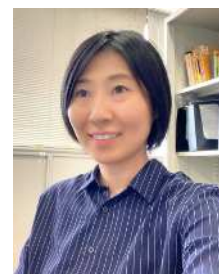
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Reference (Okayama Univ. e-Bulletin): Professor YORIFUJI's team

OU-MRU Vol.107 : [COVID-19 mRNA vaccines and fever: A possible new link](#)

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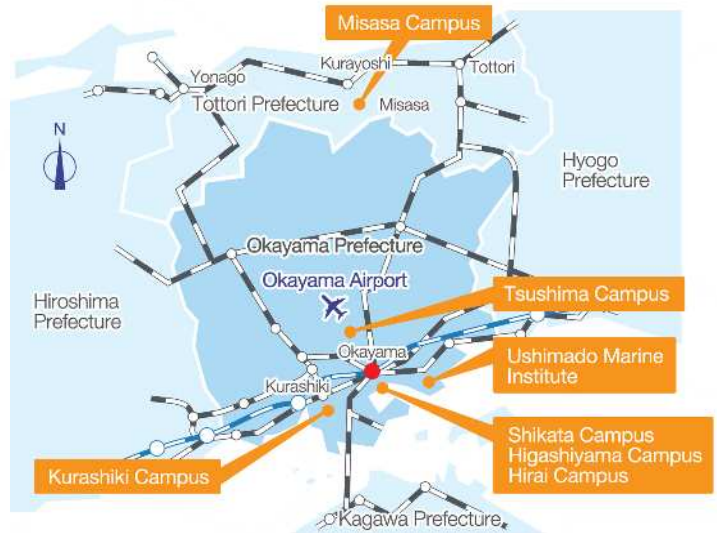
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Okayama University is located in the heart of Japan approximately 3 hours west of Tokyo by Shinkansen.

Website: http://www.okayama-u.ac.jp/index_e.html



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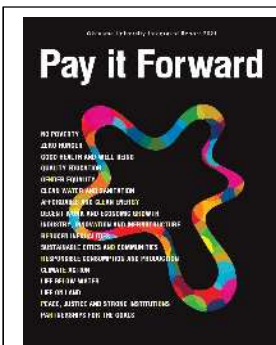


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