Incidence of Type 1 Diabetes in Children and Adolescents during the Covid-19 Pandemic in Germany: Results from the DPV registry (P1 – 21)

Clemens Kamrath[1], Joachim Rosenbauer[2,3], Alexander Eckert[3,4], Kai Siedler[5], Heike Bartelt[6], Daniela Klose[7], Marina Sindichakis[8], Silke Herrlinger[9], Valentina Lahn[10], and Reinhard W Holl[3,4]

[1] Center of Child and Adolescent Medicine, Justus Liebig University, Giessen, Germany; [2] Institute for Biometrics and Epidemiology, German Diabetes Center, Leibniz Center for Diabetes Research at Heinrich Heine University Dusseldorf, Dusseldorf, Germany; [3] German Center for Diabetes Research (DZD), Munich-Neuherberg, Germany ; [4] Institute of Epidemiology and Medical Biometry, ZIBMT, Ulm University, Ulm, Germany; [5] Hospital for Children and Adolescents, Helios Clinics Pforzheim, Pforzheim, Germany; [6] Hospital for Children and Adolescents University of Leipzig, Leipzig, Germany; [7] University Childrens Hospital Heidelberg, Im Neuenheimer Feld 430, 69120 Heidelberg, Germany; [8] Hospital for Children and Adolescents, Klinikum Traunstein,Traunstein, Germany; [9] Parent-Child Center Prof.-Hess, Bremen-Central Clinic, Bremen, Germany; [10] Altonaer Kinderkrankenhaus, Hamburg, Germany

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INTRODUCTION

The pandemic of coronavirus disease 2019 (Covid-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread rapidly across Germany in March and April of 2020. Type 1 diabetes is a chronic autoimmune disease that is influenced by both genetic and environmental factors [1]. Common respiratory infections in early childhood have been shown to be a risk factor for the development of type 1 diabetes [2-4]. However, it is not known whether Covid-19 is associated with an increase in the incidence of type 1 diabetes [5,6].

AIM

The aim of this study was to investigate the incidence of type 1 diabetes in children and adolescents during the Covid-19 pandemic in Germany compared to previous years.

METHOD

Based on data from the multicenter German Diabetes Prospective Follow-up Registry (DPV), we analyzed the incidence of type 1 diabetes per 100,000 patient years in children and adolescents in the year 2020. Using Poisson regression models, expected incidences for 2020 were estimated based on the data from 2011 to 2019, and compared to observed incidences in 2020 by estimating incidence rate ratios (IRRs) with its 95% confidence interval (CI).

RESULTS

In 2020, 3,259 children and adolescents with new-onset type 1 diabetes in Germany were registered. The observed incidence in 2020 was significantly higher than the expected incidence (23.2 [95% CI, 22.4–24.0] vs. 21.0 [20.2–21.7]; IRR, 1.11 [1.05–1.16], p<0.001; **Fig. 1**).

Analysis by month showed that the increase in incidence was particularly pronounced in the months June and July (IRRs, 1.43 [95% CI, 1.09–1.87], p=0.002, and 1.51 [1.16–1.98], p<0.001, respectively; **Fig. 2**).

The IRR was similar for both sexes (IRR in females, 1.12 [95% CI, 1.04–1.21], p=0.004; IRR in males, 1.10 [95% CI, 1.03–1.18], p=0.004).

The increase of the observed compared to the expected incidence in 2020 was significant in the age groups of children under 6 years of age (IRR, 1.15 [95% CI, 1.04–1.27], p=0.006) and 6-11 years of age (IRR, 1.13 [95% CI, 1.05–1.22], p=0.002), while no significant increase could be detected in adolescents aged 12 to 17 years (IRR, 1.05 [95% CI, 0.97–1.15], p=0.24).

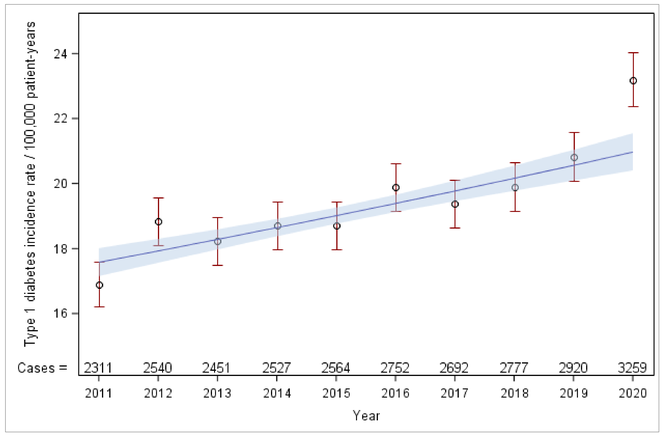

Figure 1. Incidence of type 1 diabetes in children in the year 2020 compared to the years 2011 to 2019.

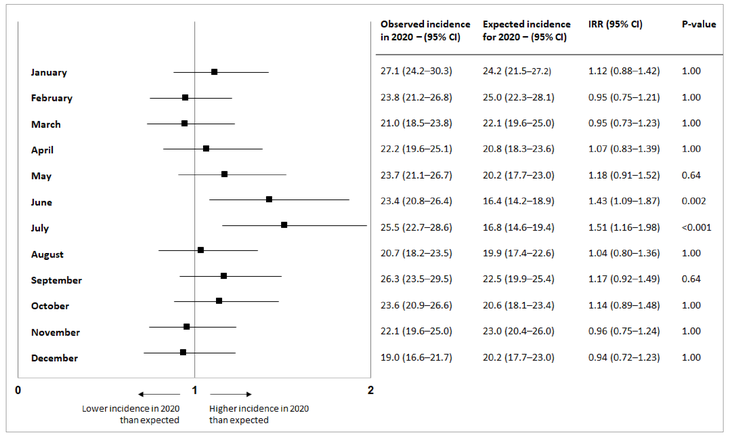

Figure 2. Incidence Rate Ratios (IRR) of observed versus expected incidence of type 1 diabetes in children and adolescents in 2020 by month. Incidence rate ratios (IRRs) are presented to show the estimated observed vs. expected incidence of type 1 diabetes in children and adolescents in the year 2020 by month.

CONCLUSIONS

This study found a significant increase in the incidence of type 1 diabetes in young children during the Covid-19 pandemic year 2020, with the peak incidence delayed about three months after the first wave of the pandemic. The underlying causes are yet unknown.

Further longer-term studies on the incidence of type 1 diabetes during the pandemic are essential.

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CONTACT INFORMATION

The authors have nothing to disclose.

Contact: clemens.kamrath@paediat.med.uni-giessen.de