The Lancet Regional Health - Europe 5 (2021) 100138

Contents lists available at ScienceDirect

The Lancet Regional Health - Europe

journal homepage: www.elsevier.com/lanepe

Letter

Are low SARS-CoV-2 viral loads in infected children missed by RT-PCR testing?

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ARTICLE INFO

Article History:
Received 20 April 2021
Revised 27 April 2021
Accepted 27 April 2021

The household is the main source of infection of SARS-CoV-2, and in a case-ascertained study we investigated the importance of age in household transmission dynamics [1]. We found that serological testing was more sensitive than RT-PCR in detecting household attack rates, with equally high attack rates in children (48%) and young adults (42%), showing that a negative RT-PCR test does not exclude infection. We therefore read with interest the commentary by Forland and Aavitsland [2] which specifically discusses our findings of equally high attack rates in children and adults. This commentary discusses SARS-CoV-2 transmission studies using RT-PCR only, not serological assays, both from Iceland and in a meta-analysis of attack rates [3-4].

Our study was performed at the start of the pandemic in Norway in an immunologically naïve population. Community transmission was very low (3.9:100,000 infected) during this period. Transmission outside the household was unlikely, as schools and nurseries were closed. Therefore, the family was the main, often only, source of infection in children. We found that nearly 90% of children had negative nasopharyngeal RT-PCR samples, yet they seroconverted 6 weeks later, confirming infection. The commentary proposes either poor sampling technique, or late testing, for the low RT-PCR positivity observed in children. However, the same nasopharyngeal sampling technique was used in children and adults, with a median time of testing 6 days after symptom debut, considered an optimal timing for RT-PCR testing. We believe that children simply had lower viral loads in the nasopharynx and therefore tested RT-PCR negative but were infected and seroconverted at 6-8 weeks.

The emergence of the more transmissible B.1.1.7 variant causes higher virus loads in the airways [5]. This variant has recently become dominant in Norway, with young children and 10–20-year-olds now among the most important groups testing RT-PCR positive, probably due to viral loads above the detection limit in nasopharyngeal samples.

Author contribution

Both authors contributed equally.

Declaration of competing interest

The authors have nothing to disclose.

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DOI of original article: http://dx.doi.org/10.1016/j.lanepe.2021.100031.

https://doi.org/10.1016/j.lanepe.2021.100138