

**SARS-CoV-2 variant Delta infects all 6 siblings but spares Comirnaty (BNT162b2,
BioNTech/Pfizer)-vaccinated parents**

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Dear Editor,

Recently, Ferreira I. *et al.* showed that SARS-CoV-2 spike mutations L452R and E484Q (as observed in the variant B.1.617.1, also named variant Delta) confer modestly reduced sensitivity to BNT162b2 mRNA vaccine-elicited antibodies [1]. While variant Delta spreads rapidly and dangerously worldwide [2], we would like to share a clinical observation illustrating BNT162b2 mRNA vaccine effectiveness against this variant in a French family cluster.

The index case is the second child of a family of 6 siblings (**figure**). He presented with fever and asthenia over 4 days. The virus rapidly spread within the close family. While the parents, who received 2 doses of the BNT162b2 mRNA vaccine one month before, remained negative (3 PCR in 2 weeks), all 5 siblings were found positive by SARS-CoV-2 PCR in nasopharyngeal swabs, with mild symptoms in the 4 youngest (**figure**). The older sibling, aged 15, who was overweight and with history of epilepsy, required hospitalization in our pediatric pulmonology unit after seven days of high fever and cough. At admission, oxygen saturation was low (92% in room air), heart pulse elevated (110 bpm), with no fever and normal lung auscultation. Blood tests revealed a lymphopenia ($0.58 \times 10^9/L$), mildly elevated liver enzymes (two times normal), normal C-reactive protein, and elevated D-dimers (1059 ng/mL). The computed tomographic pulmonary angiography showed typical SARS-CoV-2 pneumonia findings with bilateral and diffuse ground-glass opacities and nodular alveolar condensations (**figure**). SARS-CoV-2 Spike gene Sanger sequencing assessed the lineage as B.1.617.2 – variant Delta. He received acetaminophen and azithromycin for 3 days and his clinical course rapidly improved, allowing discharge 2 days after admission.

The question whether children and adolescents should be now largely vaccinated against SARS-CoV-2 is now being debated [3-6]. While the individual benefit of the vaccination may be limited, it could be an essential asset in reducing the spread of the pandemic, especially with the emergence of highly transmissible variants. Studies around the world are currently evaluating effectiveness of the existing COVID-19 vaccines against these various SARS-CoV-2 variants [1, 7-9]. Similarly to the observations by Ferreira I. *et al.* [1], Lustig Y. *et al.* observed that, despite being lower compared to the original SARS-CoV-2, the remaining neutralizing capacity conferred by BNT162b2 mRNA vaccination against variant Delta is probably protective [9]. A preprint by Bernal *et al.* reported that the effectiveness of 2 doses of Pfizer vaccine against this variant reaches 93.4% [7].

Currently, no evidence suggests that variant Delta causes more severe forms of COVID-19 in the pediatric population, but caution and monitoring are mandatory while this variant spreads. Our report highlights the high transmissibility and infectiveness of the variant Delta, and corroborates the effectiveness of 2 doses of BNT162b2 mRNA vaccine. Vaccinating children might be indispensable to counter the spread of the worldwide pandemic.

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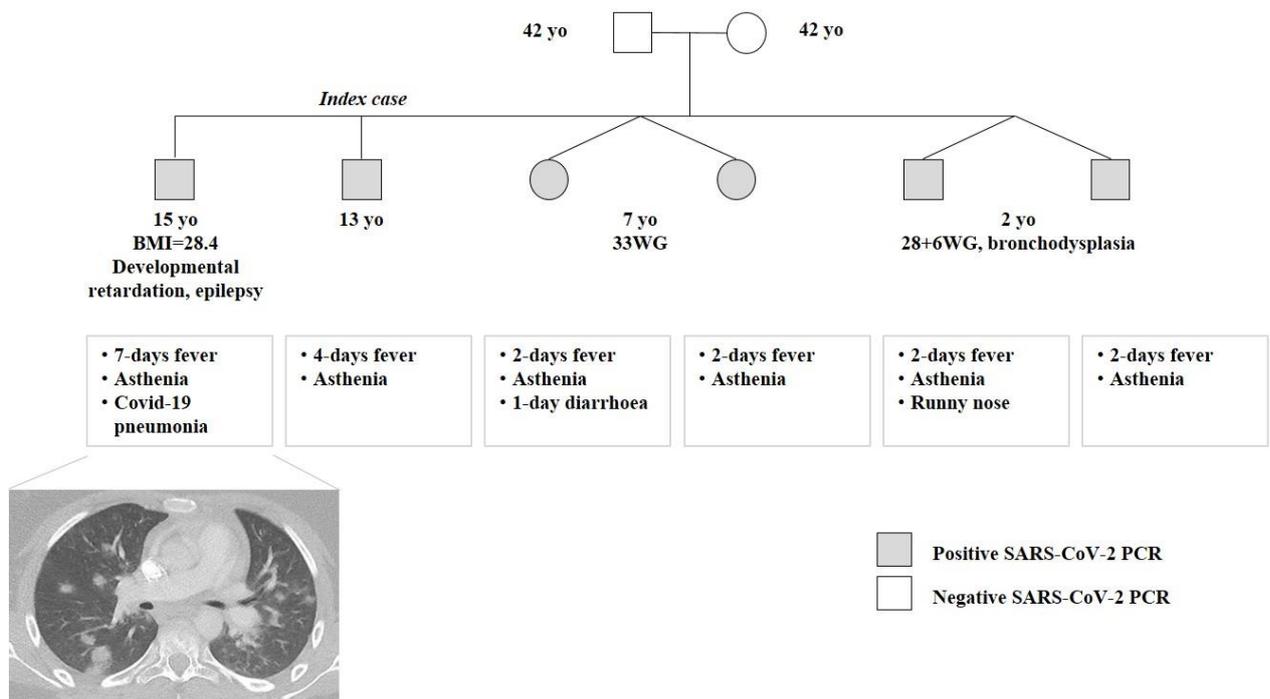
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Figure. Family tree with clinical symptoms of the siblings infected by the SARS-CoV-2 variant Delta.

Abbreviations: yo: years-old; BMI: Body Mass Index; WG: Weeks of Gestation.

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Figure 1



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