# The role of toll-like receptor (TLR)-2 and TLR-4 in pediatric patients with pneumonia

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December 5, 2022

## Abstract

**Background:** Since rapid and accurate diagnosis of pneumonia and the determination of its severity are challenging, especially in childhood, we aimed to evaluate the role of toll-like receptors (TLRs) in pneumonia, the investigation of which has been limited in animal and adult studies. **Methods:** TLR-2, TLR-4, interleukin (IL)-1β, IL-4, IL-6, IL-10, interferon (IFN)-α, and tumor necrosis factor (TNF)-α levels were evaluated in the serum samples of 67 pediatric patients with community-acquired pneumonia (CAP) (43 inpatients and 24 outpatients) and 22 healthy pediatric controls. Saliva samples from 30 pediatric patients with CAP (19 inpatients and 11 outpatients) and 20 healthy pediatric controls were also investigated. **Results:** In saliva samples obtained at the time of diagnosis, the threshold levels were 1.16 $2^{-([?][?]Ct)}$ for TLR-2 and 1.28 $2^{-([?][?]Ct)}$ for TLR-4 to differentiate patients with and without pneumonia, respectively. The sensitivity of salivary TLR-2 and TLR-4 assessment was 0.80 and 0.86, respectively. In the serum samples, TLR-2, TLR-4, IL-1β, IL-4, IL-6, IL-10, IFN-α, and TNF-α levels were significantly decreased in patients with novel coronavirus disease 2019 (COVID-19) compared with other viruses ($p<0.05$ for all). In the serum samples of patients with pneumonia due to COVID-19, IL-6 and IFN-α levels were significantly lower than in the control group ($p<0.05$ for all). **Conclusion:** Salivary analysis of TLR-2 and TLR-4 is beneficial in the diagnosis of severe pneumonia, especially in childhood.

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