Oxidant and Antioxidant Balance in Patients with COVID-19

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Abstract

Background: A crucial balance exists between oxidant and antioxidant mechanisms in the functional immune system. We aimed to evaluate the contributions of balance between these systems to coronavirus disease 2019 (COVID-19), a devastating pandemic caused by viral infection. Method: We analyzed serum oxidant and antioxidant stress parameters according to the clinical and demographic characteristics of children and adults with COVID-19 and compared them against the values of healthy controls. Serum native thiol (NT), total thiol (TT), disulfide, total antioxidant status, total oxidant status, and ischemia-modified albumin levels were evaluated and compared between groups. Results: A total of 79 children and 74 adults were evaluated in the present study, including 46 children and 40 adults with COVID-19, 33 healthy children, and 34 healthy adults. TT, NT, and disulfide levels were significantly lower in the adult COVID-19 group than in all other groups ($p = 0.001$, $p = 0.001$, and $p = 0.005$, respectively). Additionally, TT and NT levels were significantly lower in both pediatric and adult COVID-19 cases with severe disease course than mild/moderate course. TT and NT levels were identified as predictors for the diagnosis of the adult COVID-19 cases and as independent predictors for disease severity in both children and adults with COVID-19. Conclusion: Parameters that reveal the oxidant and antioxidant capacity, including TT and NT, appear to be good candidates for the accurate prediction of the clinical course among patients with COVID-19.

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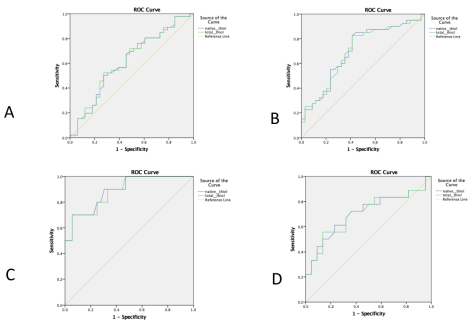

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