

ASSOCIATION BETWEEN BLOOD GROUP ANTIGENS FROM THE ABO SYSTEM AND THE SEVERITY OF COVID-19

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It has long been known that different blood antigens may carry risks or protection depending on the disease, and coronaviruses are no exception.

The first observations about the ABO blood group association with COVID-19 were reported at three hospitals in Wuhan and Shenzhen, China. The ABO blood groups distribution of 2173 patients with COVID-19 was compared with the healthy population from the respective regions. Blood group A was associated with a higher risk of severe COVID-19 compared to non-A blood groups, while blood group O was associated with a lower risk of infection compared to non-O blood groups. The distribution of A and O blood groups in the seriously ill compared to the general population in Wuhan was 39.3% vs. 32.3% and 25.7% versus 33.8% for O ($p < 0.01$), respectively.

Data from recent studies also suggest that individuals with blood group O are less likely to have severe disease after SARS-CoV-2 infection. Based on genomic data from over 8 million single-nucleotide polymorphisms from 1980 patients with severe COVID-19 in Italy and Spain, individuals with blood group A have higher odds of severe COVID-19 compared to the other blood groups; blood group O provides a protective effect against severe disease compared to other blood groups.

Studies demonstrate that blood group ABO is a biomarker for differentiated sensitivity to COVID-19. On the other hand, the ABO blood group is an important independent risk factor for cardiovascular disease and venous thromboembolism (VTE). In particular, the risk of thrombosis is significantly reduced in blood group O compared to non-O individuals. More recent data define the biological mechanisms by which ABO modulates thrombotic risk.