

The Effect of HLA-B27 on Susceptibility and Severity of COVID-19

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Hello, my name is Jim Rosenbaum.

It's my pleasure to share with you the results of our study on HLA-B27 and its effects on COVID-19 infection. This was a survey study organized primarily by the Spondylitis Association of America.

Most of us probably learned in grade school a basic principle of evolution: genetic polymorphisms persist if they offer a selective advantage. The classic example of this is hemoglobin S which is the cause of sickle cell anemia, but also offers protection against malaria.

The most polymorphic genes in humans belong to the HLA system. Some argue that this immense polymorphism helps to protect a species against a pandemic. HLA-B27 has been studied in this regard. It appears to offer some protection against HIV and hepatitis C, and possibly against influenza infection.

The Spondylitis Association of America (SSA) conducted a survey on COVID-19 between April 10, 2020 and May 31, 2020. The main purpose of the survey was to determine if spondyloarthritis or the medications used to treat spondyloarthritis influenced the severity or susceptibility to COVID-19. Those results have been published separately as a letter to the *Annals of the Rheumatic Diseases*.

The survey also allowed a test of the hypothesis that HLA-B27 would influence susceptibility or severity of COVID-19. To address this question, we analyzed 3435 respondents to our survey; 2836 respondents or 82.6% knew their B27 status, with 2157 being positive and 679 being negative. We assessed both the incidence and severity of COVID-19.

The survey included 41 subjects who believed they had had COVID-19, although that was based on positive testing in only 18. Remember that the study was conducted early in the epidemic when testing was not universally available. Ten of 679 B27-negative subjects reported having COVID, a rate of 1.5%. The rate was almost identical among B27-positive subjects, 1.4% or 31 of 2157.

This table is published with our report. It shows that the self-assessed severity of COVID-19 was not statistically significantly different as a result of HLA-B27 status.

So in conclusion, HLA-B27 does not appear to have a major influence on susceptibility or severity of COVID-19.

The limitations of our study include that we captured a relatively small number of subjects with COVID-19. The survey is ongoing to test the validity of our conclusions.

Our study included subjects without confirmed coronavirus infection.

As a survey, we relied on subjects for medical information without obtaining documented office records.

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