Blood donor serological screening for SARS-CoV-2 as a tool to estimate the prevalence of asymptomatic infection in a low-intermediate endemic area of southern Italy after the first wave of the pandemic

Federica Calò[1], Alessandra Di Fraia[1], Antonio Russo[1], Antonio Di Biase[2], Saverio Misso[2], Nicola Coppola[1]

[1]*Department of Mental Health and Public Medicine, Infectious Diseases Unit, University of Campania "Luigi Vanvitelli", Naples, Italy;* [2]*Transfusional Medicine, ASL Caserta, Italy*

Dear Sir,

Investigating the seroprevalence for SARS-CoV-2 in the general population is of the utmost importance to estimate the circulation of the virus in any one geographical area. The aim of the present study was to determine the seroprevalence for SARS-CoV-2 antibodies in healthy blood donors of the Campania region in southern Italy at the end of the first wave of the SARS-CoV-2 pandemic in order to estimate the prevalence of asymptomatic infections.

Consecutive stored blood samples collected from 21 April 2020 to 10 June 2020 from routine volunteer blood donors were evaluated for the presence of anti-SARS-CoV-2 antibodies. Donors were required to inform their reference transfusion service in the event of symptoms compatible with SARS-CoV-2 infection or in the case of a diagnosis of SARS-CoV-2 infection within 14 days after a donation (post donation information)[1].

For the ELISA test, we used WANTAI SARS-CoV-2 Ab ELISA (Beijin Wantai Biological Pharmacy Enterprose Co., Beijin, China), which tests for total antibodies to the SARS-CoV-2 receptor binding domain. The specificity and sensitivity declared was respectively 100% and 94.5%. A sample size of 1,741 produces a two-sided 95% confidence interval with a width equal to 0.010 when the sample proportion is 0.010. We compared patients testing positive for the serological test and patients testing negative using Pearson χ^2 or Fisher's exact test for categorical variables and Student's *t*-test for continuous variables; $p<0.05$ was considered statistically significant.

During the study period, a total of 1,808 serum samples collected from routine screening of blood from volunteer blood donors were assessed for the presence of anti-SARS-CoV-2 antibodies (**Table I**). Of the 1,808 serum samples collected, 15 (0.83%, 95% CI: 0.50-1.36) resulted positive for SARS-CoV-2 total immunoglobulins. All positive patients were contacted by telephone two weeks after the donation of the blood sample; no one reported symptoms compatible with SARS-CoV-2 infection.

In this area, the study found a low rate (0.83%) of seroprevalence of antibodies against SARS-CoV-2 in blood donors from April to June 2020. This seroprevalence reflects the very low circulation of SARS-CoV-2 in the Campania region prior to June 2020[2].

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Correspondence: Nicola Coppola
e-mail: nicola.coppola@unicampania.it

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Table I - *Characteristics of subjects enrolled*

Characteristics	Overall	Testing positive	Testing negative	p-value
N. of patients (%)	1,808	15 (0.83)	1,793 (99.17)	-
Males, n. (%)	1,147 (63.44)	11 (73.33)	1,132 (63.13)	0.41
Age, years, median (IQR)	44 (34-51)*	38 (30-49)	44 (34-51)*	0.60
N. (%) of patients in different age classes, (years)				
18-29	308 (17.03)*	3 (20)	305 (17.01)*	0.76
30-39	371 (20.52)*	5 (33,33)	366 (20.41)*	0.22
40-49	579 (32.02)*	3 (20)	576 (32.12)*	0.32
50-59	438 (24.22)*	3 (20)	435 (24.26)*	0.70
60-69	108 (5.97)*	1 (6.66)	107 (5.97)*	0.91
Period of blood sampling	21/04/2020-10/06/2020	21/04/2020-10/06/2020	21/04/2020-10/06/2020	-
Blood samples collected in April, 2020 n. (%)	476 (26.32)	2 (13.33)	474 (26.43)	0.02
Blood samples collected in May, 2020 n. (%)	1,189 (65.76)	9 (60)	1,180 (65.81)	
Blood samples collected in June, 2020 n. (%)	143 (7.91)	4 (26.67)	139 (7.75)	

*4 dates of birth missing.

Volunteer blood donors are truly representative of the asymptomatic proportion of the subjects affected by SARS-CoV-2 because they represent the healthy part of the population who may acquire the infection with no or mild symptoms.

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Keywords: COVID-19, SARS-CoV-2 infection, seroprevalence, blood donor, asymptomatic infections.

The Authors declare no conflicts of interest.

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