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☆ **Spotlight on Special Topics**

DOES ABO BLOOD GROUP INFLUENCE RISK OR SEVERITY OF COVID-19?

Poster Contributions
Saturday, May 15, 2021, 12:15 p.m.-1:00 p.m.

Session Title: Spotlight on Special Topics: COVID 2
Abstract Category: 61. Spotlight on Special Topics: Coronavirus Disease (COVID-19)

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Background: Whether blood type influences COVID-19 susceptibility or severity is controversial. Studies from Europe found a protective effect of type O, whereas initial observations in the US did not (Boston, Salt Lake City [Table]). We performed a prospective validation study to address this controversy.

Methods: We searched Intermountain Healthcare medical records for patients (pts) who were tested for SARS-CoV-2 between March 3-June 8 (derivation set, N=29,262) and June 9-Nov 2, 2020 (validation set, N=289,156) and had a recorded blood type. We compared virus positive vs. negative, hospitalized vs. non-hospitalized, and intensive care unit (ICU) vs. non-ICU pts.

Results: ABO associations are shown in the Table. Type O was not protective in either cohort. Type O predicted an increased risk of SARS-CoV-2 positivity in the derivation but not validation cohort. ABO profile did not predict hospitalization or ICU care, which were neither reduced by type O nor increased by type A. Analyses restricted to white race and considering Rh factor were similar.

Conclusion: We were unable to validate prior reports of a protective effect of type O, but we did validate derivation set observations of a null effect on hospitalizations and ICU admissions and overturned a preliminary association of type O with virus positivity. Additional studies, controlled for genetic background, geography, and viral strain, will be needed before accepting blood group as a determinant of predisposition to or severity of COVID-19.

Table.

A. SARS-CoV-2 Tested Patients						
	Derivation			Validation		
	Negative	Positive	p-value	Negative	Positive	p-value
	N=28,001	N=1261		N=247,296	N=41,860	
Age (years)	45.4 ± 17.9	44.4 ± 16.1	0.04	44.8±17.9	44.6±16.9	0.23
Sex (male)	22.8%	27.3%	0.001	44.1%	48.9%	<0.0001
White race	92.9%	79.1%	<0.0001	86.3%	78.2%	<0.0001
Blood type			<0.0001			0.49
A	40.2%	32.8%		40.4%	40.5%	
B	9.2%	10.7%		9.3%	8.8%	
AB	3.2%	2.5%		3.3%	3.3%	
O	47.3%	53.9%		47.0%	47.4%	
B. SARS-CoV-2 Positive Patients by Hospitalization Status						
	Derivation			Validation		
	Non-hospitalized	Hospitalized	p-value	Non-hospitalized	Hospitalized	p-value
	N=962	N=299		N=8,082	N=1,987	
Age (years)	40.7±14.0	56.1±17.0	<0.0001	41.5±15.0	57.2±18.3	<0.0001
Sex (male)	19.4%	52.5%	<0.0001	20.6%	49.6%	<0.0001
White race	82.6%	67.9%	<0.0001	89.3%	77.0%	<0.0001
Blood type			0.75			0.49
A	32.2%	34.8%		40.8%	39.4%	
B	10.5%	11.4%		8.9%	8.5%	
AB	2.5%	2.7%		3.2%	3.5%	
O	54.8%	51.2%		47.1%	48.7%	
C. Hospitalized Patients by ICU status						
	Derivation			Validation		
	Non-ICU	ICU	p-value	Non-ICU	ICU	p-value
	N=158	N=141		N=1,436	N=551	
Age (years)	53.5±18.3	59.6±14.6	0.001	55.8±18.9	61.1±16.2	<0.0001
Sex (male)	43.0%	63.1%	0.001	45.1%	61.3%	<0.0001
White race	68.4%	67.4%	0.67	78.9%	72.1%	0.004
Blood type			0.03			0.50
A	42.4%	67.4%		39.6%	38.8%	
B	8.9%	14.2%		8.8%	7.4%	
AB	2.5%	2.8%		3.7%	2.9%	
O	46.2%	56.7%		47.9%	50.8%	

Results were unchanged when Rh-factor status was added.