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COVID-19 and blood type: People with which group are more vulnerable?

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Recommended Citation

O. AL-Khikani, Falah H. (2020) "COVID-19 and blood type: People with which group are more vulnerable?," *Journal of Medicine in Scientific Research*: Vol. 3: Iss. 2, Article 13.

DOI: https://doi.org/10.4103/JMISR.JMISR_42_20

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COVID-19 and blood type: People with which group are more vulnerable?

Dear Editor,

The number of confirmed cases of the 2019 novel coronavirus (COVID-19) reported to the WHO continues to rise worldwide. The outbreak of the novel coronavirus (COVID-19) is being regarded a serious threat to the global community [1]. On March 17, 2020, the total number of confirmed cases was 179 111 globally, with 7426 death. The number of infected nations has increased to 158 countries. The mortality rate of this novel virus is 3–4% (dividing the total death numbers by the total recorded cases) (Table 1) [2].

The most common infected persons with COVID-19 were men with chronic pulmonary or cardiovascular disorders, hypertension, and diabetes. Infected individuals have a fever, cough with sputum, headache, and diarrhea. Renal failure may be one of the viral complications [3].

Zhao *et al.* [4] reported that individuals with blood group type A are at high risk to get COVID-19 compared with other blood groups, whereas people with blood group type O have a lower risk for acquiring infection compared with others [4].

This emergent finding is based on comparing the blood group of 2173 confirmed patients with COVID-19 (including 206 dead cases) in China with that in normal people from a similar area.

The tested ABO blood group of 3694 normal individuals showed distribution of 32.16, 24.90, 9.10, and 33.84%, for A, B, AB, and O, respectively, whereas of 1775 persons infected with COVID-19 appeared as 25.80, 10.03, 26.42, and 37.75% for O, AB, B, and A, respectively. The proportion of blood group A in patients with COVID-19 was significantly higher than that in normal people, being 37.75% in the former versus 32.16% in the latter ($P < 0.001$). On comparison of blood group A in normal people (32.16%) with patients with

COVID-19 (37.75%), it was significantly higher in patients with COVID-19 ($P < 0.001$), whereas the blood group O in patients with COVID-19 was clearly lower than that in normal persons, being 25.80% in the patients versus 33.84% in the normal people ($P < 0.001$). The risk among blood group A individuals was higher for being infected with COVID-19, with an odds ratio (OR) of 1.279; on the contrary, there was decreased risk among those with blood group O for COVID-19, with an OR of 0.680, compared with other blood groups.

In the 206 dead patients, ABO group distribution was also observed. Blood group A individuals have a higher risk of infection compared with blood group O in the dead individuals; the presence of O, AB, B, and A in the total investigated dead patients was 25.24, 9.22, 24.27, and 41.26%, respectively.

Blood group O was associated with a lower risk of death compared with non-O groups, with an OR of 0.660. On the contrary, blood group A was associated with a higher risk of death compared with non-A groups, with an OR of 1.482 (Fig. 1).

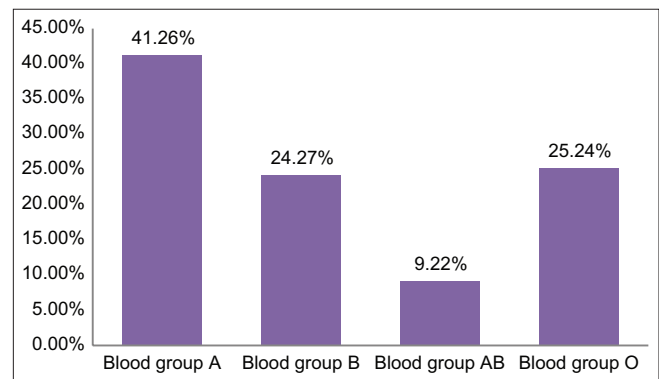


Figure 1: Distribution of ABO blood group in 206 dead patients with COVID-19

Table 1: 2019 novel coronavirus (COVID-19) outbreak

Duration	Total confirmed	In China	Outside China	Total death	Number of countries
3 January	44	44	0	0	1
20 January	282	278	4	6	4
31 January	9826	9780	106	213	20
1 February	11 953	11 821	132	259	24
5 February	24 554	24 363	191	292	24
12 February	45 171	44 730	441	1115	25
19 February	75 204	74 280	924	2009	26
26 February	81 109	78 191	2918	2761	37
10 March	113 702	80 924	32 778	4012	109
15 March	153 517	81 048	72 469	5735	144
17 March	179 111	81116	97 995	7426	158

To conclude, the ABO blood groups displayed different associated risks for the infection with COVID-19. Blood group A was significantly associated with an increased risk, whereas blood group O was associated with a decreased risk, thus demonstrating that the ABO blood type is a biomarker for differential susceptibility of COVID-19. People with blood group A might require particularly enhanced personal protection to diminish the chance of infection and should receive more vigilant surveillance and aggressive management.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code: 	Website: www.jmsr.eg.net
	DOI: 10.4103/JMISR.JMISR_42_20

Submitted: 18-Mar-2020 Revised: 03-May-2020 Accepted: 16-May-2020 Published: 24-Aug-2020

How to cite this article: AL-Khikani FH. COVID-19 and blood type: people with which group are more vulnerable? J Med Sci Res 2020;3:158-9.