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SARS-COV-2 ANTIBODIES LONGEVITY TREND

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ABSTRACT
As knowledge of SARS-CoV-2 infection progresses, so does progress in diagnosis, treatment, and prevention. The scientifically proven data are more and more in-depth. The current problem at the moment is the monitoring of the developed immunity and the need for vaccination of the patients who were ill. There is not a single opinion with a clearly defined algorithm for behavior in individual cases, and questions from the population are commonplace in the clinical practice. With the increase of experience in medicine, the need for new knowledge in order to outline all aspects of the disease increases. We are witnessing and participating in the creation of clear and specific measures and criteria in relation with the scourge of the 21st century, namely, the Covid-19 infection.

Key words: Coronavirus immunology, Antibodies life-level, Natural and vaccinated AB titers

BACKGROUND

Researchers at the Icahn School of Medicine in Mount Sinai found that most patients had neutralizing antibodies for more than a year after the infection and illness. This study was carried out between July 2020 and April 2021, based on more than 600 studied participants. Some acute respiratory coronavirus infections elicit an immune response from virus-neutralizing antibodies directed against the Spike protein. However, previous studies months after the infection showed a very low titer of protective (IgG) antibodies. In a massive study of more than 600 patients, more than 1,195 antibody tests were performed by the ELISA method. In 90% of them in the interval of illness (from 30 days to 13 months), positive antibody results were found (1). It is clear that seroconversion of IgM to IgG around 10-11-12-14 days after the onset of the disease, as well as virus neutralizing antibodies, are of paramount importance. Based on a randomized study that followed patients for up to 60 days after the illness, in some of them the titer of virus neutralizing antibodies was huge, while in others it was insignificant, as required by the discussion of vaccines, but individually only in the second group of people (2).

MATERIALS AND METHODS: We collect the data from our families which provided us with their laboratory results voluntarily. We divided the data into two groups – 9 patients who got sick and 7 who got vaccination. After the primary processing it was necessary to make equivalent the units of measurement of the antibodies level from AU into BAU using the formula AU x 2,6 = BAU. Then we made a simple logarithmic trend of antibodies level whereas the formulas are presented in Diagrams 1 and 2 made by Microsoft Excel.

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RESULTS

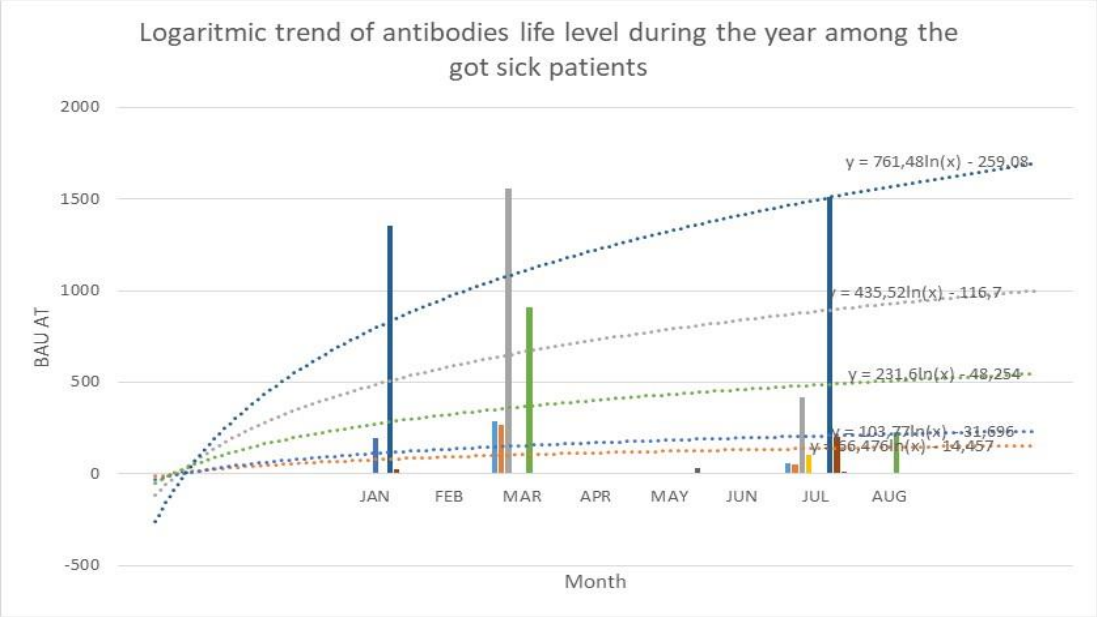
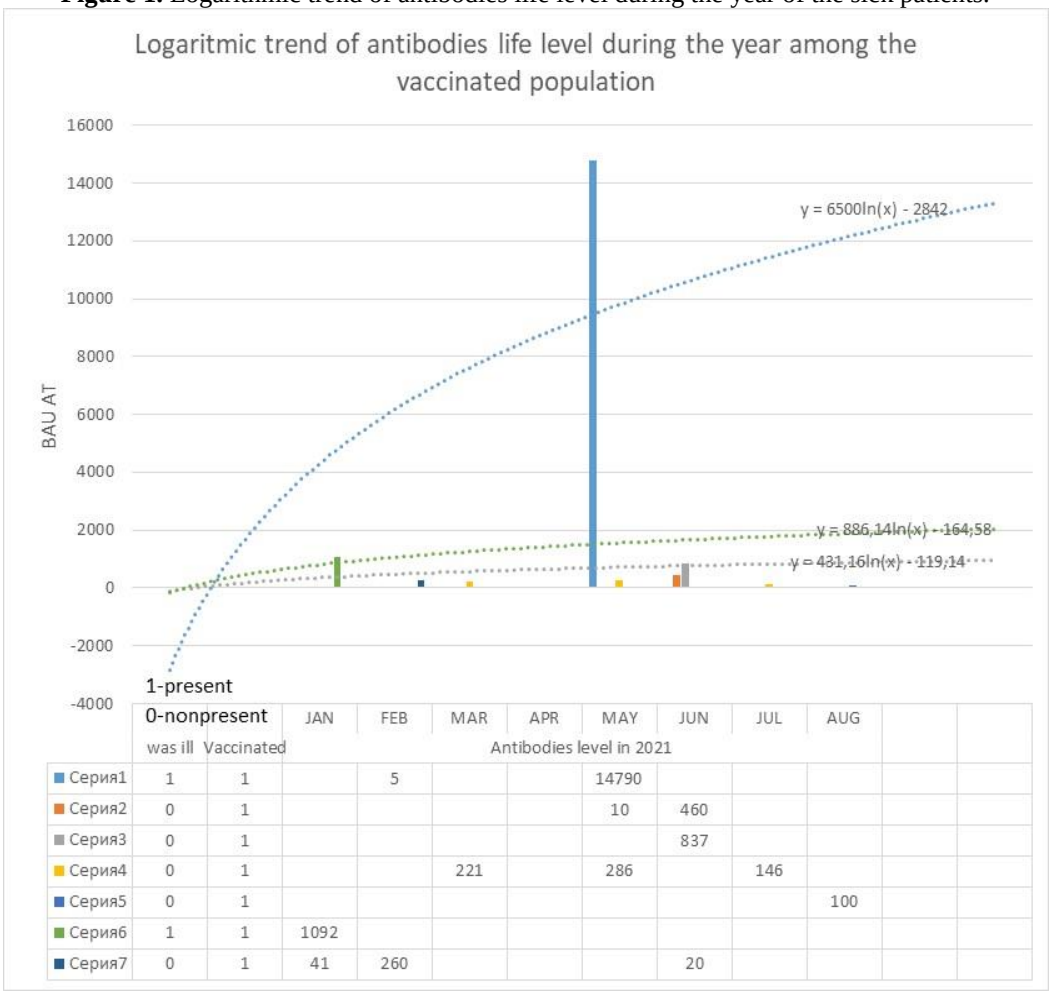


Figure 1. Logarithmic trend of antibodies life level during the year of the sick patients.



1-present
0-nonpresent

	was ill	Vaccinated	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG		
			Antibodies level in 2021									
Серия1	1	1		5			14790					
Серия2	0	1					10	460				
Серия3	0	1						837				
Серия4	0	1			221		286		146			
Серия5	0	1								100		
Серия6	1	1	1092									
Серия7	0	1	41	260				20				

Figure 2. Logarithmic trend of antibodies life level during the year among the vaccinated population.

DISCUSSION

The results of our study confirm the documented data on the topic in the world literature so far. The results of BAU - AT titers in the group of surviving patients are certainly impressive. This shows a stable process of building natural immunity in the studied individuals, with peak values of the titer of virus-neutralizing antibodies above 1000 in three of the studied 500 patients and below in the remaing patients. There is also a cyclic recurrence in the peak waves in the titers of virus-neutralizing antibodies, as they coincide with the waves of increased morbidity in the months of November - December, March - April, and they are examined about 60-90 days after their occurrence. Compared to these results, those for the vaccinated group do not show such a cyclic recurrence, as the difference in the titer of the synthesized virus-neutralizing antibodies is very demonstrative, whose values are much lower as compared to the group of survivors. This is a further evidence that the innate immunity to COVID infection, developed after a clinically evident coronavirus infection, has been shown to be much more satisfactory than in vaccinated patients.

The case of one of the studied patients is especially interesting. He suffered from moderate COVID-19 in November 2020, and then in February (the 3rd month after infection) he tested for an antibody titer of 1.92. He was subsequently vaccinated twice with the BNT162b2 vaccine. The titer of virus-neutralizing antibodies in May is impressive - 14790, 6 months after illness and 3 months after vaccination. This case well outlines a current pattern of behavior in cases of low levels of virus-neutralizing antibodies after illness with the option of administering a vaccine to help build satisfactory immunity after a COVID-19 infection.

CONCLUSIONS

The present study demonstrates that the results of large-scale immunity studies of COVID worldwide are comparable to those of the studied population. It is clear that the natural immunity after COVID-19 is many times higher than that created after vaccination in non-sick patients. The isolated case of a patient with insufficient immunity after illness and a satisfactory one after vaccination shows that the vaccination after experiencing a COVID infection can significantly contribute to the development of lasting tense immunity. Our study outlines a stable pattern for monitoring and prevention of the population in a COVID-19 pandemic.

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