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Letter to the Editor

COVID-19 and Hydatidosis Infections: Is There Any Relationship?

Somayeh Matin [1], Sahand Talei [2], Abdolhossein Dalimi [3], Masoomeh Dadkhah [4], Maryam Ghorbani [5], *Soheila Molaei [4]

1. *Department of Internal Medicine, Imam Khomeini Hospital, Ardabil University of Medical Sciences, Ardabil, Iran*
2. *School of Medicine, Tehran University of Medical Sciences, Tehran, Iran*
3. *Department of Medical Parasitology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*
4. *Pharmaceutical Sciences Research Center, Ardabil University of Medical Sciences, Ardabil, Iran*
5. *Deputy of Research & Technology, Ardabil University of Medical Sciences, Ardabil, Iran*

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*Correspondence Email:
s.molaei@arums.ac.ir

Dear Editor –in-Chief

The study was conducted between March 10 and August 15, 2020 in Imam-Khomeini Hospital of Ardabil University of Medical Sciences in Iran. The main aim was to explore the infectious rate of COVID-19 in 38 hydatid cyst patients, especially in cases with pulmonary involvement (Table 1). In addition, anti-hydatid antibodies were evaluated in 150 active COVID-19 patients by ELISA Test (Pishtazteb Kit, Cut- off: Mean+ 2.3 SD). The research method was approved by the Committee for Ethics in Biomedical Research of Ardabil University of Medical Sciences (Approval ID: IR.ARUMS.REC.1399.065).

The results obtained from following up 38 hydatidosis patients, that none of them contracted COVID-19. This result is more interesting when we consider that the families (including father, mother, etc.) of 8 patients with pulmonary hydatidosis have had active COVID-19, tested by PCR, and the results all of these 8 cases were negative. On the other hand, the survey of the patients' treatment history indicated that all of them had history of using albendazole at a dose of 400 mg twice daily for 28 days, then 14 drug-free days for two repeated period. Also, anti-hydatid antibodies of 150 active COVID-19 patients were negative.

Table 1: Descriptive characteristics of hydatid cyst patients at surgery Hospitals of Ardabil University of Medical Sciences, Ardabil, Iran (N=38)

Characteristics (n=38)		***Pulmonary Hydatid Cyst (n=10) Mean± SD/n (%)***	***Liver Hydatid Cyst (n=28) Mean± SD/n (%)***	***Total ((n=38)) Mean± SD/n (%)***
Gender	Male	6 (60)	10 (35.7)	16 (42.1)
	Female	4 (40)	18 (64.3)	22 (57.9)
Age (yr)	14-72 years	38± 14.9	43±16.1	39.44± 16.02
Anti-hydatid Antibody		4.2-5.6	3.9-4.8	38 (100)
COVID-19 (Clinical Symptoms: n=30 Real-Time Results: n=8)		Negative	Negative	Negative

The question is why patients with COVID-19 in Ardabil Province were negative for anti-hydatid antibodies, while 1.79-11.07% of the people in this province are positive (1, 2)? Also, why none of the people with a history of hydatidosis have not infected with COVID-19, while some of them were in direct contact with infected people?

Is it possible that hydatid cyst infection prevents COVID-19 infection? Instances of COVID -19 and malaria co-infection (3) as well as COVID-19 with different types of pathogens of respiratory tract have also been reported in the literature (4).

Two possibilities are at issue here: either there is an interaction between hydatid cyst antigens and coronavirus proteins, which there is no information; or the consumption of albendazole by hydatidosis patients has protected them against COVID-19. In worms and covid19 coinfection, it has been reported that immune responses become modified to the advantage of the host (5). Coinfection with *Schistosoma mansoni* and coronavirus decreases the severity of the disease in mice (6). Also, acute or chronic helminthic infections are believed to decrease the levels of pro-inflammatory cytokines implicated in COVID-19 severe cases, the type1 immunity response cytokines and therefore may improve morbidity and mortality of patients (7). However, type 2 responses in COVID-19 infection, also play pivotal roles in progression and pulmonary involvement, making this issue a lot more sophisticated to understand whether helminthic infection could improve or intensify disease processes.

Use of drugs like albendazole in hydatid cyst patients might be the reason for their protection against COVID-19. It has recently been suggested that the use of fenbendazole and other drugs of this category including mebendazole and albendazole could effectively protect people against COVID-19 (8).

In conclusion, our study showed a possible relationship between anti-hydatid antibody or hydatid antigens and COVID-19 infection. Although, the authors suggest large scale studies to be conducted. Moreover, it is recommended that the effects of albendazole and also, mebendazole on SARS-CoV-2 to be investigated in both in-vitro and in-vivo and also clinical trials studies on COVID-19 patients.

Conflict of Interest

The authors declare that there is no conflict of interests.

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