

## Co- infection of parasites and fungal infection and COVID- 19

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COVID- 19 is still the most serious worldwide public health crisis. However, the differences in susceptibility to COVID- 19 and the disease severity across nations continue to be concern. The number of cases and mortality of COVID- 19 is on the rise. The morbidity and mortality of COVID- 19 in low income with chronic helminthic infection is lower than developed countries. According to the studies in African countries, patients co- infected with parasites had not severe symptoms. Parasite co- infection with both protozoa and helminthes may protect against prognosis of sever COVID- 19. The most common fungal infections in patients with COVID- 19 include invasive pulmonary aspergylosis, candidiasis and mucormycosis, especially in high risk and immune- compromised or on long term pharmacotherapies' to develop fungal infection. In our Medical diagnostic laboratory (IRAN-ZAMIN) in Ahvaz city, Southwest Iran, I examine the specimens referred to the lab for parasitology and fungal examination. Since the outbreak of COVID- 19 in 2019. I reported many cases of opportunistic fungi, including aspergylosis, candisiasis, mucormycosis in lavage, sinus discharge and sputum received from the COVID- 19 patients. All diagnosed cases were in ICU ward. Most of them were diabetes or receiving immune- suppressed medicine. In a research carried out in Kerman province, by Professor Iraj Sharifi and his colleagues on COVID- 19 patients with a history of previous cutaneous leishmaniasis scar indicated the significantly prevented incidence of morbidity and mortality. The cross-protection mediated by the CL cured cases would presumably retard COVID- 19 in endemic countries. Analyses showed that COVID-19 cases reduced with endemicity of malaria, schistosomiasis, or soil-transmitted helminth infections suggestive of a possible protective effect from COVID-19. Nioni and Napoli (2020) reported that individuals in malaria endemic settings seem to be protected from COVID-19. These preliminary findings from an ecological analysis, support the hypothesis of a possible immune-modulatory mechanism induced by parasitic infections, which is protective against COVID-19 and warrants further investigation (Ssbambulidd et al, 2020)