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Short Communication

Physicians Take Heed of the Potential for the Appearance of Opportunistic Mycotic Infections in COVID-19 and Lyme Disease

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Quotation: "The possible presence of Opportunistic Mycotic Infections always needs to be a consideration in the treatment of Patients infections with COVID-19, Lyme and Related Tick Borne Infections and simultaneous infections with COVID-19 and Lyme and Related Tick Borne Infections".

It was observed in the decades of the 1960's and 1970's that there were major hurdles to be overcome as relates to procedures involving organ transplants, cancer therapies, burn therapy, infectious processes, inflammatory responses and AIDS-related impaired immune responses [1-4]. In those early years it was learned that overuse of broad spectrum anti-bacterial antibiotics and corticosteroids were linked to the rise of deadly opportunistic fungal infections [4,5].

During the current COVID-19, we have been observing the many deadly consequences of this viral pathogen. This deadly viral infection can bring about a pneumonic infection and also invade other organs of the human body [7]. We have also been observing cases of individuals who have now been designated as "long haulers" who manifest lingering symptoms long after their viral carriage testing via PCR has been negative [8].

Recently alarms bells have been loudly ringing from investigators in several parts of the world with appearance of secondary opportunistic infections in cases of COVID-19 [7-13]. The common thread that has linked all of these warnings was that members of the medical community were either not paying attention to or had overlooked the fact of the possible presence of mycotic opportunistic infections among their COVID-19 patients [7-13]. The use of corticosteroids and glucocorticosteroids (i.e. dexamethasone), as well as the use of broad spectrum antibacterial antibiotics played an important contributing role in the increased appearance of such mycotic agents as *Aspergillus, Mucor, Candida* and Pneumocystis just to name a few fungal agents [6-10].

The investigations of Bedard and his colleagues cited the presence of pneumonic conditions associated with Pulmonary Aspergillosis [9]. This finding was echoed by the investigations of Marr and his associates [11]. The investigations of Rabagliati et al in Chilefurther noted the presence additional mycotic infections among their COVID-19 patients that were associated with Mucormycosis [12]. The presence of Mucormycosis was also noted to be present among COVID-19 patients in India [13]. An important point to never lose sight of is the fact that fungal infections are associated with impaired cellular immunity. We learned from the past that the overuse of corticosteroid therapy adversely effects cellular immunity [1-5]. The importance of cellular immunity in COVID-19 infections has been recently reported in the investigations of Sewall and his colleagues [14].

The investigations of Bedard and his colleagues have additionally noted that secondary infections that were frequently linked to both mycotic and bacterial agents [9]. Bedard noted that these aforementioned bacterial and fungal pathogens were found in approximately 50% of their COVID-19 patients that had expired [9].

Perhaps the saddest fact of all was that in many instances the presence of opportunistic mycotic and bacterial pathogens was either not addressed or overlooked by the medical community [7-10]. Multiple investigators in many parts of the world have advocated a need for a more organized approach to address the problems associated with the possible presence of opportunistic mycotic infections in the treatment of patients with COVID-19 infections [7-13].

Lyme and tick related infections can be associated with the presence of multiple pathogens which the victim of a tick bite receives at the time of the bite [15]. Lyme disease has been associated with cases where victims of tick bites can suffer from a persistence of symptoms [15,16].

Horowitz notes that it is also importance to investigate the possible presence of mycotic agents [17]. This is a point that is frequently overlooked by members of the medical

Community who are treating patients for Lyme and related Borne Infections [17]. Because of the use of antibacterial antibiotic therapy (in doxycycline) in the treatment of Lyme Disease, there can also occur Candida overgrowth in the gastrointestinal tract [17,18]. Horowitz also notes that other fungal infections can occur in patients being treated for Lyme and related Tick Borne Diseases [17]. It has noted that in areas that are endemic for simultaneous infections involving both COVID-19 plus Tick Borne Diseases the diseases scenario becomes more complicated [16].

Thus, the possible presence of Opportunistic Mycotic Infections always needs to be a consideration in the treatment of Patients with COVID-19 infections, Lyme and Related Tick Borne infections, and in simultaneous infections with COVID-19 and Lyme and Related Tick Borne Diseases.

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