

COVID-19 in a Depressed Patient with Generalized Urticaria

Running Title: COVID-19 in a Depressed Patient

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Abstract

Health concerns, changes in lifestyle, job losses, economic hardships, and the death of family members during the Covid-19 pandemic have led to depressive disorders. Here, a 39-year-old man referred to a psychiatric clinic with the complication of depressed mood, which was exacerbated by stress, anxiety, restlessness, and insomnia. In addition, he was referred to a cardiologist and dermatologist because of uncontrolled tachycardia and urticaria. After detailed examination, the final diagnosis was COVID-19, along with anxiety disorder and dermatological diseases.

Since the Coronavirus disease (COVID-19) can cause stress and psychological problems, it can disrupt the patient's healing process if ignored. On the other hand, there seems to be a strong association between psychiatric illnesses with COVID-19 and urticaria that can be investigated.

Keywords: COVID-19, Depression, Psychiatric Disorder Urticaria

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Introduction

The first case of this disease was reported in 2019 in China and defined as a pandemic in March 2020. According to published research, Coronavirus's most common clinical manifestations are headache, cough, dyspnea, fever, fatigue, myalgia, anorexia, ageusia, anosmia, sore throat, and chills (1). Although pulmonary presentations are the main presentations of the disease, COVID-19 is not restricted to the airway system; other parts such as the liver, gastrointestinal, cardiovascular, kidney, etc., can also be affected. Extrapulmonary infections of different strains of COVID-19 are known (2).

For the first time, Recalcati in Italy reported that in a study involving 88 patients, 18 patients (20%) showed skin manifestations (3). COVID-19 infection may appear as a trigger or predisposing factor for the initiating of urticaria. Cofactors such as stress may also contribute to the urticaria being expressed (4).

The relationship between psychiatric disorders such as depression and anxiety with allergy-related inflammatory has been proven in studies. (5). Since urticaria is also an inflammatory allergic disease, it is associated with stress, restlessness, anxiety, and depression. The patient with chronic urticaria may develop posttraumatic stress disorder (PTSD) symptoms that influence psychological well-being through different levels of emotional suppression, especially repressing depression (6).

Case report

A 39-year-old, educated married man was referred to a general psychiatry clinic with a history of job

stress, chest pain, depressed mood, and urticaria. Chest pain was substernal with the quality of squeezing and sharp, which was exacerbated by anxiety. He referred to a cardiologist and also an internist. Both had suggested an atypical chest pain due to psychological reasons. The patient one week later became infected with COVID-19 and had malaise, mild respiratory distress, and urticaria that was generalized and ranged from 0.7 to 1/5 cm in diameters. After three days, he visited a dermatologist and based on the positive PCR test and the pattern of the involvement, COVID-19-induced urticaria was diagnosed (**Figure 1**).

Hydrocortisone, Cetirizine, and Hydroxyzine were prescribed for the itching. The urticaria had affected the skin around his abdomen, hands, feet, and lips. No conjunctiva or throat involvement was reported.

The patient had a previous history of hypothyroidism, diabetes mellitus, hypertension, trichotillomania, and skin picking disorder that all were controlled with drugs. Positive family history of a psychiatric disorder and substance use was not reported. He worked in a stressful job with 16 hours a day on average. Six months later, the patient lost his mother, which caused depression and four episodes of panic attacks. He met the criteria for panic disorder in DSM 5 edition (Diagnostic and Statistical Manual of Mental Disorders), with depression as a symptom, but no major depressive disorder (MDD) was diagnosed. He was prescribed Sertraline 50 mg daily. In the first follow-up (3rd visit), the patient still complained about chest pain, urticaria, irritability, and depressed mood that were not that efficient. In the next visit, Pregabalin 75 mg,

Escitalopram 10 mg, and Duloxetine 20 mg daily were prescribed, and psychoeducational and cognitive-behavioral therapy (CBT) was performed. Finally, the response to treatment was favorable and resolved about urticarial, pruritus, anxiety, and depression.



Figure 1. Exuberant urticarial lesions on the hand, forearm, and leg (from left to right), light erythema, and edema on the palms.

Discussion

COVID-19 has become a recent pandemic, frequently affecting the respiratory tracts. However, it could be presented in various clinical demonstrations, such as skin involvement (7). One of the most common dermatological presentations is urticaria (8) which refers to pruriginous erythematous papules or plaques on the skin that appears suddenly (9). Histamine and the cutaneous mast cells have a key role in urticaria. Cross-linking of two or more abutting allergen-specific immunoglobulin (Ig) E molecules bounding to the high-affinity IgE receptor (FceRI) on basophils or mast cells will inaugurate a series of intracellular signaling related to calcium to incomplete degranulation in allergic urticaria. (10).

Immunological urticaria that upshots in mast cell activation is a hypersensitivity response mediated by T-cells or antibodies (11). In-vitro studies show evidence of the presence of autoantibodies against IgE and FceRI on basophils and mast cells which release histamine (10).

Nonimmunological type is a result of mast cell stimulation through membrane receptors involved in natural immunity (e.g., complement, Toll-like, cytokine/chemokine, opioid) or by straight toxicity of xenobiotics (haptens, drugs) (11).

Psychological consequences such as depression seem more common in the patients with COVID-19 and allergic diseases like urticaria (12). A systematic review and meta-analysis of 12 surveys related to urticaria and depression and anxiety showed a two-way relationship between them, but the causality has not entirely cleared. The relationship can be explained as follows: mast cells are critical for the pathogenesis of inflammatory diseases, and the evidence showed that depression could progress based on inflammatory changes, such as tumor necrosis factor-alpha (TNF- α), interleukin-6 (IL-6), IL-2, IL-1 β , and C-reactive protein (CRP). Urticaria might be caused possibly through mechanisms involving the hypothalamic-pituitary-adrenal axis, changes in emotional status, or brain-gut-microbiome axis caused psychological disorders (13).

Anxiety, job stress, a history of depression, and losing his mother a few months ago could be triggers for urticaria and its exacerbation in this patient. Moreover, urticaria can cause anxiety problems. Since the patient had a panic attack and

chest pain, the cause can be urticaria and subsequent problems such as itching, restlessness, and insomnia.

COVID-19 may be a causative or predisposing factor for the initiation of urticaria by increasing inflammatory mediators. Additional cofactors such as stress, depression, and anxiety disorders may contribute to expressing the urticaria phenotype. Therefore, it will be hard to manage depressed patients with COVID-19 and urticaria.

Conclusion

Psychological conditions like depression or anxiety may predispose more severe allergic reactions in the patients with the Coronavirus. However, further studies need to have an appropriate clinical approach.

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