COVID-19 clinical presentations: the modern mimic of other conditions

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Abstract

The coronavirus pandemic (COVID-19) has placed enormous challenges on the health sector. Diagnosis is one of these challenges, where a clinical presentation may suggest a disease other than COVID-19. In this review we describe many presentations unrelated to the respiratory system. The ACE2 receptor is present in a wide variety of body tissues and it appears that this may be a link with the clinical pathology. To find these data we searched the major academic research engines, Google Scholar, and Pubmed, as well as the most recent case reports and original research published in specialized journals.

An awareness of these uncommon presentations helps health workers to recognize and treat the disease early and appropriately.

Keywords: COVID-19, coronavirus, pandemic, ACE2, unusual symptoms, review

Introduction

The symptoms of high fever and cough were recognised in Wuhan City (China) in December 2019 and were identified as caused by the novel coronavirus SARS-CoV-2. In 2020, the World Health Organization (WHO) declared COVID-19 to be a pandemic and recommended many precautionary measures to counter the disease. According to WHO in November 2020 the number of confirmed cases worldwide was 54,400,000 and deaths 1,320,000. The threat to health services is immense and is exemplified by the experience in Italy where services struggled to cope.[1]

Unusual clinical presentations, other than those related to the respiratory system, of COVID-19 challenges the skills of the healthcare professional. These presenting features may be related to almost any system of the human body.[2] In this review we describe this wide variety of presentations system by system with the aim of alerting clinicians of these important factors.

Central nervous system (CNS) and psychiatry

Neurological symptoms may be manifestations of the COVID-19. In one report, a 35-year-old female complained of a severe occipital headache radiating to the neck and accompanied by convulsions. After T2 Fluid-attenuated inversion recovery magnetic resonance imaging had been carried out, the initial diagnosis was as a glioma, then surgically treated after the failure of anti-epileptic drugs. A left anterior temporal lobectomy was performed, without postoperative complications. The histological study proved it was a case of encephalitis. Also, the result of PCR for COVID-19 was positive. Other symptoms may suggest a stroke.[3,4]

A relapse of a pre-existing disease may occur as in a reported case of myasthenia gravis where the patient suffered from dysphagia, exacerbated ptosis and with respiratory symptoms like exertional dyspnoea.[5]

Psychological and psychiatric symptoms may also result from COVID-19: depression, insomnia, memory problems, delirium, psychosis and mania have been recorded.[6] A case of Guillain Barré syndrome associated with COVID-19 infection was reported by Sedaghat and Karimi.[7]

Special senses

Loss of the sense of smell and taste are early symptoms of COVID-19. Based on a study involving 141 patients in Qatar the prevalence was 11.35%, 4.96%, and 8.51% of ageusia, anosmia or both respectively. It is likely that the mechanism is not related to nasal congestion or rhinitis, but chemosensory dysfunction.[8,9]

COVID-19 can affect the eyes. A case has been reported of redness and pain in the right eye with watery discharge. Nasopharyngeal and eye swabs were positive for corona virus, and the final diagnosis was keratoconjunctivitis due to COVID-19.[10] We have not found a significant case of COVID-19 with hearing involvement.

Cardiovascular system

COVID-19 may affect the cardiovascular system. A male patient complained of sticky sputum and dyspnoea on effort. He had elevated cardiac and inflammatory markers, sinus tachycardia and ST segment elevation on ECG. Transthoracic echocardiography revealed "severe global left ventricular systolic dysfunction, right ventricular (RV) enlargement, RV systolic dysfunction. A moderate-to-large pericardial effusion was noted anterior to the RV with organizing material".[11]

Gastrointestinal tract

Many COVID-19 patients have diarrhoea, vomiting or abdominal pain sometimes preceded by fever, cough and chest pain.[12] Haemorrhagic colitis, peritonitis and an acute hepatitis-like syndrome have been reported.[13-15]

Renal manifestations

Acute kidney injury has been noted. Renal biopsy has shown focal segmental glomerulosclerosis (FSGS) and acute tubular damage.[16] According to one study 75.4% of the hospitalized cases with SARS-CoV-2 had haematuria, proteinuria or acute kidney injury.[17]

Dermatological features

Dermatologists analyzed data of confirmed COVID-19 cases and found 18 with skin eruption. Eight of them showed skin symptoms from the beginning, while the rest showed them after hospital admission. These features included erythematous rash, an eruption resembling chickenpox and urticaria. The distribution was mostly in the central region, and itching was the most prominent symptom.[18]

There is a case report of a patient with an itchy, erythematous rash and yellowish papules on the heels with itchy erythematous plaques all over the face and peripheries and diffuse joint pains without swelling.[19]

Discussion

Studies suggest that ACE2 receptors may be involved with the access of SARS-CoV-2 into body tissues.[20]

The virus has been found in brain tissue and cerebrospinal fluid and hence it is not surprising to observe psychological and neurological symptoms.[20]

ACE2 receptors are found in the nasal mucosa and so may mediate the mechanism for anosmia via bradykinin and other inflammatory proteins.[21] The olfactory pathway is within the central nervous system so coronavirus may directly harm one of the structures of that pathway e.g., olfactory bulb.

This coronavirus induces a cytokine storm, the most prominent involving interleukin-6, which can harm neurons.[22]

ACE2 receptors are present in specialized cells in the glossal taste buds and hence may play a key role in changing the taste sensation.

The taste buds have receptors for sialic acid which protect glycoprotein molecules from enzyme degradation. The coronavirus has the ability to compete with that acid and link to those receptors with loss of taste.[23]

ACE2 receptors are widespread and much more work is needed to understand their significance and mechanism in relation to coronavirus infection and the clinical pathology.

Conclusion

It is essential that those caring for COVID-19 patients are aware of clinical signs and symptoms that mimic other disease processes. Lack of such awareness has serious implications for the management of patients who are not at first suspected as having the coronavirus infection and for the wider spread of the virus.

This review provides a resource for healthcare professionals alerting them to these unusual presentations and so enhancing patient care and reduction of virus spread. Our knowledge about COVID-19 is progressing rapidly and it is difficult to keep up with the pace of publications. This review is therefore unlikely to be complete but it is intended to be an alert. It shows that there is still much more to learn.

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