

## Management of Endocrinopathy in COVID 19 Patients

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Coronavirus disease 2019 (COVID-19) outbreak has been declared a public health emergency by World Health Organization (WHO) affecting more than 1.5 million people world-wide as on 10<sup>th</sup> April 2020 [1]. It has been observed that, there are multi-faceted implications of endocrinopathies in COVID-19 patients [2]. Reports suggest that endocrinopathies like Diabetes, hypertension, Chronic Obstructive Pulmonary Disease (COPD), hypothyroidism etc. are at higher risk of COVID-19 infections [3]. Diabetes has been reported to have a comorbidity in 22% of 32 non-survivors in a study done on 52 severely infected patients [4]. The reason for the high morbidity rate is that Diabetic conditions elicits a condition of impaired immunity leading to vulnerability to COVID-19 infections especially in patients having uncontrolled blood glucose levels [5]. COVID-19 management professionals can limit the frequency of phlebotomy by testing only random blood glucose levels [6]. It is also recommended not to perform Oral glucose tolerance test in COVID-19 patients. Patients should be stimulated to monitor their blood glucose regularly and contact their endocrinologists through tele-consultations. Escalation of insulin dose is a rational approach in patients with uncontrolled hyperglycaemia. Hypertension is also a common condition of endocrine disease including diabetes which has been reported to increase susceptibility COVID-19 morbidity. A study performed on 140 patients admitted to hospital for COVID-19 infection, 30% had pre-existing hypertension [7]. It has been claimed that Coronavirus (SARS-CoV-2) binds to the Angiotensin-converting enzyme 2 (ACE 2) expressed by the epithelial layer of lungs, intestine, kidney, etc. ACE 2 inhibitors and angiotensin receptor blockers (ARBs) are used for treatment of patients with Type 1 or Type 2 Diabetes and hypertension. It was hypothesized earlier that upregulation of ACE 2 through ACE 2 inhibitors and ARBs increases ACE 2 expression which may promote severe and fatal COVID-19 infections [8]. International guidelines however, state that those on these drugs should not discontinue their therapy [9]. Another hypothesis claims that ACE 2 inhibitors and ARBs can significantly reduce mortality in COVID-19 infections in older patients with upregulated angiotensin proinflammatory signalling. A Clinical report also suggests ARBs reduces risks of pneumonia induced deaths. A retrospective study advocates increased survival rate of patients with acute respiratory distress syndrome (ARDS) taking ACE 2 inhibitors or ARBs [10]. It is also suggested that patients suffering from hypertension should be closely monitored for any acute kidney injury and dyselectrolytemia. Patients having endocrinopathies like auto immune thyroid disease should be made aware to avoid discontinuation of replacement therapies without consulting their physician. Patient should avoid going to outdoor crowded places and any highly susceptible regions having COVID-19 patients. Patients should also be counselled that the replacement therapies are generally in physiological doses and thus will not cause any kind of immunosuppression. It must also be noted that hypocalcaemia arising due to hypoparathyroidism may cause weakness of chest musculature and impair breathing [11]. Patients who require pain relievers for various endocrine problems should use paracetamol, instead of ibuprofen or diclofenac. It should be always noted that opioid analgesics may amplify respiratory depression in patients and thus must be avoided. Cushing's Syndrome has not yet been assessed for its role in COVID-19 infections, however it is characterized as immunocompromised condition, thus may have inevitable implications.

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