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Post covid hyperglycemia: Homoeopathic approach

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Abstract

Among symptomatic patients of COVID-19 infection, a few are in high-risk category having several co-morbidities. Type II Diabetes is one of the co-morbidities which show complications and mortality during COVID-19 infection. Also some Non-Diabetic patients are showing Hyperglycemia after they are diagnosed with COVID-19 infection. This article summarizes the pathophysiology and management of Hyperglycemia during and after COVID -19 infection.

Keywords: Hyperglycemia, co-morbidities, SARS CoV-2

Introduction

People with COVID-19 are more likely to have certain chronic co-morbidities, such as Hypertension, Diabetes, obesity, and chronic kidney disease, which raises the risk of severe COVID-19 infection and mortality [1]. Initial research revealed a higher prevalence of Hyperglycemia in a group of COVID-19 individuals without any pre-existing history or diagnosis of Diabetes. With various viral infections and acute illnesses, the phenomenon of new-onset Diabetes after hospitalisation has been documented in the past as well. As long term follow up of these patients is limited, whether this diabetes is likely to persist or not is not known. It is challenging to provide care strategies for people with new-onset Diabetes linked to COVID-19 because the precise mechanism and epidemiology of this condition are unknown [2].

Review of Literature

There is a reciprocal association between Covid-19 and diabetes, according to an article in The New England Journal of Medicine. It has been determined that, on the one hand, diabetic patients are at an increased risk of developing a severe Covid-19 illness, and, on the other hand, it has been observed in Covid-19-infected individuals that severe metabolic complications of pre-existing diabetes, such as diabetic ketoacidosis and hyperosmolality, require exceptionally high doses of insulin [3].

Pisa Study group for COVID-19 on 271 hospitalised individuals from the COVID-19 study were found to have DM in 21% of cases, and their HbA1C levels were lower than those of patients with Diabetes, supporting the recent emergence of Hyperglycemia. With a death rate that was double that of the normal group and 30% higher than in the DM group, these participants had the worst clinical/laboratory profile and prognosis. Additionally, those with hyperglycemia had much larger neutrophils, D-dimers, and inflammatory markers than those with normal glucose [4].

Undiagnosed Diabetes prior to admission, potentially as a consequence of recent weight gain due to lifestyle changes, and worsening of hyperglycemia primarily due to COVID regulations, such as self-isolation, social withdrawal, decreased physical activity, and poor diet as a result of mental health issues, are the reasons suggested by Diabetic Research Centers of the UK, Italy, etc. for new onset Diabetes. These alterations may ultimately lead to insulin resistance, which would then set off inflammatory pathways and result in New-Onset Diabetes [5].

According to the International Diabetes Federation, it may be either through immune system compromise, which results in a challenging and prolonged recovery, or the virus may thrive in an environment of elevated blood glucose [6].

No mortality benefit was reported upon Remdesivir indication in COVID-19 patients, according to a study on the effectiveness and safety of Remdesivir in COVID-19 induced by sars-cov-2, although Remdesivir plus high dose corticosteroids was shown to be associated

with the development of Diabetes [7].

Warning Signs of Diabetes

- Frequent urination, which may involve getting up at night to urinate or occurring more frequently during the day.
- Polydipsia.
- Blurring of vision.
- Weight loss.
- Delayed wound healing.
- Although fatigue is a frequent symptom, it can be challenging to distinguish between cases of COVID-19 because most patients have it for a long time after their acute sickness.

Clinical Variants of Diabetes Mellitus

1. Pre-existing known case of Diabetes with COVID-19 infection
2. Undetected Diabetes identified during COVID-19 infection
3. Pre-Diabetes, converted to type 2 Diabetes, due to COVID-19 infection/ stress.
4. Steroid/stress induced Hyperglycaemia
5. New onset Diabetes mellitus due to COVID-19 infection

Pathophysiology

Though the exact mechanisms of origin of New-Onset Diabetes in people who acquired COVID-19 are yet to be studied, few interrelated mechanisms have been thought to be involved. Among these are the direct or indirect effects of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on the beta cell, previously undetected Diabetes, stress hyperglycemia, steroid-induced hyperglycemia, and others [3].

So far, it is understood that when undiagnosed Diabetic or pre-diabetic patients are treated with corticosteroids for moderate to severe COVID-19 infection, there is acute rise in the blood sugar level and they often require high doses of insulin.

There is a rise in inflammatory mediators in the blood, including inflammatory cytokines, toxic metabolites, and lipopolysaccharides, with severe acute respiratory syndrome Coronavirus 2. Additionally, interferons, natural killer cell activity, and reactive oxygen species (ROS) may rise. All these eventually produce lung fibrosis, acute lung injury, and acute respiratory distress disease, which in turn activates the renin-angiotensin-aldosterone system. Insulin resistance, hyperglycemia, and vascular endothelial damage are the final results, and they contribute to cardiovascular events, thromboembolism, and disseminated intravascular coagulation.

Studies have also revealed a connection between acute hyperglycemia and the virus's affinity for the ACE2 receptor, which is more abundant in the islets of the pancreas and exocrine glands than in the lungs.

SARS-CoV infection was linked to a rapidly rising need for insulin (frequently reaching or exceeding 100 IU per day) in known Diabetes individuals who were insulin-dependent. This alteration in insulin requirements may be related to the levels of inflammatory cytokines. Although ketoacidosis is a typical consequence of type 1 Diabetes, COVID-19 has shown that it frequently co-occurs with type 2 Diabetes.

The blood levels of IL-6 and lactate dehydrogenase are the

two most important indicators of COVID-19 severity. Because of its pro-inflammatory properties, IL-6 levels can be related to both the severity of the disease and a procoagulant profile. In those with Diabetes mellitus, IL-6 damages DNA, proteins, and lipids by increasing oxidative stress and thus impairing body's structure and functions, which accelerates the course of COVID-19.

As a part of the renin-angiotensin-aldosterone system (RAAS), ACE2 serve as an entry receptor for SARS-CoV-2. Recent studies show that ACE2 is expressed in organs like intestines, kidneys, myocardium, respiratory system, vasculature and pancreas. Since ACE2 is expressed in pancreatic islets, COVID-19 affects carbohydrate metabolism and causes Diabetes mellitus [8].

Homoeopathic Approach

Diabetes mellitus is a metabolic disorder affecting several organs, and controlling Hyperglycemia may prevent many complications including cardiovascular, renal and neurological.

Homoeopathic treatment aims at maintaining the normal homeostasis of the body, hence an individualistic approach would be better for managing Hyperglycemia.

Homoeopathic Materia Medica explains the indication of several medicines for controlling Hyperglycemia, which include deep acting polychrest remedies like Lycopodium, Sulphur, Phosphorous, Plumbum metallicum etc. Since it is a post-viral phenomenon affecting many organ systems, a symptomatic approach would be a better one. Patients may or may not have symptoms connected with organ systems other than pancreas, which also has to be taken for individualisation. Some organ specific medicines having affinity to pancreas, are also mentioned in the Homoeopathic Materia Medica

Life style management is important for controlling carbohydrate metabolism. Also, it requires lipid control and proper management of Systemic Hypertension to reduce macrovascular complications.

Advice regarding ideal body weight

- 55-60% of energy from carbohydrate, with high fibre and low glycemic index 12-15% of energy from proteins. Mainly from vegetable sources, fish and lean meats, low fat milk and low fat curd.
- 20-30% of total energy from fats. Monounsaturated fatty acid rich cooking oil and nuts in moderation may be advised to achieve good glycemic control and to reduce cardiovascular complications.
- Added salt of <5gm per day should be advised.

Advice regarding smoking and alcohol should be given. Stress management is essential.

Specific Remedies for Hyperglycemia [9,10]

Iodium

Indicated in Diabetes with great appetite and thirst but with loss of flesh. Slightest exertion leads to perspiration and debility. Dark yellow green urine which is profuse. Frequent urging for urine. There is cuticle on surface of urine.

Phosphoric Acid

Debility is the keynote of this remedy. Physical weakness along with emaciation and nervous exhaustion is marked. Diabetes along with dry cracked lips. Profuse and frequent

urination especially at night which is watery and milky. Presence of phosphate and albumin in urine.

Uranium Nitricum

Degeneration of the liver along with Diabetes. Tendency to ascites with great emaciation and debility is the keynote of this medicine. Indicated in general dropsy. Profuse urination with glucose in urine. Skin and mucous membrane is dry.

Syzygium Jambolanum

Indicated in Diabetes with profuse urination with high specific gravity and glycosuria. Has an immediate action on sugar level. Great weakness and emaciation along with thirst.

Abroma Augusta

Diabetes mellitus with albuminuria and frequent urination

Curare

According to Dr. Barkhard, Curare is effective in Diabetes mellitus in 4th dilution. It is indicated in glycosuria with motor paralysis.

Eupatorium Purpureum

Indicated in Diabetes with albuminuria, strangury, irritable bladder and enlarged prostate.

Ferrum Iodatum

Indicated in Diabetes when the urine has sweet smell.

Phloridzin

It is a good medicine for Diabetes especially indicated in renal glycosuria.

Cuprum Arsenicosum

Cases of Diabetes where urine has high specific gravity with increased acetones and diacetic acid.

Glycerinum

Indicated in Diabetes with increased specific gravity and sugar with mental and physical debility.

Helonias

Cases where albuminous, phosphatic, profuse and clear urine predominates. Urine has saccharine content.

Insulinum

When given in potency, it is of more utility than in material dose where the glycogenic balance of liver has been disturbed. Also, it can be used in potency when symptoms appear due to overdose of insulin injection.

Kali Brom

Indicated in Diabetes when thirst and urine is increased.

Mag Sulph

Diabetes with profuse urine which may be bright yellow or greenish and becomes turbid and deposits red sediment. Urine may also be clear, but profuse.

Lactic Acid

Saccharine and large quantities of urine is passed frequently. Ars bromatum, Cephalandra, Gymnema etc... are also remedies to be considered.

References

1. Sanyaolu A, Okorie C, Marinkovic A, Patidar R, Younis K, Desai P, *et al.* Comorbidity and its Impact on Patients with COVID-19. *Sn Compr Clin Med.* 2020;2(8):1069-76.
2. Khunti K, Del Prato S, Mathieu C, Kahn SE, Gabbay RA, Buse JB. COVID-19, Hyperglycemia, and New-Onset Diabetes. *Diabetes Care.* 2021;44(12):2645-55.
3. New-Onset Diabetes in Covid-19 | NEJM [Internet]. [cited 2022 May 26]. Available from: <https://www.nejm.org/doi/full/10.1056/nejmc2018688>
4. Coppelli A, Giannarelli R, Aragona M, Penno G, Falcone M, Tiseo G, *et al.* Hyperglycemia at Hospital Admission Is Associated With Severity of the Prognosis in Patients Hospitalized for COVID-19: The Pisa COVID-19 Study. *Diabetes Care.* 2020;43(10):2345-8.
5. Pardhan S, Islam MdS, López-Sánchez GF, Upadhyaya T, Sapkota RP. Self-isolation negatively impacts self-management of diabetes during the coronavirus (COVID-19) pandemic. *Diabetol Metab Syndr.* 2021;13(1):123.
6. Joensen LE, Madsen KP, Holm L, Nielsen KA, Rod MH, Petersen AA, *et al.* Diabetes and COVID-19: psychosocial consequences of the COVID-19 pandemic in people with diabetes in Denmark—what characterizes people with high levels of COVID-19-related worries? *Diabet Med.* 2020;37(7):1146-54.
7. Singh S, Khera D, Chugh A, Khera PS, Chugh VK. Efficacy and safety of remdesivir in COVID-19 caused by SARS-CoV-2: A systematic review and meta-analysis. *BMJ Open.* 2021;11(6):e048416.
8. Lim S, Bae JH, Kwon HS, Nauck MA. COVID-19 and diabetes mellitus: from pathophysiology to clinical management. *Nat Rev Endocrinol.* 2021;17(1):11-30.
9. William Boerrick MD. Pocket manual of homoeopathic materia medica. 9th edition. Indian Books & Periodicals Publishers.
10. Blackwood Alexander L. A Manual of Materia Medica Therapeutics and Pharmacology. B.Jain Publishers, 2002, 694p.