

Coronavirus outbreak & diabetes care

According to the Health Authority, Hong Kong has recorded 4 deaths of coronavirus disease (COVID-19) as of 18th March 2020¹ and the first reported death was a 39-year-old male². Despite his young age, he was a high-risk patient due to his underlying diabetes². Many people may wonder if diabetes mellitus increases risks of fatalities and if patients require any extra precautions.

According to Dr. Norman Chan, a specialist in Endocrinology, Diabetes and Metabolism, high glucose levels in the urine and blood of diabetic patients, which, in particular, favor the multiplication or growth of bacteria or virus. Moreover, diabetic patients usually have a weaker immune system especially if they also have kidney complications. "In general, diabetic patients are at a higher risk of bacterial or viral infections and their condition tends to be more severe upon infection."

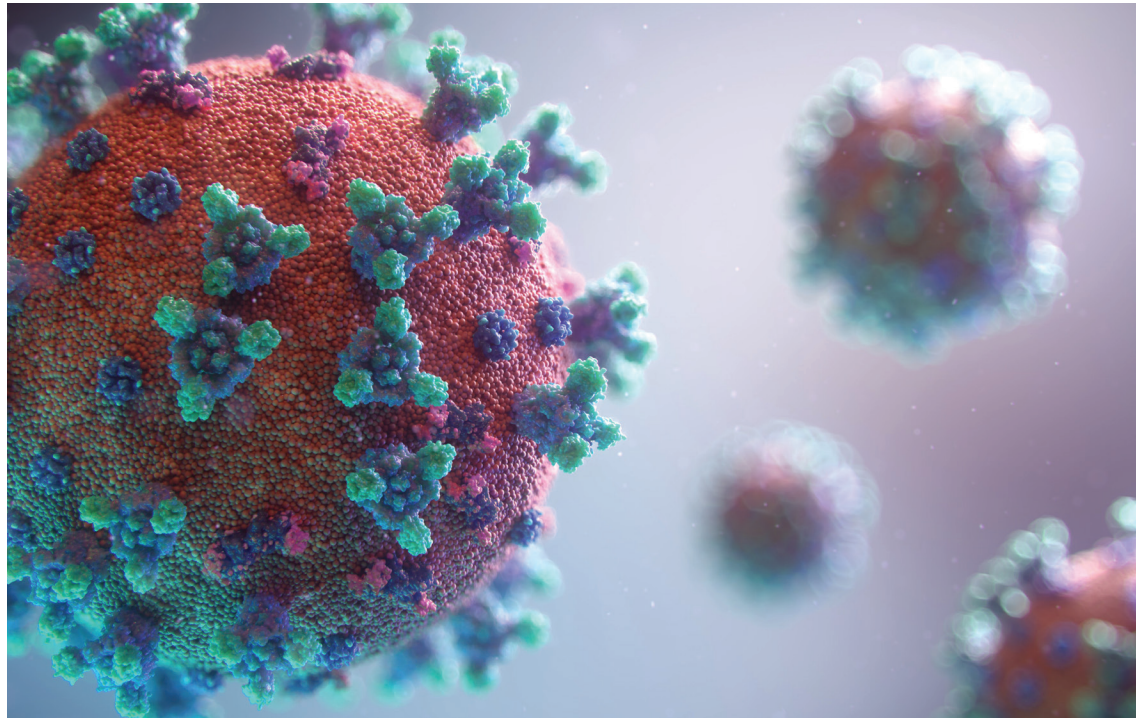
From the experience of SARS in 2003, those who suffered from more severe symptoms upon the coronavirus infection might require high-dose steroids for disease management³. As far as Dr. Chan is concerned, the possibility and severity of adverse drug reactions are likely to be higher for diabetic patients when they are prescribed with high-dose steroids.

"Steroids are effective in reducing inflammation and infection-related symptoms. However, they often cause a drastic increase in patients' blood glucose level, which will further complicate the patients' progress", Dr. Chan said, "Patients on regular anti-diabetic oral medication for their diabetes might need insulin injection in many steroid-treated cases."

During the coronavirus outbreak, diabetic patients should pay more attention to hygiene measures than healthy individuals, and to ensure their diabetes is well-controlled.

Dr. Chan provided some tips to diabetic patients. "Besides those advices for the general public such as avoiding going to crowded places and washing hands frequently, diabetic patients shall wear face masks of better quality when they go out, and change and wash their clothing immediately once they return home. For those who would do a daily finger-prick test for blood glucose monitoring, they should do it more frequently during this period of time to ensure that their level is well-maintained."

Diabetic patients need lifelong medication for their blood glucose management. During the coronavirus outbreak, some of them may be reluctant to visit the clinic for medical reviews as they are concerned with the risk of infection. Some may even reduce the dosage or temporarily discontinue their treatment without consulting their doctor when they have run out of medicines, which Dr. Chan strongly discourages. "Going back to the clinic for follow-up consultations shall be fine for patients as long as they have taken proper precautionary measures. If they are really concerned, they can phone up the clinic to arrange a family member to pick up the medicines for them, instead of stopping the medication themselves. It is very important for them to continue their medicines as prescribed by their doctor."



Ms. Kendy Tam
UK Registered Dietitian

Diabetic patients can do some stretching exercises at home or low-intensity exercises in the park. If they stayed at home all day without any exercise, they may keep snacking which will lead to weight gain. This may further complicate their diabetic condition and increase their risk of worsening of fatty liver.

Diabetic patients need a lot of medical supplies in addition to medicines, for example, alcohol swipes, which are used for sanitization before pricking their finger for blood glucose monitoring. During the coronavirus outbreak, the supply of alcohol swipes may be limited. Under such circumstances, patients may consider using a continuous glucose monitor (CGM) instead. A very tiny sensor of the CGM device is inserted under the skin and an adhesive patch holds the sensor in place for measuring the interstitial glucose level, which needs to be replaced biweekly. CGM provides a more comprehensive self-monitoring of glucose level as patients can track their glucose fluctuations on the reader of their mobile phone app.

Dr. Chan emphasized, "It is well-known that infections such as pneumonia (viral or bacterial) cause a rise of inflammation in the body and this can trigger rupture of coronary plaques causing acute coronary artery occlusion resulting in a heart attack. Patients with diabetes often have

high cholesterol and silent coronary heart disease (plaques in coronary arteries). Hence diabetic patients who developed pneumonia are more prone to cardiac complications such as heart attacks. Therefore, the control of risk factors in diabetic patients especially low-density cholesterol (LDL-cholesterol) is of paramount importance. Treating these risk factors to target according to international guideline becomes even more important for these high-risk individuals."

"Achieving their blood cholesterol target is always a challenge for diabetic patients," Dr. Chan suggested, "The European Society of Cardiology revised the recommended treatment goal for diabetic patients who also have other cardiovascular disease. For these patients in the very high risk group, their LDL-cholesterol level (commonly known as 'bad' cholesterol) shall go below 1.4mmol/L, together with a 50% reduction from baseline⁴. Lifestyle intervention, including diet and exercise, alone is usually not sufficient enough to reduce their blood cholesterol to target level and medicines are needed. There are plenty of drugs available for lipid lowering. Traditional ones include statin and ezetimibe, and recently there is a newer option, PCSK9 inhibitor. PCSK9 inhibitor is a subcutaneous injection, which is administered biweekly and can reduce 50-60% 'bad' cholesterol⁴. Patients shall consult their doctor to work on together the most optimal cholesterol treatment."

Non-alcoholic fatty liver disease (NAFLD) is also a common problem among diabetic patients according to Dr. Chan's clinical experience, where gene and lifestyle are two main factors leading to NAFLD. Patients with severe fatty liver tend to have poor diabetic control and high LDL-cholesterol.

"Diagnosis and follow-up evaluation of fatty liver are mainly based on the results from Fibro-Scan (a machine for fatty liver examination). Besides diet and regular aerobic exercise, some supplements play a role in fatty liver



Dr. Norman Chan
Endocrinology, Diabetes
and Metabolism Specialist

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management." Dr. Chan recommended, "It is a long-running battle, and a structural treatment plan designed by a multi-disciplinary team, including doctor, physiotherapist and dietitian, can help patients significantly improve their liver fat and lead to better diabetic control."

During the coronavirus outbreak, many fitness centers either shorten their opening hours or even close the venues completely. Ms. Kendy Tam, a UK Registered Dietitian, highlighted the importance for diabetic patients to keep their exercise routine. "They can do some stretching exercises at home or low-intensity exercises in the park," suggested by Kendy, "If they stayed at home all day without any exercise, they may keep snacking which will lead to weight gain. This may further complicate their diabetic condition and increase their risk of worsening of fatty liver."

Kendy also highlighted that "Patients with diabetes should pay extra attention in following a balanced diet to support their immune system during the outbreak. They should eat daily orange and yellow-colored fruits and vegetables which are high in Beta-Carotene (a type of Vitamin A) and Vitamin C." Kendy added, "A recent study in mice showed that eating broccoli, which contains natural plant compounds, and is also packed with Vitamins A, C and E, is beneficial in countering NAFLD development⁵. In addition, Vitamins A, C and E have antioxidizing properties, which are useful in reducing inflammation in our body^{6,7,8}."

"When foods cannot provide patients with adequate amounts of vitamins, supplements may help." Kendy recommended, "But just like medicines, there could be a risk of overdose if the amount patients consume exceeds the daily recommended dose. Therefore, patients should speak to their doctor or dietitian before starting on any supplements."

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