

Diabetes mellitus and COVID -19 - A bidirectional association

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Early in the COVID-19 pandemic, it became clear that those individuals with diabetes who were infected with COVID-19 had a *worse prognosis* than the general population. However, it has also been noted that in some cases, COVID-19 infections seem to *cause diabetes*.

Two recent publications highlight these issues.

A recent meta-analysis of the literature published in the Journal *Diabetologia* has confirmed worse outcomes in people with diabetes. There seems to be many reasons for this. *Glycaemic control on admission for COVID-19 infection* is one. Those admitted with blood glucose levels above 11 mmol/l had an 8.6 times greater chance of dying than those admitted with glucose levels below 6 mmol/l. In addition, the risk of death was increased in those with *comorbidities* (the presence of one or more additional medical conditions often co-occurring or co-existing with a primary condition). Underlying *cardiovascular disease*, increased the risk of dying by 56%, and *chronic kidney disease* by 93%. Further, *male gender, older age* and the *need for insulin therapy* (often linked to *long duration* of type 2 diabetes) was also associated with a higher mortality.

In those with type 1 diabetes, there is a very high incidence of *severe diabetes ketoacidosis* on admission.

The other side of the coin is highlighted in a publication in *Diabetes, Obesity and Metabolism*. This looked at the proportion of *newly diagnosed diabetes* in people with COVID-19 infection. This is commonly observed, occurring in as many as 14.4% of those admitted to hospital with COVID. Again, a number of factors may be responsible. *Undiagnosed type 2 diabetes is common* and may have been present before contracting COVID-19. The *severe inflammatory response* induced by the virus and the resultant need for *corticosteroid treatment* may precipitate diabetes in prone individuals. However, there is also evidence to suggest that the *virus itself may directly destroy the insulin-producing beta cells of the pancreas*.

Globally, we now face two major pandemics - an *acute COVID-19 pandemic* and a *chronic pandemic of diabetes mellitus*. Our concern is that they appear to be interrelated in a complex and synergistic interplay.

Takeaway messages

- Your *prior state of health* and *health risks* greatly influence the *severity* and *outcomes* of COVID-19 infection
- COVID-19 has *chronic* health consequences beyond the initial infection

If you *know that you have diabetes* and possibly any of its *complications*, please *contact your diabetes care team as soon as possible* to ensure that your blood glucose and other risk factors are *well-managed*.

If you *don't* have a regular caregiver for your diabetes, the CDE may be able to assist with a CDE-Accredited health professional near you. Visit www.cdediabetes.co.za/home/utilities/find-cde-provider.html

How do I know if I have undiagnosed diabetes? Symptoms of diabetes are of two types:

- *Classical, specific*: passing large amounts of pale, sweet urine frequently, extreme thirst, weight loss, fatigue
- *Non-specific*: blurred vision, tingling of hands and feet, slow wound healing, fungal infections (esp. genital).

But, most people with diabetes (older adults with type 2 diabetes or late onset type 1 diabetes) *may not experience any symptoms for many years* and may present with potential *complications* of diabetes *at diagnosis*. Thus, $\frac{2}{3}$ of sub-Saharan Africans with diabetes are *undiagnosed* and at risk for *health- and life-threatening complications of diabetes and COVID-19 infection*.

However, people with a *high risk for diabetes* have one or more of the following risk factors that should prompt a *doctor's visit* and *laboratory screening* for diabetes to enable *earlier diagnosis* and *management*:

All adults (any age) who are *overweight* (body mass index (BMI) $> 25 \text{ kg/m}^2$ or $> 23 \text{ kg/m}^2$ in Asians), *plus* one or more additional risk factors:

- Physical inactivity
- High blood pressure / hypertension [blood pressure (BP) $\geq 140/90 \text{ mmHg}$] or on treatment for hypertension
- Close family relative (parent, full sibling or child) with diabetes
- Serum cholesterol problems
- Polycystic ovarian syndrome
- High-risk ethnicity (Asian Indian, Coloured)
- Cardiovascular disease history
- Previous gestational diabetes or giving birth to a baby $> 4 \text{ kg}$
- History of any blood glucose abnormality
- Other conditions associated with *insulin resistance* (*severe obesity* [especially around the tummy area] and *acanthosis nigricans* [dark, velvety patches of skin often appearing in the armpits, groin and neck]).

If you have any of the risks referred to in this article, don't delay in *seeking medical advice to proactively* identify and manage any risks to your health in these challenging times. Never before has the ancient adage "prevention is better than cure" been more apt.

References

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