

Case Report Endocrinology

Covid Diabetes and Remission is this News Diabetes Entity or Just a Coincidence?

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Abstract

Covid 19 is the global pandemic that continues to surprise us day after day with its atypical clinical expressions, and its variable systemic damage from one patient to another. We report 3 clinical cases of patients with covid 19, in whom we diagnosed diabetes for the first time. The evolution of their diabetes towards remission marks its particularity. This so-called “covid” diabetes reminds us of transient neonatal diabetes.

Keywords: Covid 19, pandemic, diabetes, patient.

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INTRODUCTION

COVID-19 infection is certainly a respiratory infection, but it can affect other organs outside the lung, which is why some authors qualify it as a systemic disease. In our study we will present 3 cases of patients who had diabetes when they were affected by covid 19 but which resolved completely afterwards. Is this a new entity of diabetes or a pure coincidence?

CLINICAL CASES

We are going to present 3 patients who had covid 19 with fortuitously discovered diabetes during the systematic assessment carried out during their hospitalization, then their follow-up in consultation for 6 months. The following table summarizes the clinical and paraclinical data for these patients:

	Patient 1	Patient 2	Patient 3
Age	28years old	42 years old	65 years old
Sex	Feminine	Male	Male
Medical history	- Diabetic inheritance in both parents (Type 2 diabetes) - Fall of 6 kg over the 6 months preceding the attack by covid 19 associated with polyuria polydipsia syndrome	- Smoking and drug addiction since the age of 20, weaned 4 years ago - No diabetic heredity - Weight retained - No polyuria polydipsia syndrome	- Epilepsy for 20 years under VALPROIC ACID and CARBAMAZEPINE - No diabetic heredity - Weight retained - No polyuria polydipsia syndrome
Date of hospitalization	01/07/2020	08/08/2021	27/12/2021
Variety of covid 19 detected	Covid 19	Delta variant of covid 19	Omicron variant of covid 19
diabetes discovery mode	inaugural ketoacidotic decompensation	inaugural ketoacidotic decompensation	inaugural ketoacidotic decompensation
IMC	20kg/m2	32kg/m2	27kg/m2
Thoracic scanner	Lung damage 30%	Lung damage 75 %	Lung damage 50%
Initial blood glucose	4.25g/l	5.75g/l	3,88g/l
Fasting blood glucose after 6 months	0.90g/l	0.88g/l	0.98g/l
initial HbA1c	14.1%	10.7%	8.4 %
HbA1 après 6 mois	5.2%	5.1%	5.4 %
Anti-corps : Anti-GAD Anti-îlots Anti-insuline	Negatives	Negatives	Negatives

	Patient 1	Patient 2	Patient 3
Specific treatment for covid 19	Antibiotic Antipyretic Vitamin Chloroquine	Oxygen Antibiotic t Antipyretic Vitamin Chloroquine corticosteroid Preventive anticoagulation	Oxygen Antibiotic Antipyretic Vitamin Chloroquine Corticosteroid Preventive anticoagulation
Treatment of diabetes during hospitalization, and for 1 month after leaving the hospital	Insulin	Insulin	Insulin
Treatment during the 3 months since leaving the hospital	Sulfonamide	Métformin+Sulfonamide	Métformin
Treatment for 3 months later	Diabetes Only Diet	Diabetes Only Diet	Diabetes Only Diet
Treatment after 6 months	Stopping all treatments even the diet	Stopping all treatments even the diet	Stopping all treatments even the diet
orally induced hyperglycemia at 75 g	normal results	normal results	normal results

DISCUSSION

Many teams around the world have seen the relationship between covid 19 and diabetes. The virus can then target other organs outside the lungs such as the liver, heart, kidneys, brain and pancreas [1]. Thus many hypotheses have underlined the causal link between covid 19 and diabetes. First of all, we know that many viruses, including the coronavirus, can cause SARS (severe acute respiratory syndrome), and can cause autoimmune diseases such as type 1 diabetes [2]. Another hypothesis recalls that the pancreas is rich in angiotensin-converting enzyme 2 inhibitor [3], a protein that constitutes an entry point for SARS CoV2. The virus would then be able to destroy pancreatic cells and cause acute diabetes. Another possibility considered, SARS-Cov2 induces the production of cytokines responsible for an immune response that can also lead to cell destruction. Other scientists believe that the virus could, through major inflammation, impair the ability of the pancreas to produce insulin, while lowering the sensitivity of the liver and muscles to insulin, which also intervene in the blood sugar regulation. Finally, another protein, SARS-Cov2 also seems to bind to DPP4 (human dipeptyl peptidase 4), having a major role in glucose and insulin metabolism [4]. Anyway, the result is the same, the virus can thus induce either type 1 diabetes or type 2 diabetes [5-8], especially in the presence of a risk factor genetics, prediabetes, overweight...

The occurrence of diabetes also provides information on the severity of covid 19, i.e. diabetes triggered by covid 19 seems to be associated with a poorer prognosis of Covid-19 infection with a higher rate of complications and death compared to patients with normoglycemia or with pre-existing diabetes [9, 10].

The particularity of our patients is the negativity of antibodies specific for type 1 diabetes and also the transient aspect of their diabetes and its evolution towards complete remission in a few months. This reminds us of the evolution of transient neonatal diabetes, and offers us a new entity of so-called "covid" diabetes.

On the other hand, authors believe it could simply be undiagnosed cases of diabetes prior to SARS-CoV-2 infection. Due to a lack of access to healthcare, or because people don't know what symptoms to watch out for. This could be true for our first patient, especially with the weight loss and the polyuro-polydipsic syndrome accused 6 months before her infection with covid 19. But the evolution towards remission of her diabetes opens a new door for discussion on the possibility of the resolution of diabetes thanks to covid 19 such as the case of the patient with Hodgkin's lymphoma cured following covid 19 [11], then covid 19 is a remission factor, it is anecdotal but to be mentioned as even to deepen our research.

Hopeful treatments have been the subject of several studies in order to find molecules capable of neutralizing viral attacks on the pancreas and avoiding the occurrence of the process of transdifferentiation or apoptosis of pancreatic cells such as:

- Trans-ISRIB, which helps beta cells to retain their identity and their ability to produce insulin, even when infected with SARS-CoV-2 [12].
- Neuropilin 1, a protein receptor, was essential for SARS-CoV-2 to infect beta cells. Blocking this receptor prevents infection [13].
- Caspases prevent programmed cell death, or at least limit the damage caused by the virus in the short term [14].

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