



Response to Comment on Marchand et al. Type 1 diabetes onset triggered by COVID-19; and follow-up of the case

Lucien Marchand¹ · Cédric Luyton¹

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We thank Mentari Maratus Sholihah et al. for their comment [1] on our article published in July 2020 [2], describing the case of a 29-year-old woman with a medical history of gastric by-pass one year earlier, who presented with acute polyuria-polydipsia syndrome one month after first symptoms of COVID-19. Diabetes mellitus was diagnosed with a glycemia of 3.7 g/l (20.5 mmol/l), nonsignificant ketosis (0.7 mmol/l), and normal bicarbonates level (26 mmol/l). HbA1c level was at 11.8% (105 mmol/mol). Her weight was 57 kg (BMI of 21.5 kg/m²) at time of diabetes diagnosis. Acid decarboxylase-65 autoantibodies (GAD-65A) were positive (93UI/ml, N < 17).

Concerning COVID-19 infection, the patient did not receive neither corticosteroid therapy nor IVIG therapy. As it was described in the paper, the treatment was symptomatic only (paracetamol). We agree that plasma glucose level should be monitored in hospitalized subjects with COVID-19, because 1) it is important to identify subjects with unknown diabetes or new-onset diabetes; 2) increased admission plasma glucose concentration is predictor of death; and 3) some data suggest that dysregulated glucose control during hospitalization is associated with poor outcomes [3].

Concerning diabetes etiology, she did not have metabolic comorbidities nor markers (no hypertension, negative CRP,

Hdlc 0.46 g/l, Ldlc 0.43 g/l, triglycerides 0.42 g/l, normal ALT, AST, gGT and ferritin levels, no liver steatosis at the CT-scan). She did not have acrochordons. The waist circumference is not available. HOMA-IR was not performed (already treated with basal bolus insulin regimen).

GAD-65A were clearly positive and C-peptide was low at 0.07 pmol/ml (normal values between 0.37–1.47).

With positive GAD-65 antibodies, a normal lipase level, no history of acute pancreatitis, and a normal pancreatic scan, it does not seem reasonable to perform a pancreatic MRI, let alone a pancreatic biopsy.

In our opinion, this patient has autoimmune diabetes (exploration of the complement system is not usually performed in findings of diabetes, and HLA typing is not routinely performed in our center). We agree that latent autoimmune diabetes in adults could not be ruled out first, but the patient presented with cetoic decompensation 3 and 6 months after diagnosis, and ketoacidosis 10 months after (following treatment discontinuation). These events, less than a year after the discovery of diabetes, are rather in favor of Type 1 diabetes.

Concerning diabetes treatment, we do not quite understand the comment because basal and prandial insulins were immediately started after admission. Insulin needs were low (0.3 U/kg/day in total). Glycemic variability was high in a context of food anarchy and medical history of by-pass gastric. She used intermittently scanned continuous glucose monitoring very little (very low number of scans per day with Freestyle libre device). HbA1c values remained around 10%. Her follow-up was transferred to another center 6 months ago, she remains in denial of her disease one year after, and presented with ketoacidosis 2 months ago after further treatment discontinuation.

Finally, we did not encounter other cases of autoimmune diabetes triggered by COVID-19. To date, no increase in

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✉ Lucien Marchand
lmarchand@ch-stjoseph-stluc-lyon.fr

¹ Department of Endocrinology and Diabetes, Centre Hospitalier Saint Joseph Saint Luc, Quai Claude Bernard, 69007 Lyon, France

the incidence of type 1 diabetes has been described [3–5], which seems to be good news for patients who contracted COVID-19 (and for the diabetologists!), but a longer follow-up is needed to conclude. However, diabetic ketoacidosis were more frequent in pediatric new-onset type 1 diabetes probably because of delayed diagnosis (changes in parental behavior and healthcare accessibility) [4, 5].

It remains to determine if CoviDIAB registry, a global registry of COVID-19-related diabetes, will report other exceptional cases of type 1 diabetes related to COVID-19 (<https://covidiab.e-dendrite.com/>).

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Declaration

Conflict of interest The authors declare that there is no duality of interest associated with this manuscript.

Human and Animal Rights All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 1975 Declaration of Helsinki, as revised in 2008.

Informed Consent Informed consent was obtained from all patients for being included in the study.

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