CASE REPORT

RECURRENT HYPOGLYCAEMIA IN AN OLDER INDIVIDUAL WITH COVID-19

Tayyabah Usman, Shahnoor Ahmed, Saniya Sabzwari
Aga Khan University Hospital, Karachi-Pakistan

Coronavirus disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged as a deadly pandemic overburdening healthcare system globally. While people of all ages were affected, the older population has faced disproportionately higher morbidity and mortality, likely due to altered immune responses and pre-existing comorbid conditions like cardiovascular disease, hypertension, diabetes mellitus, chronic pulmonary and kidney disease. Clinical manifestations in older patients may also be atypical with absence of fever, increased chances of acute confusion and longer recovery times. While other parameters of disease severity have been found, poor glycaemic control is another indicator of severity in COVID 19 infection. Moreover, older patients with diabetes mellitus are also at risk of hypoglycaemia which increases the risk of cardiovascular and cerebrovascular events, progression of dementia, falls, emergency department visits and hospitalization. Here we share a case of an older man with COVID-19 infection who presented primarily with recurrent hypoglycaemia and weakness. This case also highlights the social impact of an infection that has decimated support systems for vulnerable older adults.

Keyword: Hypoglycaemia; COVID-19

Citation: Usman T, Shahnoor A, Sabzwari S. Recurrent hypoglycaemia in an older individual with Covid-19. J Ayub Med Coll Abbottabad 2022;34(4 Suppl. 1):1027–9.

DOI: 10.55519/JAMC-04-S4-9656

CASE

We are now presenting a case of an older individual with COVID-19 who presented with the episodes of recurrent hypoglycemia during the course of illness which improved after starting medications.

A 79-year-old man with diabetes, hypertension and chronic kidney disease developed a mild cough after visiting relatives who were infected COVID-19 infection. The patient was the sole caregiver of his wife who had poor ambulation and recurrent falls after a cerebrovascular accident. The only other symptom he noticed was a decreased appetite. He chose to self-isolate at home, did not get tested and continued to take his routine once a day medicines: 25 mg losartan, gliclazide 30 MR and aspirin 75 mg.

On his family doctor's advice, he started a course of azithromycin. On day five the patient fell and was found to be drowsy, confused and weak by his grandson. A tele-consult revealed left sided facial drooping and slurred speech. With the empiric diagnosis of a COVID-19 induced thromboembolic event, it was decided to transfer the patient to a local hospital. During transport EMT found his blood sugar to be 50 mg/dL after which dextrose was administered. Patient's cognitive status and facial droop resolved within minutes. In the hospital emergency his COVID PCR was positive and a brain MRI revealed no acute event. Labs results are summarized in table-1.

Patient refused hospitalization due to his social circumstances wanting to continue caring for his wife.

At home his hypoglycaemia persisted with sugars ranging from 60–70 mg/dL despite discontinuation of gliclazide. His appetite remained poor and weakness persisted. He continued to care for self and wife at home during this time with little support as it was hard to find care givers willing to work in a home with active COVID-19 infection. Fortunately, he developed no respiratory symptoms and maintained a pulse oxygen level of 98%.

To rule other infections as a cause of hypoglycaemia a urinalysis and chest x-ray was done on day 2 and day 7 respectively. Urinalysis was normal and x-ray revealed mild bilateral infiltrates.

Repeat inflammatory markers showed a rising ferritin (Table-1). An infectious disease consult was obtained. With a CALL score of 13[1] (Table-2), it was decided to start him on Remdesivir and dexamethasone

(for the recurring hypoglycaemia). The patient's blood sugars and appetite started to improve two days later. He never developed any significant respiratory symptoms.

DISCUSSION

Over the last year the varied manifestations of COVID-19 infection have converted this respiratory infection into a multisystem illness.

Altered immune responses and sub-clinical processes in older patients with multiple co-morbid conditions may cause atypical symptoms of COVID-19 infection like diarrhoea and delirium.[2]

In older individuals with dementia, altered mental status may be one of the first sign of COVID-19 infection. Some patients may develop confusion, agitation and refusing care, disorientation and loss of appetite without classical presentation of fever or respiratory symptoms.[3] Our patient did report marked loss of appetite and asthenia. Type 2 diabetes, hypertension, and cardiovascular diseases have been identified as the most common comorbidities for SARS-CoV-2 infection associated with worse outcomes and more severe course of COVID-19.[4] Hypoglycaemic episodes are common in older adults with poor glycaemic control and diabetes. Episodes of hypoglycaemia are particularly dangerous in the older population. Common symptoms like tremors, sweating etc. may not occur due to age related decrease in sympathomimetic activity. When blood glucose falls in a non-diabetic adult, insulin release is suppressed, and counter-regulatory hormones, such as glucagon and epinephrine, are activated to stimulate hepatic glucose production and inhibit peripheral glucose uptake until euglycemia is restored. With advancing age, renal function tends to decline thereby, increasing blood levels of drug metabolites that have predominant renal elimination, further increasing risk of hypoglycaemia e.g, several oral hypoglycaemic agents like metformin, glimepiride, glibenclamide (glyburide), sitagliptin and vildagliptin have mainly renal elimination.[5]

Maintaining good glycaemic control is mandatory, as both hyperglycemia and hypoglycaemia are associated with adverse COVID outcomes and increased risk for severe COVID-19.[6]

The isolation precautions imposed by COVID-19 also pose significant risk for older adults living alone, as they are cut off from their usual support systems e.g., for food procurement, help with instrumental activities of living. In our setting the lack of infrastructure support complicated this scenario, where an acutely ill older individual still continued to carry out care giving responsibilities.

CONCLUSION

COVID-19 infection in older individuals may manifest in atypical symptoms especially in diabetic patients. Close monitoring of blood glucose in such older adults becomes important even in the absence of non-severe respiratory symptoms.

Frail older adults with poor social support are at even greater risk as infection control practices further limits their access to care during isolation. In systems with lacking infrastructure and resources for this vulnerable age group, physicians need to take a pro-active approach in safely engaging with patients and families affected with COVID-19 infection.

Table-1: Lab workup

Test	Day 1 (AtED)[1]	Day 2	Day 3	Day 5	Day 10	Range
Serum LDH	-	-	464	609	425	(120-246) I.U/L
Serum CRP	-	-	18.91	23.07	17.07	(0-10) mg/L
Serum Ferritin	-	-	657	1077.7	362.7	(22-322) ng/ml
Hemoglobin	12.3	-	-	12.5	12.8	(12.3-16.6) g/dl
Hematocrit	36	-	-	36.9	37.9	(28.4-50.7) g/dl
RBC	3.79	-	-	4.03	4.08	(4.25-6.02) *10^12/L
MCV	96	-	-	91.6	92.9	(78.7-96.3) fL
WBC	2.2	-	-	3.8	11.3	(4.8-11.3) *10^9/L
Neutrophils	64	-	-	64.7	81.7	(34.9-76(.2) %
Lymphocytes	26	-	-	26.1	7.1	(17.5-45) %
NLR	2.46	-	-	2.5	11.5	(1-4)
Platelets	86	-	-	144	364	(154-433) *10^9/L
Finger Stick Glucose (Fasting)[2]	50	57	60	-	-	70-120 mg/dL

[1]Day 1 corresponds to the day of ER visit after the patient exhibited severe weakness and drowsiness.

[2] Fasting blood sugar levels remain elevated from Day 3 onwards as the patient started taking oral dexamethasone from the night of Day 3.

Table-2: CALL score

Comorbidity With Without	Score 4
Age (Years) < 60 >60	 3
Lymphocyte (x10^9/L) > 1.0 < 1.0	 3
LDH (U/L) < 250 250–500 >500	 3

REFERENCES

1. Kamran SM, Mirza ZE, Moeed HA, Naseem A, Hussain M, Fazal I Sr, *et al*. CALL Score and RAS Score as Predictive Models for Coronavirus Disease 2019. Cureus 2020;12(11):e11368.
2. Gan JM, Kho J, Akhunbay-Fudge M, Choo HM, Wright M, Batt F, *et al*. Atypical presentation of COVID-19 in hospitalised older adults. Ir J Med Sci 2021;190(2):469–74.
3. Ward CF, Figiel GS, McDonald WM. Altered Mental Status as a Novel Initial Clinical Presentation for COVID-19 Infection in the Elderly. Am J Geriatr Psychiatry 2020;28(8):808–11.
4. Parveen R, Sehar N, Bajpai R, Agarwal NB. Association of diabetes and hypertension with disease severity in covid-19 patients: A systematic literature review and exploratory meta-analysis. Diabetes Res Clin Pract 2020;166:108295.
5. Scheen AJ. Pharmacokinetic considerations for the treatment of diabetes in patients with chronic kidney disease. Expert Opin Drug Metab Toxicol 2013;9(5):529–50.
6. Shauly-Aharonov M, Shafrir A, Paltiel O, Calderon-Margalit R, Safadi R, Bicher R,*et al*. Both high and low pre-infection glucose levels associated with increased risk for severe COVID-19: New insights from a population-based study. PLoS One 2021;16(7):e0254847.

Submitted: May 27, 2021	*Revised: November 16, 2021*	*Accepted: November 23, 2021*

Address for Correspondence:

Tayyabah Usman, IH-15 Falcon Complex AFOHS, PAF base Malir Cantt, Karachi-Pakistan
Email: tayyabah.moeen@gmail.com