SAS Journal of Medicine
Abbreviated Key Title: SAS J Med
ISSN 2454-5112
Journal homepage: https://saspublishers.com

OPEN ACCESS

Pediatric Intensive Care

Diabetic Ketoacidosis and COVID-19: A Case Report in Pediatric Intensive Care

Hasna Darouich[1*], Meriem Miara[1], Kaoutar El Fakher[1], Wissal Aissaoui[1], Samira Kalouch[1], Abdelaziz Chlilek[1]

[1]Department of Pediatric Intensive Care, Harouchi Hospital Casablanca, Morocco

DOI: 10.36347/sasjm.2022.v08i06.009 | **Received:** 08.05.2022 | **Accepted:** 13.06.2022 | **Published:** 17.06.2022

***Corresponding author:** Hasna Darouich
Department of Pediatric Intensive Care, Harouchi Hospital Casablanca, Morocco

Abstract **Case Report**

The 2019 coronavirus disease (COVID-19) pandemic has introduced several challenges to the medical field. Although children have lower mortality rates from COVID-19, the presence of pre-existing terrain can worsen the picture. Because COVID-19 and diabetes are widespread conditions, its suspicion is necessary to diagnose CDA in a timely manner to improve the prognosis of COVID-19-related CDA.

Keywords: Diabetic ketoacidosis, COVID-19, pediatric intensive care.

INTRODUCTION

Recent severe acute respiratory syndrome coronavirus 2 (SARS-COV2) has affected the world with a serious and fatal pandemic especially threatening to cases with comorbidities like diabetes [1, 2]. It is reported that the severity of the diseases, mortality, and further complications are more common in diabetic patients. Castagnoli *et al.*, highlighted that children also are susceptible to COVID-19 but with a more benign course compared to adults and a study conducted with over 2000 paediatric subjects showed that 89,7% children had low-moderate severity disease and 4.4% were asymptomatic . Many considerations related to diabetic patients in SARS-Cov2 epidemic conditions, including the health requirements necessary for healthcare in the community and blood sugar control have been mentioned [3, 8]. One point of discussion is the possible complications in diabetic patients, especially children, which will be mention in the following case.

CASE PRESENTATION

A 12-year-old child, 40 kg, with a body surface area of 1.2 m2, known to be a type 1 diabetic since the age of 8 months, on insulin therapy with a basal bolus of 18 units in the morning and 12 in the evening, admitted for diabetic ketoacidosis.

The patient's history dates back 5 days with the onset of severe abdominal pain associated with vomiting. The evolution was marked by respiratory discomfort

On clinical examination:

- On the neurological level: somnolent Glasgow at 14/15th.
- Respiratory: spo2: 80% in the open air, signs of respiratory struggle such as intercostal pulling, polypneic thoraco-abdominal swaying at 58 cycles per minute. Kussmaul's dyspnea. Normal pleuropulmonary auscultation.
- Hemodynamics: BP=11/6 heart rate:120bpm CTR<3s
- Apyretic at 37.5
- Capillary blood glucose 4.28 g/l
- Urine dipstick: ketone bodies (+++) and glucosuria (+++)
- Biological work-up:
  - rapid antigen test (covid 19) positive
  - PCR COVID 19: negative
  - Na+:140
  - K+ :3,3
  - Ca++:97
  - Albumin level:39
  - Alkaline reserves:<5
  - CRP:116
  - PCT:12.8
  - Hb:16
  - WBC:29500
  - PNN:20590
  - Lymphocytes:5780

- Urea/creatinine:0,79/25,2
- ASAT/ALAT:23/21
- Lipasemia:59

- On gasometry:
  - PH:7,18
  - HCO3-:15
  - PaCo2:97.7

- Thoracic CT: appearance in favor of bilateral infectious pneumopathy of the covid 19 type with involvement of >25% of the pulmonary parenchyma (Figure 1).
- Cerebral CT: normal

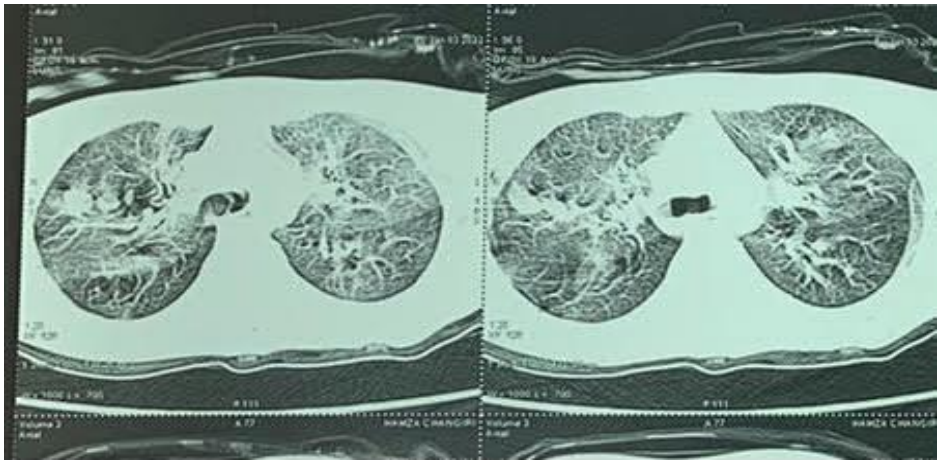

Figure 1: Chest CT showing bilateral infectious pneumopathy of the covid 19 type with involvement of >25% of the pulmonary parenchyma

- Therapeutically:
  The patient placed on 3l/m2 body surface area of G5%.
  Rehydration by saline solution for the first 2 hours.
  Insulin therapy: 0.1ui/kg/h
  Triaxon 75mg/kg/d
  Ciproxin 20mg/kg/d
  Bicarbonates: 240cc

The patient was hospitalized for 2 days in the pediatric intensive care unit. With a clear improvement on the neurological level with a GSC: 15/15.

On the respiratory plan: spo2 at 98% in eupneic free air then he was transferred afterwards in pediatric endocrinology service.

DISCUSSION

Since December 2019, when COVID-19 was first recognized and quickly became a pandemic disease, numerous studies have been published on the have been published on the clinical or paraclinical manifestations in pediatric patients that were different from those in adults [5]. Many aspects of aspects of COVID-19 have been considered in children; it is asymptomatic [7]. Severe forms of the disease have been less frequently reported in children [4].

Based on our experience, some considerations can be suggested: In pediatrics, COVID-19 may present with nonspecific symptoms such as abdominal and gastrointestinal symptoms. In addition, COVID-19 may trigger or aggravate underlying diseases such as uncontrolled diabetes. Finally, a chest CT scan should be performed in suspected cases.

CONCLUSION

SARS-CoV2, initially considered a respiratory pathogen, also involves other organs. Long-term follow-up of children and adults with diabetes helps to control morbidity and mortality.

REFERENCES

1. World Health Organization. (2020). WHO Director-General's openingremarks at the media briefing on COVID-19- 11 March. Accessed October 20. 2020.
2. Kamrath, C., Mönkemöller, K., Biester, T., Rohrer, T. R., Warncke, K., Hammersen, J., & Holl, R. W. (2020). Ketoacidosis in children and adolescents with newly diagnosed type 1 diabetes during the COVID-19 pandemic in Germany. *Jama*, *324*(8), 801-804.
3. Rubino, F., Amiel, S. A., Zimmet, P., Alberti, G., Bornstein, S., Eckel, R. H., ... & Renard, E. (2020). New-onset diabetes in Covid-19. *New England Journal of Medicine*, *383*(8), 789-790.
4. Chee, Y. J., Ng, S. J. H., & Yeoh, E. (2020). Diabetic ketoacidosis precipitated by Covid-19 in a patient with newly diagnosed diabetes mellitus. *Diabetes research and clinical practice*, *164*, 108166.
5. Wong, S. H., Lui, R. N., & Sung, J. J. (2020). Covid-19 and the digestive system. *Journal of gastroenterology and hepatology*, *35*(5), 744-748.
6. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., ... & Zhang, L. (2020). Epidemiological

and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The lancet*, *395*(10223), 507-513.

7. Wu, C., Chen, X., Cai, Y., Zhou, X., Xu, S., Huang, H., ... & Song, Y. (2020). Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China. *JAMA internal medicine*, *180*(7), 934-943.
8. Guo, W., Li, M., Dong, Y., Zhou, H., Zhang, Z., Tian, C., ... & Hu, D. (2020). Diabetes is a risk factor for the progression and prognosis of COVID-19. *Diabetes/metabolism research and reviews*, *36*(7), e3319.