

Newly-onset type 1 diabetes mellitus triggered by COVID-19: original case report

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Introduction :

During this year, scientific research revolves around COVID-19, with so many unanswered queries in term of pathogenesis; complications, and mortality rate ; in light of limited pediatric evidence. The close relation between COVID 19 and new-onset diabetes especially in children is still an unresolved issue. Our paper, exhibits an unique presentation of DKA misleading COVID 19 diagnosis at this age

Case presentation :

A three-year-old boy admitted for a history of acute dyspnea besides vomiting and weight loss, without abdominal discomfort. His vital parameters were monitored : temperature was 38°C, respiratory rate up to 50 breaths per minute without Kussmaul breathing however he had obvious respiratory distress signs, his oxygen saturation was initially about 93 % under 3 liters of oxygen provided by a simple facial mask. The child's capillary blood glucose was checked ; reaching 3 g/l with 3+ of ketones besides 3+ of glucose in the urine test. The remainder of his physical examination was uneventful. The diagnosis of a mild DKA was obviously assessed (pH :7,25 , Bicarbonate : 13,2 meq/l with decreased alkaline reserve : 8 meq/l). However, obvious respiratory distress signs didn't disappear even though glycaemic levels were normalized and acidosis was resolved. The boy was tested positive for Covid-19 just as his parents while they were asymptomatic. Then, the patient underwent a Chest computed tomography revealing bilateral ground-glass opacities especially in subpleural region with left consolidations ; graded CO-RADS 4 by the radiologist. After 48 hours in the intensive care; his clinical condition gently improved. The patient started breathing room air ; and was moved to an isolation COVID-19 care unit with his mother. Basal bolus insulin regimen was started, and diabetes education was provided and evaluated through sessions pursued even after the hospital's discharge. Our boy's HbA1c value was 10,3 % ; and his islet autoantibodies were positive. After 10 days in the hospital, the patient and his mother were discharged with quarantine recommendation.

Discussion/Conclusion :

Covid-19 pandemic, concerns all ages. Its conventional shape is usually observed in adults unlike children and adolescents. Many reports shed the light on the rise of severe presentations regarding new-onset T1DM in children within this pandemic. Younger age was also observed in a review from spanish epicenter of Covid-19 (1) compared to prior years, and our child is indeed only 3 years old. In fact, Italy recorded 44,3% severe cases of DKA rather than 36% during the same period in 2019 (2); and UK listed 70% of DKA ; and about 52% were severe (3). Looking for a reason of DKA in our case is more laborious than it seems. Actually, infection may be pointed out in DKA, and viral exposure along with genetic background are defined in auto-immune T1DM pathogenesis, but normally this viral contact should go before months or years (3). Moreover, the description of the correlation between SARS-CoV-2 and RAAS which is exhibiting the role played by ACE2 receptor as the binding piece of SARS-Cov-2 ; is definitely incriminating this virus in β -pancreatic cell dysfunction accelerating DKA process (3).

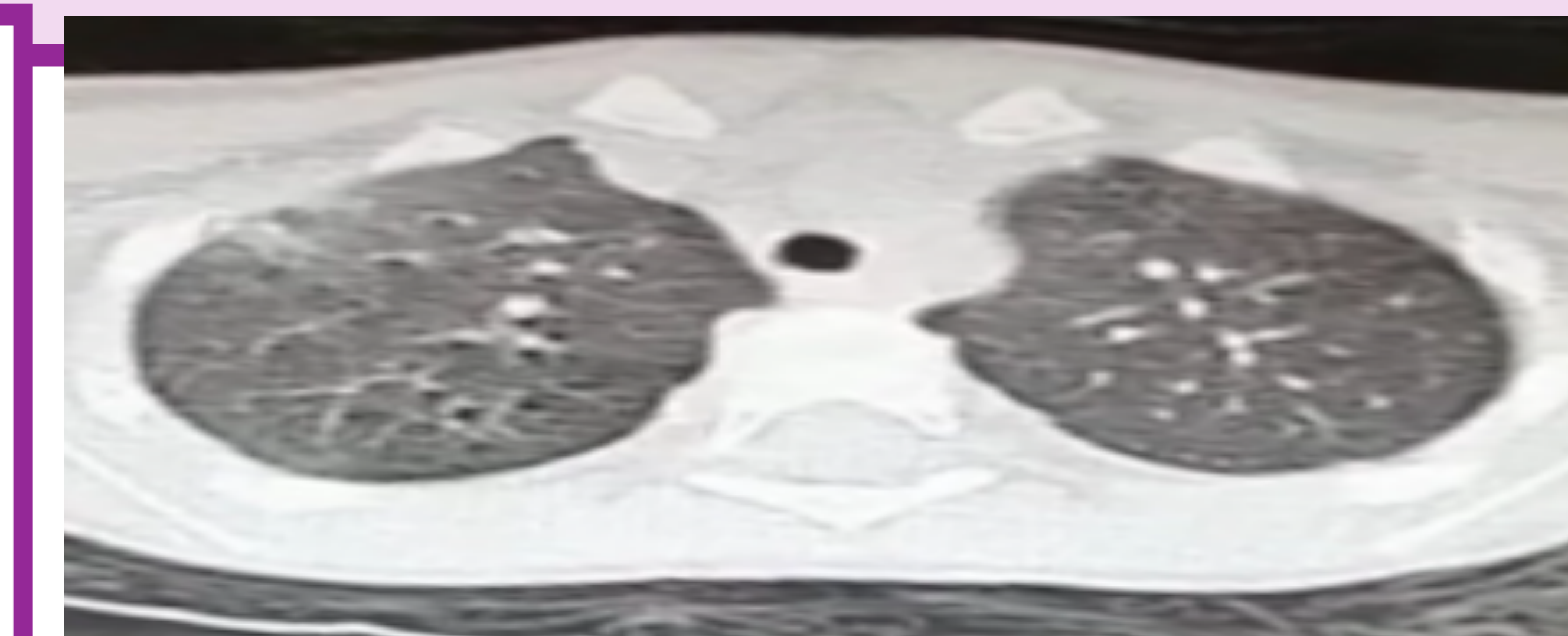


Figure 1: Axial images of our case's CT chest showing ground-glass opacities with consolidations

Discussion/Conclusion :

Our clinical case would enrich the global registry of cases with COVID-19-related diabetes (Cov-iDIAB project) in order to conduct further studies to understand the correlation between diabetes and COVID-19 in the pediatric population. In the meantime, higher attention is required to enhance COVID-19 linked diabetic ketoacidosis prognosis ; and a well diabetes education should be provided to the child and his family.

References:

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