

Case Report

Acute Pancreatitis Following the Third Dose of the BNT162b2 COVID-19 Vaccine

Omar Fakhreddine¹, Omar Chaabo¹, Alaa Sharara², Mohammad Samir Arnaout^{1*}

¹Department of Internal Medicine, American University of Beirut Medical Center, Beirut, Lebanon

²Division of Gastroenterology, department of Internal Medicine, American University of Beirut Medical Center, Beirut, Lebanon

***Corresponding Author:** Mohamad Samir Arnaout, Professor of clinical medicine, Internal medicine department Cardiology division, American University of Beirut Medical Center, Beirut, Lebanon

Received: 11 March 2022; **Accepted:** 29 March 2022; **Published:** 18 April 2022

Citation: Omar Fakhreddine, Omar Chaabo, Alaa Sharara, Mohammad Samir Arnaout. Acute Pancreatitis Following the Third Dose of the BNT162b2 COVID-19 Vaccine. Archives of Clinical and Medical Case Reports 6 (2022): 278-280.

Abstract

In December 2020, BNT162b2 vaccine developed by Pfizer and BioNTech became the first mRNA-based vaccine approved for human use against COVID-19. The emergence of such techniques in vaccine development have raised concerns about possible side effects. We present the case of a 64-year-old male who presented with acute onset of severe diffuse abdominal pain few days after receiving the third dose of Pfizer BioNTech COVID-19 vaccine. He was diagnosed with acute pancreatitis based on his lipase level of 1483 U/L as well as radiological evidence of pancreatic

inflammation. Investigations were unable to detect any evident etiology. He was admitted for observation and conservative management for 24 hours, after which he was discharged home. Few cases of bouts of acute pancreatitis have been reported after the first and second dose of BNT162b2 vaccine. To our knowledge this is the first case of acute pancreatitis after the third dose of vaccine.

Keywords: BNT162b2 vaccine; COVID-19; Pancreatic inflammation; Pfizer and BioNTech

1. Case Presentation

We present the case of a 64-year-old male who presented to the emergency department complaining of few hours' history of diffuse abdominal pain that awakened him from sleep. The pain was stabbing in nature, severe in intensity (9/10) with no radiations. It was associated with low grade fever, myalgia, arthralgia, generalized fatigue as well as nausea. He denied vomiting or diarrhea. The patient also denied use of any new medications, no dietary changes or any recent travel or sick contacts. He is previously healthy, with no significant surgical history. He is not receiving any chronic medications. He does not smoke or use alcohol. To note that few days prior to his presentation, the patient received his third dose of the

BNT162b2 COVID-19 vaccine. He doesn't report any similar episodes after receiving the first two doses.

Upon presentation, his vital signs were within normal limits. On physical examination, he had epigastric abdominal tenderness. Laboratory work up including a CBCD, chemistry panel, liver function test, TSH, lipid panel, cardiac enzymes and electrocardiogram were normal. Lipase level was 1483 U/L. CT scan of the abdomen was done and showed a mildly edematous pancreas with peripancreatic inflammatory changes and fluid consistent with acute interstitial pancreatitis. Ultrasound of the gallbladder showed no evidence of cholelithiasis.



Figure 1: CT scan of the abdomen showing a mildly edematous pancreas with peripancreatic inflammatory changes and fluid.

The patient was diagnosed with acute pancreatitis and admitted to the hospital for 24 hours monitoring and conservative management including intravenous hydration and pain medications. The following day his pain has resolved and he was discharged home. Lipase level was followed few days later and trended down to 54. Given the lack of risk factors of acute pancreatitis and the timing between the administration of the third dose of COVID-19

vaccine administration and the appearance of symptoms, we suspected the vaccine as a possible cause of acute pancreatitis.

2. Discussion

Acute pancreatitis is defined as an inflammatory condition of the pancreas and it is recognized as one of most common causes of gastrointestinal-related hospitalization in the

United States [1]. Its presentation varies widely from mild disease that requires conservative management to severe and complicated disease with high rates of morbidity and mortality [2]. Acute pancreatitis can develop due to multiple causes which can be identified in up to 85% of the cases. Some of the most common factors include gallstones, alcohol abuse, drugs, toxins, hypercalcemia and hypertriglyceridemia [3]. In the patient mentioned in this article, all common risk factors previously mentioned were ruled out.

In December 2020, an emergency use authorization has been granted for a SARS-COV-2 vaccine (BNT162b2) developed by Pfizer and BioNTech that became the first mRNA-based vaccine approved for human use against COVID-19 [4]. The rapid development of COVID-19 vaccines with the introduction of emerging technologies such as mRNA based vaccines have raised concerns about possible side effects [5]. Local and systemic reactions were reported after the first and second dose of BNT162b2 vaccine and it included pain at the site of injection, headache, fever, fatigue, nausea, myalgia and arthralgia [6]. Two cases of pancreatitis were reported after the first and second dose of vaccine [7, 8].

Although it is difficult to conclude that the vaccine may be the direct cause of acute pancreatitis, our case was temporally associated with the administration of the BNT162b2 vaccine with absence of any predisposing risk factor, which increased the likelihood of the vaccine as a possible etiology behind the episode of acute pancreatitis.

References

1. Chatila AT, Bilal M, Guturu P. Evaluation and management of acute pancreatitis. *World J Clin Cases* 7 (2019): 1006-1020.
2. Gapp J, Chandra S. Acute Pancreatitis. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing (2021).
3. Wang G-J, Gao C-F, Wei D, et al. Acute pancreatitis: etiology and common pathogenesis. *World J Gastroenterol* 15 (2009): 1427-1430.
4. Tumban E. Lead SARS-CoV-2 candidate vaccines: Expectations from phase III trials and recommendations post-vaccine approval. *Viruses* 13 (2020): 54.
5. Alamer E, Alhazmi A, Qasir NA, et al. Side Effects of COVID-19 Pfizer-BioNTech mRNA Vaccine in Children Aged 12-18 Years in Saudi Arabia. *Vaccines (Basel)* 9 (2021):1297.
6. U.S. Food and Drug Administration. MEETING DATE: Pfizer-BioNTech COVID-19 Vaccine (BNT162, PF-07302048). Vaccines and Related Biological Products Advisory Committee Briefing Document (2020).
7. Parkash O, Sharko A, Farooqi A, et al. Acute Pancreatitis: A Possible Side Effect of COVID-19 Vaccine. *Cureus* 13 (2021): e14741.
8. Walter T, Connor S, Stedman C, et al. A case of acute necrotising pancreatitis following the second dose of Pfizer-BioNTech COVID-19 mRNA vaccine. *British Journal of Clinical Pharmacology* 8 (2022): 1385-1386.



This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC-BY\) license 4.0](https://creativecommons.org/licenses/by/4.0/)