

LETTER TO THE EDITOR

A case of acute necrotising pancreatitis following the second dose of Pfizer-BioNTech COVID-19 mRNA vaccine

As of 22 June 2021, there have been about 400 000 000 doses of the Pfizer-BioNTech COVID-19 mRNA vaccine administered worldwide. At this time, 176 cases of pancreatitis have been reported in pharmacovigilance reports submitted to the WHO.¹ No epidemiological link between the Pfizer-BioNTech COVID-19 mRNA vaccine and pancreatitis has been reported. We report a case of acute necrotising pancreatitis following the second dose of the Pfizer-BioNTech COVID-19 mRNA vaccine. This case has been reported to the New Zealand Pharmacovigilance Centre and the patient has consented to publication of the case report.

A 43-year-old, NZ European male was diagnosed with acute necrotising pancreatitis 10 h following the administration of his second Pfizer-BioNTech COVID-19 mRNA vaccine. He has a background of atopy with seasonal rhinitis, eczema, and asthma, all of which are “mild.” He takes no regular medications and takes as needed melatonin 2 mg nocte, cetirizine 10 mg for hay fever, and betamethasone and emollient cream for dermatitis. He has no family history of note and works in a senior professional role. He drinks six standard units of alcohol per week, has never been a tobacco smoker, and does not use recreational drugs—and his employer undertakes regular drug testing.

He had a previous episode of pancreatitis in 2011, precipitated by high alcohol intake during a holiday abroad. He is otherwise previously well. There is no family history of note, his father was a smoker and died of lung cancer in his 60s, his mother is well, and he has two siblings and three children all of whom are well. He is not aware of any diseases of note in his extended family.

In May 2021, he received his second dose of Pfizer-BioNTech COVID-19 mRNA vaccine; he was well at that time. Four hours after the dose, he had two 330 ml bottles of 5% alcohol beer with his dinner. Six hours after the dose, he became unwell with nausea, epigastric pain, and vomiting. Ten hours after the dose, blood tests on admission to hospital included: white cell count $18.5 \times 10^9/L$ (4–11), neutrophils $15.5 \times 10^9/L$ (1.9–7.5), lymphocytes $0.8 \times 10^9/L$ (1.0–4.0), CRP $< 3 \text{ mg/L}$ (< 5), lipase 23 750 U/L (10–70), and triglycerides 3.3 mmol/L. Acute pancreatitis was diagnosed. An ultrasound scan showed pancreatitis without evidence of cholelithiasis. He subsequently deteriorated and a computer tomography (CT) scan on 17 May, day 9 of the illness, showed severe necrotising pancreatitis with collections.

During the admission under a specialist hepatobiliary surgical team, known causes of pancreatitis were excluded, including steroid

use, trauma, family history of autoimmune conditions, and infection. He did not have the risk factors of obesity, smoking, or heavy alcohol consumption. He had the risk factor of a previous episode of acute pancreatitis. The incidence of pancreatitis in New Zealand Europeans in this age group is approximately 50 per 100 000 per year.² Idiopathic cases represent about 15% of these.

Using the Naranjo criteria, the pancreatitis being “caused” by the Pfizer-BioNTech COVID-19 mRNA vaccine score was 6 “probable.”³ Clinical case discussion (including a hepatobiliary surgeon, gastroenterologist, and clinical pharmacologist) concluded that while idiopathic pancreatitis could not be excluded, the onset of symptoms and findings were consistent with an acute precipitating event around the time the second vaccine dose was administered.

In addition to the 176 cases reported in VigiBase™, searches of PubMed and Google Scholar™ identified two published case reports of pancreatitis following the Pfizer-BioNTech COVID-19 mRNA vaccine. These were following administration of the first dose of the Pfizer-BioNTech COVID-19 mRNA vaccine. In one case, symptoms developed several hours after vaccine administration and the other several days after vaccine administration.^{4,5}

Acute pancreatitis is rare in patients with COVID-19 but characteristic patterns of illness have been reported.⁶ This raises the possibility that an immune response to either the virus or the vaccine could have common sequelae.

This case of acute pancreatitis was temporally associated with the Pfizer-BioNTech COVID-19 mRNA vaccine suggesting a causal link. The characteristics of pancreatitis cases associated with the Pfizer-BioNTech COVID-19 mRNA vaccine should be examined to see if a consistent pattern is present.

KEYWORDS

adverse drug reactions, clinical pharmacology, epidemiology, immunology, medication safety, pharmacovigilance, vaccines

CONFLICT OF INTERESTS

The authors have no conflicts of interest to declare.

Talia Walter¹ 

Saxon Connor² 

Catherine Stedman³ 

Matthew Doogue⁴ 

¹Department of Clinical Pharmacology, Canterbury District Health Board,
Christchurch, New Zealand

²Department of Surgery, Canterbury District Health Board, Christchurch,
New Zealand

³Department of Gastroenterology, Canterbury District Health Board,
Christchurch, New Zealand

⁴Department of Medicine, University of Otago, Dunedin, New Zealand

Correspondence

Matthew Doogue, Department of Medicine, University of Otago, PO
Box 4345, Christchurch 8140, New Zealand.
Email: matt.doogue@otago.ac.nz

ORCID

Talia Walter  <https://orcid.org/0000-0002-2933-283X>

Saxon Connor  <https://orcid.org/0000-0002-5788-2185>

Catherine Stedman  <https://orcid.org/0000-0002-4591-7723>

Matthew Doogue  <https://orcid.org/0000-0002-2525-6307>

REFERENCES

1. VigiAccess™ <http://www.vigiaccess.org/> - accessed June 24, 2021.
2. Pendharkar SA, Mathew J, Zhao J, Windsor JA, Exeter J, Petrov MS. Ethnic and geographic variations in the incidence of pancreatitis and post- pancreatitis diabetes mellitus in New Zealand: a nationwide population-based study. *N Z Med J.* 2017;130(1450):55-68.
3. Naranjo CA, Busto U, Sellers EM, et al. A method for estimating the probability of adverse drug reactions. *Clin Pharmacol Ther.* 1981;30(2): 239-245. <https://doi.org/10.1038/clpt.1981.154>
4. Cieślewicz A, Dudek M, Krela-Kaźmierczak I, Jabłeczka A, Lesiak M, Korzeniowska K. Pancreatic Injury after COVID-19 vaccine—a case report. *Vaccine.* 2021;9(6):576. <https://doi.org/10.3390/vaccines9060576>
5. Parkash O, Sharko A, Farooqi A, Ying GW, Sura P. Acute pancreatitis: a possible side effect of COVID-19 vaccine. *Cureus.* 2021;13(4):e14741. <https://doi.org/10.7759/cureus.14741>
6. Bircakova B, Bruha R, Lambert L, Grusova G, Michalek P, Burgetova A. A bimodal pattern of the onset of COVID-19 related acute pancreatitis supports both the cytotoxic and immune-related pathogenesis—a systematic review. *Scand J Gastroenterol.* 2021;56(7):870-873. <https://doi.org/10.1080/00365521.2021.1922751>