



## A POSSIBLE SIDE EFFECT OF COVID 19 VACCINATION: PANCREATIC INJURY

Asna Aafreen<sup>1</sup>, Apoorv Pankaj<sup>2</sup>, Aprajita Pankaj<sup>3\*</sup>, Anjana Pankaj<sup>4</sup> and Pankaj Kumar<sup>5</sup>

<sup>1</sup>Medical Student, Massachusetts, USA

<sup>2</sup>Medical Student, Lucknow, Uttar Pradesh, India

<sup>3</sup>Department of Obstetrics and Gynecology, Aprajita Hospital, Uttar Pradesh, India

<sup>4</sup>Central Government Health Scheme, Lucknow, Uttar Pradesh, India

<sup>5</sup>Department of Surgery, Integral Institute of Medical Science and research, Lucknow, Uttar Pradesh, India

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### ABSTRACT

The COVID-19 pandemic has caused more than 3 million deaths worldwide. Recently developed genetically engineered vaccines are the most critical solution for controlling the pandemic. Clinical trials on a large number of participants confirmed their safety and efficacy. However, with the growing number of vaccinated people, new infrequent adverse effects have been reported, not described in the medicinal product characteristics. We would like to report a case of acute pancreatic injury that occurred shortly after administering Pfizer BioNTech COVID-19 mRNA vaccine (Comirnaty). The report points out the potential need for close monitoring of patients reporting abdominal pain after vaccination (unresponsive to standard oral painkillers) because such symptom can be associated with acute pancreatitis.

### INTRODUCTION

Equitable access to safe and effective vaccines is critical to ending the COVID-19 pandemic (SARS CoV 2), so it is hugely encouraging to see so many vaccines proving and going into development.

The AstraZeneca/Oxford product is a viral vectored vaccine called ChAdOx1-S [recombinant]. It is being produced at several manufacturing sites, as well as in the Republic of Korea and India. ChAdOx1-S has been found to have 63.09% efficacy and is suitable for low- and middle-income countries due to easy storage requirements [1].

Fever, headache, injection site pain, fatigue has been reported as common side effects of the vaccine [2]. A possible rare side effect of the vaccine, acute pancreatitis, has been reported [3,4].

In addition to pancreatitis, infrequent side effects including myocarditis and Guillain-Barré syndrome that developed after COVID-19 mRNA vaccination have also been reported, and the involvement of molecular mimicry theory has been proposed as a mechanism for their development [5,6]. Report the case of acute pancreatitis that developed shortly after the precautionary dose of covishield vaccination.

### Case Presentation

The 26 years old female patient, presented with severe abdominal pain, bilious vomiting and fever since 2 days. The patient gave history that the symptoms started 3 days after precautionary dose of covishield vaccination on 13/01/2022. The patient did not have history of alcohol consumption, previous history of acute pancreatitis, drug consumption, allergies to any vaccine or family history of pancreatitis.

On examination, patient was conscious and oriented, had tachycardia (Pulse rate 116/min), was afebrile with other vitals being within normal range. On per abdomen examination, the abdomen was distended; tenderness and guarding appreciated. Bowel sounds were absent. No organomegaly or other significant finding appreciated. Other systemic examination was within normal limits.

Laboratory examination revealed mild leucocytosis, raised serum amylase and serum lipase levels (Table 1). The patient was started on conservative management. She was not allowed oral food intake. Nasogastric tube was inserted. She was started on IV fluids, antibiotics and antiemetics and was being monitored (vitals and systemic examination) at regular intervals. The patient responded to the conservative management; with stabilising vitals and distension, tenderness and rigidity settling gradually. She passed stools on day 3 of

\*Corresponding author: **Aprajita Pankaj**

Department of Obstetrics and Gynecology, Aprajita Hospital, Uttar Pradesh, India

admission and was allowed orally. The patient was discharged on day 4, after observing her for a further 24 hours of symptom improvement.

The patient was followed up after 10 days of discharge and she was found to be recovering well. An informed consent was obtained from the patient for publication of the case report.

**Table 1**

Date	Admission Day	Day 2 of admission	Ref values
Hb	12.3	11.9	11.5-16 g% (F)
TLC	17200	14300	4000-11000 /cumm
Hct	38.200000%	35.600000%	
Total RBC	4.12 mill/cumm	3.99	
Platelet	163000/cumm	245000 /cumm	1.5-4.5 lakh/cumm
MCV	92.7	89.2	80-96 fL
MCHC	32.1	33.4	33-36 g/dL
MCH	29.8	29.8	27-33 pg
S Amylase	676.2	157.4	Upto 90 IU/L
S Lipase	912.5		Upto 190 IU/L
T Bilirubin	1.73		0.1-1.2 mg/dL
Conjugated bilirubin	0.44		0-0.4 mg/dL
Unconjugated bilirubin	1.29		0.2-1 mg/dL
SGOT	37.7		upto 45 IU/L
SGPT	32.6		upto 45 IU/L
ALP	221.5		106-308 IU/L
Blood urea	68.6		10-40 mg/dL
Creatinine	1.24		0.4-1.2 mg/dL (F)

Hb= Haemoglobin, TLC= Total Leucocyte count, Hct= Hematocrit, RBC= Red Blood cell, S= serum, T= Total, F= female

## DISCUSSION

The patient is a healthy woman, with no significant past history, including history of alcoholism, previous history of pancreatitis, consumption of drugs or family history of pancreatitis. The symptoms appearing shortly after vaccination for covid 19, may suggest a temporal association and thus the need for closely monitoring patients with the above symptoms. Bizjak et al. identified in their paper important factors that suggest a possible link between vaccination and pancreatitis. These factors include [7]: the chronology of events associated with the onset of adverse reaction; positive rechallenge and exacerbation of symptoms after repeated exposure to the vaccine; similar case reports describing pancreatitis after using the same vaccine; a probable causal relationship of the vaccine to other kinds of autoimmune diseases; case reports describing pancreatitis observed after different vaccines; probable mechanism between the vaccine and acute pancreatitis.

Two cases of acute pancreatitis after COVID-19 mRNA vaccine have been reported [3,4]. Both cases were women who had developed pancreatitis within a few days after the first dose of the Pfizer/BioNTech COVID-19 mRNA vaccine. Both cases were mild, and no case of pancreatitis with extensive inflammation, as in this case, has been reported yet. Recently, a case of acute pancreatitis after the second dose of Pfizer/BioN Tech COVID-19 mRNA vaccine was also reported [8].

Although the mechanism of vaccine-induced pancreatitis remains unclear, a compelling hypothesis of molecular mimicry (molecular mimicry theory) has recently been proposed [9,10]. According to this theory, cross-reactivity due to the similarity between amino acid sequences of viral and

self-antigens leads to tissue damage by the cytotoxic antibodies [11].

Indeed, recently published data revealed that antibodies against SARS-CoV-2 spike protein and nucleoprotein presented cross-reactivity against many human tissue antigens [12]. Other hypotheses that have been discussed include polyclonal activation of lymphocytes, "bystander activation" of self-reactive lymphocytes, somatic mutations of immunoglobulin variable genes, vaccine-induced vasculitis and triggering the release of histamine and leukotrienes [13].

The scientific literature provides information on incidents of infectious pancreatitis caused by mumps (the first case of pancreatitis caused by virus ever described), hepatitis viruses (with hepatitis B virus being the most commonly associated with acute pancreatitis), human immunodeficiency virus (incidence of acute pancreatitis 40% in HIV-positive patients compared to 2% in the general population), coxsackie virus type B, herpes simplex virus, cytomegalus virus, varicella-zoster virus, and some other viruses [14,15].

## CONCLUSION

Our patient developed acute pancreatitis 3 days after precautionary dose of covishield vaccine. The patient did not have any high risk factors for developing acute pancreatitis, thus, suggesting a possible temporal association with covid 19 vaccination. This report emphasises on the fact that acute abdominal pain after vaccination should be immediately looked into and patient monitored vigilantly. This case report is to make the readers aware of such rare but possible side effects of covid 19 vaccination.

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