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## **Acute epistaxis on male patient after covid vaccination by the Pfizer-BioNTech COVID-19 vaccine : Case report**

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**Abstract**--Epistaxis has the potential to be lethal since it can impair a patient's airway, breathing, respiratory system, and circulation. To reduce morbidity, it is essential to recognise underlying bleeding diatheses that may be addressed medically as soon as feasible. Ten days after receiving the first dose of the Pfizer-BioNTech COVID-19 vaccine, a 29-year-old man began to experience hematomas and epistaxis. This is the case study that we are providing. The experience serves as a cautionary tale that the SARS-CoV-2 virus can harm any organ, including the circulatory system, either directly through tissue tropism or inadvertently through inflammatory reactions in the form of innate immunity. According to the study that follows, vasculitis and vasculopathy associated with COVID-19 are a telltale symptom of a systemic virus-related disease.

**Keywords**---COVID-19, circulatory system, inflammatory reactions.

## Introduction

Epistaxis will affect more than 50% of people at some time in their lives (Ameya G et al., 2021). Based on its anatomical origin, epistaxis may be categorised, with the majority being classified as "anterior" and originating from a network of anastomotic blood vessels in Little's Area, the anteroinferior portion of the nasal septum. Most of these bleedings will end spontaneously or with relatively minimal first assistance. The year is 2022 by Tabassom A et al.

However, a tiny fraction could require hospital admission for nasal packing and possibly even surgery. Even while most posterior bleeding may be managed without surgery, It is often more copious, more likely to aspirate, and more likely to cause airway impairment. **(Leadon M et al.,2022).**

The underlying causes may be systemic (such as trauma, inflammation, or topical medication usage) or local (such as local factors) (congenital or acquired blood dyscrasias, and use of oral anticoagulants) (Römer P et al., 2022).

Adults with coagulopathies are far less typical patients. One such disorder that is uncommon, has a high death rate, and is difficult to detect and treat is acquired haemophilia. **(Mengatti M et al ., 2019)**

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is the culprit behind the current epidemic known as coronavirus disease 2019. (COVID-19) ( **Cascella M et al.,2022).**

Newly created vaccinations are effective instruments to stop the continued spread of CoV-2 as a result of SARS. Due to the original vaccines' rapid approval for clinical use, data on the side effects of SARS-CoV-2 immunisation are currently available.. **(Rubin R.,2021).**

ITP is different from vaccine-induced immune thrombotic thrombocytopenia (VITT), a condition characterised by blood platelet factor 4 (PF4) antibodies and thrombocytopenia together with thrombosis. Live and inactivated vaccines have both been linked to ITP. But as far as we know, receiving the Pfizer-BioNTech COVID-19 immunisation is not yet linked to ITP. **(Klok FA et al.,2022)**

Patients with COVID-19 have brought up a variety of problems. Blood vessel inflammation is known as Vasculitis. Autoimmune diseases, infections, and trauma are some of its causes. **(Wong K et al.,2022)**

## Case presentation

A 29-year-old man who had received the first dose of the Pfizer-BioNTech COVID-19 vaccination appeared with hematomas and epistaxis ten days later. Blood testing revealed a platelet count of 258.109/L, a WBC of 7.1, and a Hb of 14.9; additional laboratory tests revealed no noteworthy results. He began medical treatment and received no improvement after 48 hours of using a local decongestant, systemic Dicynone, cycloapron, vitamin C, and an anti-inflammatory. In order to compress the continuous epistaxis, patients received

surgery in which nasal and posterior nasal packs were implanted. In response to the patient's lack of improvement after 48 hours, the patient underwent further surgery. Nasal sinuscopy and endoscopic nasal examinations revealed necrotic tissue at the base of the skull. The posterior sphenopalatine was cauterised, and a mass biopsy of the left nasal cavity was taken (fig1). The patient responded quickly after 2 days of receiving 1 g/kg/day of IVIG. Platelets started to drop as soon as we started decreasing the steroids, so we switched to dexamethasone (40 mg/d), for 4 days every two weeks. He had 3 cycles, received a full recovery, and underwent follow-up for a year.

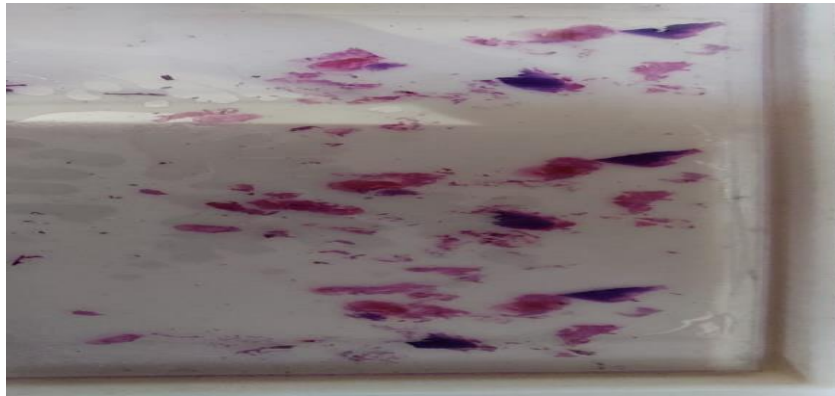


Figure 1. A left nasal mass biopsy revealed an inflammatory angiomatous nasal polyp with no evidence of malignancy, most likely caused by vasculitis.

## Discussion

Epistaxis is a condition that affects 60% of people, making it a rather common condition. Even though it frequently occurs, only 10% of cases are thought to need medical attention. Most cases of bleeding that are brought to a doctor's notice are anterior haemorrhage, and very few of them require surgery. **(Tabassom A et al.2022)**

Four cases of severe ITP have been documented after receiving the ChAdOx1 nCoV-19 adenoviral vector vaccine, according to Paulsen et al. Three of the four individuals had autoimmune illnesses or moderate thrombocytopenia in the years before the vaccine, but all four had a stable platelet count. **(Paulsen FO et al.,2021)**

Following the first or second dosage of the Pfizer-Biontech mRNA vaccine, a platelet drop was noted 3–18 days later, and it was frequently successfully treated with steroids combined with or without IVIG. **(Bianchi S et al.,2022).**

Some people who received the immunisation had previously been diagnosed with ITP and a stable platelet count **(Cooper KM et al.,2021).**

There have been cases of ITP associated with current immunizations, one of which was so severe and resistant that it needed dexamethasone, IVIG, platelet

transfusions, rituximab, and eltrombopag. After Johnson & Johnson, ITP reported in literature, the COVID-19 vaccine is also discussed. **(Helms JM et al.,2021).**

Following vaccination with the COVID-19 or Moderna vaccine from Pfizer-BioNTech, patients had ITP and general thrombocytopenia. The case-series, which was submitted to the Vaccine Adverse Event Reporting System and published in June 2021, discusses the COVID-19 immunisation. (Welsh KJ et al., 2021).

ITP cases per 100,000 persons were 3.3, while the reporting rate for thrombocytopenia for both vaccines was 0.80. **(Said K.B et al.,2022).**

Since all of them (mRNA and adenoviral vector) have been associated with likely ITP, it is still uncertain whether immunisation should be given to those who acquire ITP after the first dose. Given our findings, it is reasonable to complete immunisation while closely monitoring CBC to detect a platelet fall as soon as feasible. **(Said K.B et al.,2022).**

More information must be acquired so long as COVID-19 immunisation is still being done. Since handling these patients can be hard and difficult, as our experience has shown, it seems better to remain attentive for any possible hemorrhagic crises and closely monitor patients who have a history of ITP while we wait for further evidence and guidelines. In any case, there is no question that the advantages of immunisation outweigh the chance of developing ITP as a vaccine-related adverse event when mortality and morbidity risk following COVID-19 infection are taken into account. **(Kuter DJ.,2021).**

An inflammatory nasal polyp of the angiomatous type without malignancy was discovered in our instance during nasal sinuscopy and a mass biopsy of the left nasal cavity. This nasal polyp was most likely caused by vasculitis.

This might be explained by the fact that COVID-19 patients have endothelium inflammation, apoptosis, and malfunction (Becker R.C., 2020). Infections, oxidative stress, hypoxia, and environmental pollutants all have an impact on endothelial cells. Anti-inflammatory cytokines, Transforming Growth Factor Beta (TGF- $\beta$ ), Interleukin 10 (IL-10), Interleukin 1 (IL-1) receptor agonist, and high density lipoprotein cholesterol are a few of the external signals and intracellular mediators implicated in this inflammatory characteristic (HDL-C). **(Becker R.C.,2020a).**

Questions are raised regarding how susceptible endothelial cells are to SARS-CoV-2 binding, membrane fusion, and viral entry, which can result in infection, vascular damage, and dysfunction. **(Becker R.C. 2020).** Viral inclusions and a buildup of inflammatory cells were seen in the endothelium. Tissue samples from autopsies and operations revealed the presence of apoptotic bodies and extensive lymphocytic endotheliitis **(Varga Z et al.,2021).** Therefore, in COVID-19 individuals, endotheliitis and endothelial cell death may result in vasculitis.

Endothelial cell involvement and endotheliitis are described by Varga and colleagues in many arterial beds. Histology and electron microscopy performed by Varga Z and colleagues (2010) revealed that the vascular endothelium of the

heart, small bowel, kidneys, and lungs had accumulated inflammatory cells and viral inclusions, respectively. In surgical and autopsy tissues, apoptotic bodies and extensive lymphocytic endotheliitis were seen. It is important to remember that rather than host cell viral penetration, viral attachment to the cell surface and subsequent activation of the apoptotic and proinflammatory pathways may be sufficient to trigger apoptosis.. (**Sharma A et al.,2020**).

This article provides a succinct but accurate summary of the urticarial vasculitis that two COVID-19 patients encountered (**De Perosanz-Lobo D et al.,2020**). One kind of urticarial vasculitis is leukocytoclastic vasculitis with immunocomplex deposition, and COVID-19 also manifests a variety of cutaneous symptoms, including exanthemas that resemble varicella, petechial rashes that resemble dengue fever, and urticaria.

In a patient with COVID-19, Pinto AA et al., 2020 described a case of central nervous system vasculopathy with antimyelin oligodendrocyte glycoprotein antibodies. Soon after beginning immunomodulating therapy, clinical improvement occurred. Numerous autoimmune illnesses, in addition to Guillain-Barre syndrome, have been discovered. (**Zhao H et al.,2020**)

The hands, feet, heels, and toes of COVID-19 patients have skin lesions caused by lymphocytic vasculitis. Children and teens have been engaged in the majority of occurrences, but not only (**Colmenero I et al.,2020;Cordoro KM et al.,2020**)

### **Conclusions and future directions**

CoV-2 SARS syndrome the cardiovascular system, among other organs, might be impacted by COVID-19. In the acute, subacute, and perhaps chronic stages of the disease, endothelial cell inflammation in arteries, arterioles, capillaries, venules, and veins leads to pathological events such tissue hypoperfusion, damage, thrombosis, and vascular dysfunction. The results will demonstrate that SARS-CoV-2 is a novel type of systemic vasculitis that will be long recognised in the annals of medicine, in addition to changing the textbooks to identify SARS-CoV-2 as a causative pathogen for multi-bed vasculitis. Epistaxis in cases after vaccine may be life threatening especially when misdiagnosed so we must exclude vasculitis as a cause to epistaxis . As medical professionals and scientists, it is our responsibility to grasp, avoid, treat, record, and inform at every stage of the process. Future researches should be done to study the other effects of vaccine

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