

Case study

Case Report, Bullous Pemphigoid (BP)Covishield Vaccine Allergy

Abstract:

Bullous pemphigoid (BP) is a rare autoimmune subepidermal blistering disorder, the immunobullous skin disorder characteristically presents with **intense** tense bullae and intense generalized pruritis, where the immune system attacks a thin layer of tissue below the outer layer of skin. Most of the BP cases are due to autoantibodies against proteins arranged at the dermal-epidermal junction, **some BP is also** caused by systemic medications. ~~Here to present a~~ A classic case of this condition **is presented here** to highlight and to create awareness about the symptoms **which** occurred after ~~covid~~ **COVID-19** vaccination. ~~and to refer dermatologist in the initial stage.~~ A 41-year-old female patient presented with BP ~~the similar disease caused~~ after the administration of 1st dose of covid vaccine.

Keywords: Allergy, Bullous Pemphigoid, Covishield vaccine allergy, Autoimmune subdermal blistering disorder, Rashes

INTRODUCTION:

In 2019, the world faced the rampant coronavirus (COVID- 19) which led to the unprecedented impact on the overall health and the global economy in 2020 of 411 trillion, with confirmed cases of 235 million, with approximately 4.8 million deaths.[1]. ~~Vaccination is the most dependable strategy to end the fast spreading of the pandemic, particularly in low-to-middle-income countries. The spike protein of the virus (immunodominant antigen of the virus) is the main target of the approved SARS-CoV-2 vaccines [2]. This protein binds to the~~

~~ACE2 receptor of the host cell, inhibiting the entry of the virus into the host cell and the chain of subsequent events leading to the acute respiratory distress syndrome [3].~~ COVID-19 has escalated to devastating proportions with 50 crore confirmed cases globally as of April 2022(2)[4]. It started as an outbreak in Wuhan, China and was declared a pandemic by World Health Organization (WHO) on March 11, 2020. As of 11th October 2021, 237,383,711 confirmed cases of COVID-19, and 4,842,716 deaths have been reported to WHO(3) [5]. Various treatment options and strategies were undertaken to curb its vigorous spread through social distancing, sanitizing, use of drugs such as antivirals, antimalarials, steroids, cytokine inhibitors, monoclonal antibodies and convalescent plasma therapy were proposed as the remedy of COVID-19. ~~In India the use of remdesivir, Montelukast aided in speedy recovery in virus treatment [6].~~ However, none of them have been found to be effective in curing the disease due to the continuous mutation of the coronavirus. So, the invention of the vaccine was the main goal among the scientists. COVID-19 vaccine is the fastest developed vaccine in history with the Pfizer-BioNTech vaccine being approved for emergency use on 2nd December 2020 in UK just a year after the first case was reported in China. As of 16, September 2021, 16, 37 vaccines have completed Phase III trial and 22 vaccines have been approved for use by at least one country(4) [7]. Covishield vaccine is one of the recombinant vaccines developed by Oxford University and manufactured by Serum Institute of India [8]. Various adverse events following immunization has been reported worldwide with the development of COVID-19 vaccine. In June 2021, the first side effect due to Covishield 1st dose was reported in a 22-year-old girl, the adverse reaction of the vaccine caused the girl's brain dead with severe neurological complications, started with the side effect of chronic headache, then slowly with the formation of clot in the brain(5)[9]. A study was conducted using COVID Symptom Study app in UK and the report showed the incidence of local and systemic reactions as 58.7% and 33.7% respectively following the first dose of ChAdOx1 nCoV-19 vaccine (6)[10]. Following the first dose of the Pfizer BioNTech vaccination, injection site reactions were reported in 65.4% and systemic reactions were reported in 48%, whereas 73.9%

injection site reactions and 51.7% systemic reactions were reported after the first dose of the covid vaccine. There is a lack of sufficient evidence regarding the safety profile of these vaccines (7)[11].

Insufficient evidences led to the vaccine hesitancy in public. ~~therefore there are speculations that adequate vaccine coverage might not be achieved despite vaccine availability due to vaccine hesitancy, the percentage of vaccine hesitancy was seen in 77.6% general population, several factors lead to the vaccine hesitancy such as gender, age, politics and most importantly about safety measure of the vaccine.[12].~~ The following example illustrates the adverse effects caused due to the 1st dose of ChAdOx1 nCoV-19 (Covishield vaccine) which is an adenovirus vector vaccine.

CASE REPORT:

A 41-years-old female patient visited the dermatologist in the initial stage with maculopapular rashes, itching, watery discharge, blisters. She was treated with steroids. It got subsided, but after leaving the medicines, the same symptoms got worsted by reoccurring all over the body with throat pain, fever, rigors. The above symptoms were started after taking 1st dose of covid vaccine (COVISHIELD). Then she was admitted to Isabel's Hospital-Mylapore, Chennai in general department. The patient was conscious, oriented, and febrile, according to her general examination. The pulse rate, blood pressure and vital signs appear to be normal. The systemic examination revealed that all systems were operating normally. ~~The patient was of medium build and was on a mixed diet. The patient was not a known case of diabetes mellitus (DM), hypertension (HTN). The patient has a normal sleep pattern and bowel bladder habits.~~

Table 1: Patient Hematological Investigations

CBC TEST	ABNORMAL VALUE	NORMAL VALUE
Hb	10.6g%	M:13-18g%; F:11.5-16.5g%
RBC COUNT	5.3 million/cmm	M:4.5-6.5 10 ⁶ /cmm;

		F:3.8-5.8 10 ⁶ /cmm
PCV	36.5%	M:47-58; F:42-58
NEUTROPHIL%	82%	40-75%
LYMPHOCYTES%	10%	20-45%
EOSINOPHIL%	12%	1-6%
TOTAL WBC	13,300cmm	4000-11000cmm
MCV	68.7fL	79.0-93.3fL
MCH	19.9Pg	27.0-32.0Pg
MCHC	29.0g/dl	32.0-36.0g/dl
PLATELET COUNT	4.13lakhs/cmm	1-4lakh/cmm

The ANC, AEC, CBC Tests were taken and the Table 1 shows the hematological reports of patient which showed microcytic Hypo-chromic ~~chronic~~ anemia -Elliptocytes (RBC with elliptical shape), Anis poikilocytosis (RBC with different sizes and shapes such as MHA and Elliptocytes), Neutrophilia (Increased production of neutrophils), Eosinophilia (Increased production of eosinophils). ~~She was diagnosed with Bullous Pemphigoid triggered due to allergic reaction of covid vaccine.~~ The ECG reports were normal and lab investigations were abnormal as mentioned above (in table 1).

Patient was diagnosed as a case of Bullous Pemphigoid triggered due to allergic reaction to covid vaccine.

The patient was treated with-

~~-corticosteroids-like~~ Inj.methylprednisolone (125mg),
Inj.dexamethasone (4mg),

~~-immunosuppressant-~~ like azathioprine (50mg) orally,

~~-anti-histamine-such as~~ Inj.Pheniramine (2ml),

~~-antibiotic- such as~~ Inj.Meropenem (1g), Inj.Linizolid (600mg). ~~Since then, the patient's condition subsided.~~

Mention outcome of the patient ?

DISCUSSION:

Vaccination is the important and immediate prophylactic measure taken to prevent the further spread of the coronavirus; though vaccines cause adverse effects most of the adverse effects were due to the immunization action of the vaccine but not due to an allergic reaction (8)[13]. According to the physicians, though manufactures claimed that Covishield might produce mild reactions, certain pre and post precautions should be taken by the public. The trial population reported mostly mild Covid symptoms, like fever and fatigue (9) [14].

The report given by the government stated that more than 89,000 individuals suffered adverse reactions due to covid vaccines of whom 1,148 individuals died (10) [15]. ~~The Serum Institute of India stated the ingredients present in the Covishield vaccine are L Histidine, L Histidine hydrochloride monohydrate, Magnesium chloride hexahydrate, Polysorbate 80, Ethanol, Sucrose, Sodium chloride, Disodium edetate dihydrate (EDTA), Water for injection [16]. The public before the administration of the vaccine should be aware of the allergic reactions caused due to the ingredients present in the vaccine which may trigger the other complicated diseases.~~

The above case report is a classic example of autoimmune disease which had been triggered due to the administration of the Covishield vaccine. The patient received the relevant advice regarding therapeutic drug use and was cautioned against vaccination prior medical advice.

CONCLUSION:

Although Covid-19 vaccines can be reported to develop allergic and anaphylactic reactions which is considered as normal, the evidence indicate that vaccines and boosters are effective at helping to prevent serious illness, hospitalization, lethality due to COVID-19. ~~Large clinical trials were conducted to prove the prophylactic effect of the vaccines. [17]. At both national and international levels, there was enhanced need for the control of the spreading covid 19. The FDA has granted emergency use of both the vaccines i.e., Covishield and~~

Covaxin; Covishield is developed by the S11, Oxford University and AstraZeneca and Covaxin is developed by Bharat Biotech and ICMR; both vaccines are beneficial to provide immunity against the coronavirus [18]. Reported Adverse Effects (AEs) by the World Allergy Organization through the database conducted in 123 (54.1%) women and 104 (45.8) men the database showed multiple clinical presentation of allergic spectrum such as allergic rhinitis, allergic asthma, skin allergy, food allergy, drug allergy or anaphylaxis [19]. Serum Institute of India reported that people with autoimmune diseases have been more prone and expressed concern that covid-19 vaccines could aggravate their symptoms. Autoimmune hematologic disorders have been reported as complications of Covid-19 vaccine, which also reported that it triggered the occurrence of immune thrombocytopenia or autoimmune haemolytic anaemia [20]. It is necessary that the people should be counseled by the health care providers with adequate information regarding the side effects and advice to report the adverse effects immediately to the physician. Early diagnosis helps the clinician to elude the early symptoms and subsequent complications.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES:

1. **1**-Global Preparedness Monitoring Board. World Health Organization; Geneva:2020. A World in Disorder. Global Preparedness Monitoring Board Annual Report 2020.[https://apps.who.int/gpmb/assets/annual report/GPMB AR 2020 EN.pdf](https://apps.who.int/gpmb/assets/annual%20report/GPMB%20AR%20EN.pdf) License: CC BY-NC-SA 3. 0IGO.AVAILABLE from:(Google Scholar)

- ~~2. Oxford AstraZeneca (Covishield) COVID-19 vaccine, Medical News Today.com, updated on July 15, 2021.~~
- ~~3. Adverse events associated with Covishield vaccination among healthcare workers in a tertiary hospital in South India, December 2022, volume 12.~~
4. **2**-WHO. WHO coronavirus disease [internet]. WHO;2021. P.1.Available from: <https://covid.who.int>
5. **3**-Draft Landscape of COVID-19 Candidate Vaccines. (2021). Available online at <https://www.who.int/publications/m/items/draft-landscape-of-covid-19-candidate-vaccines>.|Google Scholar.
- ~~6. Chen PL, Lee NY, Cia CT, Ko WC, Hsueh PR. A review of treatment of coronavirus disease 2019 (COVID): therapeutic repurposing and unmet clinical needs. Front Pharmacol.2020;1110.3389/fphar.2020.584956[PMC free article] [PubMed]~~
7. **4**-Vaccines-COVID19 Vaccine Tracker. Available from: <https://covid19.trackvaccines.org/vaccines/>.
- ~~8. University of Oxford to study nasal administration of COVID-19 vaccine www.jenner.ac.uk/volunteer/recruiting-trials/covid-19-vaccine-intranasal-study-cov008~~
9. **5**-Death due to neurological complication-[https://www-thehealthsite.com/news/Delhi](https://www.thehealthsite.com/news/Delhi), published on June 22,2021
- 10.**6**-Vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID Symptom Study app in the UK; a prospective observational study. Menni C, Klaser K, May A, et al. Lancet Infect Dis.2021;21:939-949. [PubMed]

11. **7-**Chapin-Bardales J, Gee J, Myers T. Reactogenicity following receipt of mRNA-Based COVID-19 Vaccines. JAMA-Journal of the American Medical Association. 2021. Apr 5. Available from: Doi: 10. 1001/jama.2021.5374[PubMed].

~~12. Pascarella G, et al. COVID 19 diagnosis, and management: a comprehensive review. J Intern Med.2020;288(2):192-206-PMC-PubMed.~~

13. **8-**McNeil M.M. Weintraub E.S. Duffy J. et al. Risk of anaphylaxis after vaccination in children and adults. J Allergy Clin Immunol. 2016; 137:868-878.

14. **9-**The News India Express publications-
<https://www.newsindianexpress.com/cities/Bengaluru/2021/jan/12>

15. **10-** Article on How India Failed those who were harmed by the Covid-19 vaccine-[https://scroll.in/article/1036361/how-india-failed-those-who-were-harmed-by-the-covid-29-vaccine-published-on-November-2nd, 2022.](https://scroll.in/article/1036361/how-india-failed-those-who-were-harmed-by-the-covid-29-vaccine-published-on-November-2nd,-2022)

~~16. Covishield not to be taken by people severely allergic to any of its ingredients: Serum Institute; published on Jan 19, 2021~~

~~17. McGill University <https://www.mcg.ca/oss/article/covid-19-health/how-we-know-covid-19-vaccine-work> published on 23rd July 2021.~~

~~18. COVID 19 vaccine: comparison of biological, pharmacological characteristics and adverse effects of Pfizer/BioNTech and Moderna Vaccines S A Meo et al. Eur Rev Med Pharmacol Sci.2021 Feb.~~

~~19. Evaluation of allergic reactions following COVID 19 Vaccination in patients with documented allergies-
<https://org/x294d4c4/evaluation-of-allergic-reactions-following-covid-19-vaccination-in-patients> published on 16th September,2021.~~

~~20. Grignard ME, Liebherr S, Schoenenberger A, Benz R:
Autoimmune hematologic disorders in two patients after mRNA
COVID-19 vaccine. Hemasphere. 2021,5: e618.~~

UNDER PEER REVIEW