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Sars-Cov-2 Vaccine-Induced Severe Hemolysis- A Unique Case Presentation.

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Abstract:
SARS-Cov-2 is the causative agent of the covid-19 pandemic. Vaccination is very effective and better way to decrease mortalities and prevent serious illness associated with covid-19. All vaccines have side effects that need to be reported and investigated to weigh the anticipated benefits and risks. Here we present a case of 45 years old female patient with a history of hypertension and DM and a history of vaccination for SARS-Cov-2 first dose 15 days back. Then she had fever for 2 days later she developed hematuria. on evaluation all investigations were done to rule out relevant conditions. in view of recent vaccination, covid vaccine-induced hemolytic anemia is considered with ruled out all relevant causes of hematuria and fever. so based on this report we are finally concluding that clinicians should be aware of possible adverse effects and management related to covid-19 vaccines.

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I. Introduction:

SARS-Cov-2 is the causative agent of the covid-19 pandemic. Vaccination is very effective and better way to decrease mortalities and prevent serious illness associated with covid-19. All vaccines have side effects that need to be reported and investigated to weigh the anticipated benefits and risks and to allow the respected authorities to act if they occur(1).Hemolytic anemia is a type of anemia and caused by high rates of red blood cell destruction, which leads to loss of red blood cells which results in improper functioning of bone marrow. There are two forms of hemolytic anemia one is extrinsic and one is intrinsic. Haemolysis is the destruction or removal of red blood cells from the circulatory system prior to their normal span of 120 days. hemolysis presents as acute or chronic anemia, reticulosis and jaundice. Diagnosis criteria include reticulocytosis, elevated levels of unconjugated bilirubin and LDH, decrease haptoglobin and coombs test, platelet count, peripheral blood smear findings. In the early stages of hemolysis is asymptomatic, but in later stage of hemolysis causes angina and cardiopulmonary related diseases sometimes leads to death(2&3).

II. Case Presentation:

45 years old female patient with a history of hypertension and DM and history of vaccination for SARS-Cov-2 first dose 15 days back. then she had fever for 2 days later she developed blood in the urine. initially, they went to the local hospital and underwent series of investigations found to have severe anemia (Hb-6.8gms) and thrombocytopenia. dengue NS1 antigen and IgG&IgM negative. Total serum bilirubin showed 2.6, indirect bilirubin 1.4 and DCT was found to be negative. The next day CBP was repeated but it was showed hemoglobin (7.7). After that patient was referred to a tertiary care hospital for further management. On arrival, the patient had breathlessness treated with 2 liters of oxygen to reach 100% Spo2. Then she was undergoing for covid profile in that rapid antigen and Rt-PCR negative for SARS-Cov-2 and CT scan chest revealed no active covid infection. On evaluation patient had moderate anemia, (Hb-8.1gm) &thrombocytopenia and unconjugated hyperbilirubinemia [total serum bilirubin 3.76 and direct bilirubin 0.40 and indirect bilirubin 3.36 and SGPT (57) &SGOT (39)], raised LDH (550) and reticulocytosis (5.5), the overall picture showed hemolytic anemia then hematology consultation was taken and advice followed. coombs direct and indirect Coombs test was negative. connective tissue disorder (systemic Lupus erythematous) was ruled out with an ANA IF and ANA profile, anti-ds DNA were found to be negative and other infected causes like dengue were ruled out. Based on all investigations and in view of recent vaccination, post-covid vaccine-induced hemolytic anemia is considered with ruled out of all relevant causes related to fever and hematuria. Then patient was treated with IV immunoglobulins(appropriate calculated dose)and pulse steroids and anti-coagulants with supportive medications. No evidence of GI bleed in Upper gastrointestinal endoscopy. For hemoglobin and platelet fluctuations, she was undergoing PRBC and RDP transfusions multiple times. finally, hemoglobin and platelets

were improved. Then all symptoms were disappeared and discharged with appropriate medications and advised to follow up on an OPD basis.

III. Discussion:

Here we discussing a case of a 57-year-old female patient diagnosed with covid vaccine-induced hemolytic anemia.

Sergio B et al presented a case of 55-year-old woman diagnosed with autoimmune hemolytic anemia induced by the second dose of m.RNA covid-19 vaccine with no history of SARS-Cov-2 infection. but in our case patient was diagnosed with hemolytic anemia and vaccinated with viral vector covid vaccine of the first dose(1).

Gloria F. Gerber et al, presented six cases of m-RNA vaccine induced severe hemolysis with a history of paroxysmal nocturnal hemoglobinuria (PNH) but in our case, there is no history of PNH and vaccinated with viral vector covid vaccine(4).

Quinn, R et al, reviewed a study of case series of thrombocytopenia including immune thrombocytopenia after being vaccinated with m.RNA covid vaccine which was reported to the VAERS (vaccine adverse event reporting system) and they reported uncommon/rare presentation of thrombocytopenia occurred in 0.80/ million doses for Pfizer& moderna vaccines(5)

Gaignart et al, reported Two cases of autoimmune hematological disorders one is immune thrombocytopenia and another one is the warm type of autoimmune hemolytic anemia induced by mRNA covid vaccine(6).

Gregory lazarian et al, reported seven cases of warm and cold autoimmune hemolytic anemia associated with covid-19 infection. in which four of them with history of lymphocyte malignancy contrast to our case(7). in our case patient had hemolytic anemia induced by post-vaccination and the patient had no history of covid-19 infection and no malignancies. hemolytic anemia was reported with some covid vaccines but very rarely.

Lucia perez Lamas et al, reported a case of 57-year-old female with a history of primary cold agglutinin disease vaccinated with m-RNA covid vaccine after 2 days of first dose complaint with chills, weakness, shortness of breath on exertion, jaundice and hemoglobinuria .so based on investigations she was diagnosed with autoimmune hemolytic anemia same symptoms occurred after the second dose. But in our case patient was diagnosed with hemolytic anemia vaccinated with viral vector covid vaccine (8).

Based on this case we are advising that aware clinicians or health care professionals consider hemolytic conditions associated with the covid-19 vaccine and studies are required for finding an association between covid vaccines and hemolysis.

IV. Conclusion:

All vaccines are carried minimal side effects and sometimes serious side effects. But in this pandemic situation, many covid vaccines are available and large-scale vaccination drive undergoing across the world. So, vaccine safety is crucial for health-related quality of life. So based on all Investigations we are concluding that in this patient, hemolytic anemia may probably be induced by the SARS-Cov-2 vaccine. And clinicians should aware of possible adverse effects and appropriate management of vaccine-related adverse effects. So, vaccine adverse event reporting system is very essential for the safety of public health.

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