

**COVID-19 vaccines/rituximab****Lack of efficacy: 6 case reports**

In a case series, six patients (three men and three women) aged 51-80 years were described, who exhibited a lack of efficacy following treatment with AZD-1222, mRNA-1273, or tozinameran. Additionally, rituximab attributed to vaccine effectiveness in patient 2 and 3. [routes and dosages not stated].

Case 1: A 71-year-old man with a history of hypertension received the first dose of the AZD1222 vaccine [ChAdOx1-S; AstraZeneca] on April 1 and the second dose on June 24. He complained of a cough and fever three days after the second dose. However, 8 days later, he was hospitalised due to worsening fever and dyspnoea. He tested positive for COVID-19 infection with the delta variant [lack of efficacy of AZD1222]. He underwent several laboratory investigations and was diagnosed with COVID-19 pneumonia. Eventually, he received off-label therapy with IV dexamethasone at 6 mg/day for 10 days. Additionally, he received concurrent therapy with heparin. A week later, on July 9, his symptoms worsened and revealed extended pneumonia. Eventually, he died five days later [immediate cause of death not stated].

Case 2: A 51-year-old woman, who had a history of follicular lymphoma, with remission in September 2020. She also had SARS-CoV-2 infection in November 2020 and on April 7, 2021, she had received the tozinameran [Pfizer mRNA-1273] vaccine. She had been receiving rituximab since September 2020. However, she never developed an immunological response to SARS-CoV-2 and rituximab attributed to vaccine effectiveness. She had been positive for SARS-CoV-2 since the day she was vaccinated [lack of efficacy of tozinameran]. Few days later, her condition worsened due to dyspnoea and fever. A week later, she underwent various laboratory investigations and was diagnosed with COVID-19 pneumonia. She continued to be positive for SARS-CoV-2. On June 7, after 2 months, she was hospitalised for worsening dyspnoea and fever. Eventually, she received off-label therapy with IV dexamethasone at 4 mg/day for 10 days. Additionally, she received concurrent therapy with heparin. Eventually, she tested positive for SARS-CoV-2 on June 11 and 15. However, her COVID-19 pneumonia remained the same. Her condition stabilised and she was discharged. However, on July 3, 15 days later, she was hospitalised for worsening dyspnoea, and received off-label treatment with IV ceftriaxone 1 g/day and oral prednisone 25 mg/day for 10 days. Her clinical circumstances improved once more, and she was discharged. Her SARS-CoV-2, however, remained positive.

Case 3: A 53-year-old woman, who had a history of follicular lymphoma had been receiving rituximab therapy and attributed to vaccine effectiveness. She received the first dose of mRNA-1273 [COVID-19 mRNA-1273 Pfizer] on March 4 and the second dose on March 26. She screened positive for SARS-CoV-2 after 3 days on April 28, and she had received unspecified monoclonal antibody treatment [lack of efficacy of mRNA-1273]. She screened positive for SARS-CoV-2 on May 8, 16, and 20, and on May 27 and June 21, she tested negative. On July 1, she was hospitalised for fever and dyspnoea. She underwent several different laboratory investigations and was diagnosed with COVID-19 pneumonia. She received off-label therapy with IV dexamethasone at 4 mg/day for 10 days. After two days, she again tested positive for SARS-CoV-2. Additionally, she also received concurrent therapy with remdesivir and heparin. Eventually, her condition improved, and on July 9 and 13, she screened negative for SARS-CoV-2. She was discharged. On July 21, she was again hospitalised and tested positive for SARS-CoV-2. She then received off-label treatment with meropenem 3 g/day in three doses, methylprednisolone 1 mg/kg daily for 3 days, and oral prednisone 25 mg/day for 10 days. Her dyspnoea symptoms improved. However, she had a fever and tested positive for SARS-CoV-2 on August 3, 23, and 26, with negative findings on August 11, August 14. She then received off-label treatment with immunoglobulin, which showed resolution of COVID-19 pneumonia symptoms on August 14. Later, she was discharged.

Case 4: An 80-year-old man, received the first dose of mRNA-1273 [COVID-19 mRNA-1273 Pfizer] on March 11 and the second dose on April 1. However, on July 6, he experienced dyspnoea, cough, and fever. Seven days later, his condition worsened, and he was hospitalised. During admission, he tested positive for SARS-CoV-2 [lack of efficacy of mRNA-1273]. He underwent several laboratory investigations and was diagnosed with COVID-19 pneumonia. He received off-label therapy with IV dexamethasone at 6 mg/day for 10 days. Additionally, he received concurrent therapy with heparin. On July 16, he was tested positive for SARS-CoV-2. His clinical status, on the other hand, remained steady.

Case 5: A 63-year-old woman was hospitalised for fever, dyspnoea, and thoracic pain on July 30. She had a history of uterine cancer, which was managed with surgery 10 years prior. She had received the first dose of mRNA-1273 [COVID-19 mRNA-1273 Pfizer] on April 22 and the second dose on May 14. On July 21, 2021, she tested positive for SARS-CoV-2 [lack of efficacy of mRNA-1273]. She had also received off-label therapy with azithromycin 500mg 1 CP once daily for 3 days. She developed nausea and vomiting 2 days before hospitalisation. She tested positive for SARS-CoV-2 during admission. She underwent several different laboratory investigations and was diagnosed with COVID-19 pneumonia. She received off-label therapy with IV dexamethasone at 4 mg/day and IV ceftriaxone at 1 g/day. Additionally, she received concurrent therapy with heparin. Her condition improved, and three days later, she was discharged.

Case 6: A 61-year-old man received the first dose of mRNA-1273 [COVID-19 mRNA-1273 Pfizer] on April 22 and the second dose on May 14. He had a significant history of hypertensive cardiopathy and a prior cerebral haemorrhage in 2018. On July 7, he was hospitalised for a lipothymic episode. During admission, he tested positive for SARS-CoV-2 [lack of efficacy of mRNA-1273]. He denied any contact with a positive individual who had a COVID-19 infection. He underwent several different laboratory investigations and was diagnosed with COVID-19 pneumonia. He received off-label therapy with oral prednisone at 25 mg/day for 10 days. Additionally, he received concurrent therapy with heparin. However, he tested positive on July 18 and 21. His condition improved, and three days later, he was discharged. His clinical status, on the other hand, remained steady and he was discharged.