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Letter to the Editor / Editöre Mektup

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Anti-Jo-1 associated disease after inactive COVID-19 vaccine

İnaktif COVID-19 aşısı sonrası anti-Jo-1 ilişkili hastalık

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Dear Editor,

The effect of various environmental factors on the etiopathogenesis of autoimmune diseases has been known for a long time. One of these environmental factors is vaccines. Anti-Jo-1 associated disease is an autoimmune disease of unknown cause presenting with fever, non-erosive arthritis, myositis, Raynaud's phenomenon and mechanic's hand, often accompanied by interstitial lung disease.

A 63-year-old woman with no history of chronic disease, drug use, or past COVID-19 infection presented with weakness and pain in her extremities. The patient also had swelling in both her shoulders, elbows, and hand joints. It was learned that these symptoms started about 3 days after the second dose of her COVID-19 inactivated virus vaccine (Sinovac, Sinovac Biothech Ltd., Beijing, China). She had no fever, Raynaud's phenomenon, rash, or dysphagia but exertional dyspnea after the vaccine. Physical examination revealed 3/5 muscle strength in bilateral lower and upper limb proximal muscles. She had arthritis in her right shoulder, right elbow, both wrists, and both second, third, and fourth metacarpophalangeal joints. She also had a mechanic's hand formation in both of her hands (Figure 1). She had a high erythrocyte sedimentation rate 68 mm/hr (reference range 0-15 mm/hr), serum C-reactive protein level 34 mg/L (reference range 0-5 mg/L), and creatine kinase 3774 U/L (reference range 0-145 U/L) along with a positive antinuclear antibody (3+, speckled) by indirect immunofluorescence assay. In her blood test anti-Jo-1 (3+), anti-Ro52 (3+), and anti-PM/Scl (3+) were found positive. Electromyography and thigh magnetic resonance imaging was consistent with myositis (Figure 2). Bilateral subpleural ground-glass opacities were observed in the lung parenchyma with high resolution computed tomography (Figure 2). The patient was diagnosed with anti-Jo-1 associated disease. The patient was treated with 0.5 mg/kg methylprednisolone and

Figure 1. Mechanic's hands

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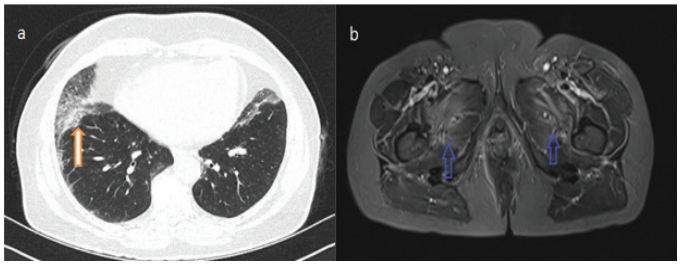

Figure 2. Subpleural ground glass opacities (arrow) (a) in high resolution computed tomography in a patient with anti-Jo-1 associated disease after COVID-19 vaccine. TIRM-hyperintense lesions in adductor muscles was compatible with myositis (blue arrow) (b)

azathioprine (150 mg/day). Her symptoms regressed during follow-up. She is still being followed up with low dose methylprednisolone (4 mg/day) and azathioprine (150 mg/day) without any symptoms.

Vaccines, as infectious agents, can cause immune system activation and autoantibody production. The broad homology between viral and bacterial elements in vaccines and human peptides may facilitate pathological autoimmune processes. Cross-reaction because of molecular mimicry, especially in genetically susceptible individuals, are suggested as a prototype mechanism of such processes.[1] Autoimmune disease may occur by rearrangement of memory T cells, activation of superantigens, or release of autoantigens because of cross-reaction. Cases such as Gullian-Barre syndrome and arthritis have previously been reported after various vaccines.[2]

While cases of autoimmune reactions after COVID-19 infection have been defined over time, information on immunological outcomes after COVID-19 vaccines is insufficient.[3] It is predicted that m-RNA vaccines, a vaccine developed against COVID-19, may lead to abnormal activation of the immune system related to a strong immune response.[4] However, these outcomes may also be observed with inactivated COVID-19 vaccine.

Reports of autoimmune diseases such as immune thrombocytopenic purpura after COVID-19 vaccination suggest that these vaccines may trigger autoimmune diseases, possibly through immune system activation, in susceptible individuals.[5] Some studies suggest that vaccines may trigger inflammatory myositis, but a complete link has not been demonstrated yet.[6] However, it has been suggested that anti-Ro-52 antibodies may play a possible role in susceptibility to vaccine-caused myositis.[7] In this study, there was a strong anti-Ro-52 antibody positivity. cases of polymyositis and local deltoid muscle myositis were previously reported after COVID-19 vaccine.[7,8] While a case of anti-Jo-1 associated disease after influenza vaccination was previously described,[9] to the best of our knowledge, this is the first such case after COVID-19 vaccination. In conclusion, although the relationship between autoimmune diseases such as inflammatory myopathies after vaccination has not yet been fully understood in various studies and case reports, the causal relationship cannot be denied. In this period of intensive vaccination against the COVID-19 virus, such post-vaccination autoimmune diseases should be kept in mind. Comprehensive and accurate immunological studies are needed to understand such autoimmune clinical manifestations after vaccination.

Ethic

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Authorship Contributions

Surgical and Medical Practices: Z.A., K.E.K., U.İ., H.E., Concept: Z.A., K.E.K., H.E., Design: Z.A., K.E.K., H.E.,Data Collection or Processing: Z.A., K.E.K., H.E., Analysis or Interpretation: Z.A., U.İ., H.E., Literature Search: Z.A., K.E.K., U.İ., H.E., Writing: Z.A., U.İ., H.E.

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