Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Neurology & Neurophysiology

Antisynthetase Syndrome with Anti-Jo-1 Antibodies Following Oxford-Astrazeneca COVID-19 Vaccination: Uncommon Case Report

Aziz Ahizoune[1*], Amal Charef[2], Ahmed Bourazza[1]

[1]Department of Neurology and Neurophysiology, Mohammed V Military Teaching Hospital, University of King Mohammed V-Souissi, Rabat
[2]Department of internal medicine, Mohammed V Military Teaching Hospital, University of King Mohammed V-Souissi, Rabat

DOI: 10.36347/sjams.2024.v12i06.003 | **Received:** 28.04.2024 | **Accepted:** 02.06.2024 | **Published:** 04.06.2024

***Corresponding author:** Aziz Ahizoune
Department of Neurology and Neurophysiology, Mohammed V Military Teaching Hospital, University of King Mohammed V-Souissi, Rabat

Abstract **Case Report**

Anti-synthetase syndrome (ASS) is an idiopathic inflammatory myopathy (IIM) with autoantibodies against one of many aminoacyl transfer RNA (tRNA) synthetases. Since the widespread introduction of the Sars-Cov 2 vaccines, a number of adverse reactions have been reported. In terms of these vaccines, Oxford AstraZeneca vaccines have been responsible for various side effects, but their benefits outweigh the risks. Cases of IIM following vaccination are rarely reported in the literature. Here we report a case of ASS in a patient who received the Oxford-Astrazeneca's Sars-Cov 2 vaccine.
Keywords: anti-synthetase syndrome, idiopathic inflammatory myopathy, myositis, Sars-Cov 2, Oxford-Astrazeneca COVID-19.

INTRODUCTION

Anti-synthetase syndrome (ASS) is an idiopathic inflammatory myopathy (IIM) with autoantibodies against one of many aminoacyl transfer RNA (tRNA) synthetases [1]. ASS constitutes a rare immune-mediated clinical entity which may include interstitial lung disease (ILD), non-erosive arthritis, myositis, Raynaud's phenomenon, unexplained fever and/or mechanic's hands [2]. Viral infections, vaccines, drugs and exposure to ultraviolet light are among the most important triggers of IIM [3].

Covid-19 is a viral disease caused by the Sars-Cov 2 virus, which recently caused a global pandemic with increased mortality worldwide. With the introduction of Sars-Cov 2 vaccines, this pandemic has been successfully controlled with a significant reduction in mortality. Thromboembolic events in people vaccinated with OXFORD-AstraZeneca COVID-19, were the most reported adverse events worldwide [4]. Here we present a case of a patient who presented manifestations of myositis and arthritis secondary to ASS following OXFORD-AstraZeneca COVID-19 vaccination.

CASE REPORT

A 30-year-old male patient with no previous medical history who received recently OXFORD-AstraZeneca COVID-19 vaccine. Seven days later, he started complaining from muscular pain of thighs with inflammatory arthralgia affecting knees, wrists and hands in a symmetric pattern. Despite the occurrence of these symptoms, a second injection of the vaccine was performed one month later. The next day, he showed worsening of the articular symptoms which became swollen and associated with generalized muscular pain, without any fever, headache, skin or respiratory manifestations. On physical examination, he was found to have slight motor deficit of proximal muscles of the lower limbs. The muscles showed significant tenderness and exaggerated sensitivity to palpation, especially over the thighs. Arthritis were symmetric and mainly involved knees, wrists, metacarpophalangeal and interphalangeal joints of both hands. The remainder of the somatic examination was normal.

Laboratory investigations revealed creatine phosphokinase (CPK) level of 5048 IU/L (N<308 IU/L), lactate dehydrogenase of 718 IU/L (N<225 IU/L), aspartate aminotransferase of 241 IU/L (N<37 IU/L) and alanine aminotransferase of 130 IU/L (N<41 IU/L). Erythrocyte sedimentation rate was 36 mm/hour

(N< 15 mm/hour), and C-reactive protein level of 17.5 mg/L (N< 5 mg/L).

A myositis panel was obtained, which was positive for anti–Jo-1 antibodies. Electromyoneurography was compatible with a myopathic inflammatory pattern. X- Rays of joints didn't show any significant abnormalities. MRI of the thighs showed an aspect of active myositis which mainly affecting the muscles of the posterolateral compartment on both sides (Figure 1). A muscle biopsy of the vastus lateralis of the quadriceps was performed and demonstrated inflammatory infiltrates with fibers in necrosis process. Computed tomography of chest showed signs of interstitial lung disease (ILD) affecting mainly the bases of the lungs.

The diagnosis of antisynthetase syndrome (ASS) was made in our patient with features of myositis, ILD, arthritis and presence of the anti-Jo-1 antibodies. Therefore, the patient was prescribed pulses of intravenous methylprednisolone (1g/day for 3 days) and was discharged on prednisone 60 mg/day with azathioprine (150 mg/day). Within two weeks, the patient's muscle pain, weakness and arthritis improved significantly.

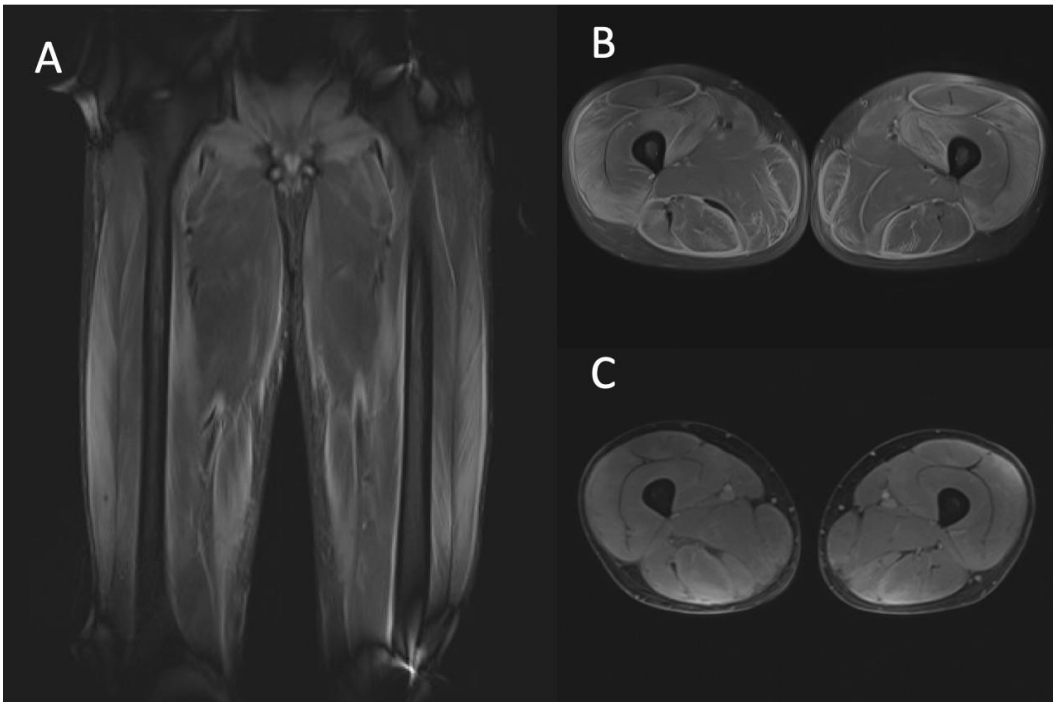

Figure 1: MRI of thighs in our patient and demonstrating diffuse hyperintensities among muscles of both thighs in coronal FAT-SAT T2 sequence (A), and axial section FAT-SAT T2 (B) with enhancement that predominate posteriorly on post contrast FAT-SAT T1 (C)

DISCUSSION

Antisynthetase syndrome is a rare systemic autoimmune disease characterized by the presence of antibodies against aminoacyl-tRNA synthetases, most commonly anti-Jo-1 antibody [2]. This condition is characterised by a complex cascade of innate and adaptive immune activation leading to cell-mediated end-organ damage [1]. ASS can result in a constellation of symptoms including inflammatory myositis, ILD, fever, mechanic's hands, Raynaud's phenomenon and polyarthralgias [1]. Our patient had an association of myositis, arthritis, and ILD secondary to anti-Jo-1.

In patients vaccinated with Sars-Cov 2 vaccines, an increased incidence of myositis with ASS has been reported [3]. The exact pathophysiology of this disease is not well known, but experts suggest that it is triggered by an environmental factor (such as tobacco use, air pollutants), infections, vaccines, and facilitated by a genetic predisposition. This genetic predisposition is reported to be implicated in development of auto-immunity. Experts suggest that Sars-cov 2 vaccination may be a triggering factor for IIM and other autoimmune diseases in genetically predisposed patients [3].

In the setting of ASS and active muscle inflammation, CPK levels are usually elevated [5]. Such report was observed in our patient who had very high level of CPK with diffuse active myositis as shown in MRI of thighs.

Several cases of inflammatory myopathy following vaccination with measles, mumps and rubella, influenza, Bacillus Calmette-Guerin and human papillomavirus vaccines have been reported in the literature [6]. Since the widespread use of the Sars-Cov 2 vaccines, a number of side effects have been reported,

but the benefits far outweigh the risks. However, cases of ASS following other vaccination are very rare, with only a few sporadic cases [7]. A work similar to ours was published by Gupta *et al.*, in a 46-year-old woman who presented with IIM associated with anti-Jo1 antibodies following Sars-cov 2 vaccination with OXFORD-AstraZeneca COVID-19 vaccine[7].

To the best of our knowledge, our previous healthy patient who developed ASS within a short timeframe after vaccination is the first case to present such adverse event in our country. Giving the autoimmune nature of ASS, we believe that this association might have been triggered by the immune response to a component of the OXFORD-AstraZeneca COVID-19 vaccine.

CONCLUSION

The rarity of neurological cases following Sars-Cov 2 vaccination is evidence that these vaccines are not responsible for autoimmune diseases. Rather, these side effects are likely to be seen in patients who are genetically or otherwise predisposed. The benefits of Sars-cov 2 vaccination have been shown to far outweigh the risks.

REFERENCES

1. Marco, J. L., & Collins, B. F. (2020). Clinical manifestations and treatment of antisynthetase syndrome. *Best Practice & Research Clinical Rheumatology*, *34*(4), 101503.
2. Witt, L. J., Curran, J. J., & Strek, M. E. (2016). The diagnosis and treatment of antisynthetase syndrome. *Clinical pulmonary medicine*, *23*(5), 218-226.
3. García-Bravo, L., Calle-Rubio, M., Fernández-Arquero, M., Mohamed, K. M., Guerra-Galán, T., Guzmán-Fulgencio, M., ... & Ochoa-Grullón, J. (2022). Association of anti-SARS-COV-2 vaccine with increased incidence of myositis-related anti-RNA-synthetases auto-antibodies. *Journal of Translational Autoimmunity*, *5*, 100160.
4. Wise, J. (2021). Covid-19: European countries suspend use of Oxford-AstraZeneca vaccine after reports of blood clots.
5. Betsikos, A., Gazouni, E., Bika, S., Paschou, E., & Sabanis, N. (2023). Antisynthetase Syndrome: The Classical Phenotype with a Twist. *Cureus*, *15*(7).
6. Stübgen, J. P. (2014). A review on the association between inflammatory myopathies and vaccination. *Autoimmunity Reviews*, *13*(1), 31-39.
7. Gupta, K., Sharma, G. S., & Kumar, A. (2021). COVID-19 vaccination-associated anti-Jo-1 syndrome. *Reumatologia/Rheumatology*, *59*(6), 420-422.