JSES International 8 (2024) 236

Contents lists available at ScienceDirect

JSES International

journal homepage: www.jsesinternational.org

Letter to the editor regarding: "Frozen shoulder after COVID-19 vaccination"

To the Editor,

We read Sahu et al's[5] study entitled "frozen shoulder after COVID-19 vaccination" with great interest, and we congratulate the authors for having composed one of the most downloaded articles from *JSES International* in 2022. However, we felt the urge to emphasize a few points in order to avoid misconceptions on both the pathophysiology of frozen shoulder and the causality between the COVID-19 vaccine and this refractory disease of the shoulder.

The definition of primary idiopathic stiff shoulder, namely 'frozen shoulder', was perfectly clarified by a consensus of the Upper Extremity Committee of International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine (ISAKOS) led by Eiji Itoi in 2014.[4] According to the consensus criteria, the term *frozen shoulder* should be used exclusively to describe the primary idiopathic stiff shoulder, which develops without any trauma or specific shoulder disease period. Itoi et al regrouped the causes of secondary stiff shoulder as intra-articular, capsular, extra-articular, and neurologic. Shoulder injury related to vaccine administration is a well-described condition, with a wide variety of presentations including shoulder pain, stiffness, and subacromial bursitis.[1] This condition has been increasingly reported as the number of vaccinations escalated in the course of the pandemic.

Despite the high incidence of improper intramuscular injection during the pandemic, vaccination cannot be considered a shoulder trauma. However, it has been previously reported that the subdeltoid bursa extends far beyond the acromion laterally and lies within the reach of a commonly used 1-inch needle.[2] An intense local inflammation and immune response are inevitable when the injection is made in, or even in the vicinity of the subdeltoid bursa, which can trigger a quickly escalating inflammatory reaction in susceptible individuals.

To be able to introduce a link between a phenomenon and a new agent, a considerable increase in the incidence that exceeds the natural occurence of this phenomenon must be recorded. Delaney et al[3] recently reported a 39.8% increase in the incidence of patients with idiopathic frozen shoulder from March 2020 to January 2021, which is a period that predates the widespread administration of the COVID-19 vaccines. The cohort of Sahu et al was admitted between June 2021 and September 2021, when an increase in the incidence of frozen shoulder had already been reported independent of vaccine administration. Moreover, as it is clearly stated by the authors, over 13 billion vaccines have been administered until the present time with no additional explosive increase in cases of frozen shoulder.

We believe that Sahu et al's cohort could be more likely classified as a prolonged shoulder injury related to vaccine administration reaction, as a secondary stiff shoulder, led by an acute inflammatory response to the vaccine. The evidence provided by the authors is not strong enough to associate their patients with the enigmatic pathophysiology of frozen shoulder, including the relentless fibrosis and very distinct clinical phases. Moreover, these patients cannot be classified as primary idiopathic stiff shoulder, or 'the frozen shoulder' by definition when there is an obvious intervening factor around the shoulder joint, particularly when this intervention is known and aims to provoke an inflammatory reaction.

Olgar Birsel, MD
İlker Eren, MD
Koç University School of Medicine, Orthopaedics and Traumatology Department, Istanbul, Turkey

References

1. Atanasoff S, Ryan T, Lightfoot R, Johann-Liang R. Shoulder injury related to vaccine administration (SIRVA). Vaccine 2010;28:8049-52. https://doi.org/10.1016/j.vaccine.2010.10.005.
2. Bodor M, Montalvo E. Vaccination-related shoulder dysfunction. Vaccine 2007;25:585-7. https://doi.org/10.1016/j.vaccine.2006.08.034.
3. Demyttenaere J, Martyn O, Delaney R. The impact of the COVID-19 pandemic on frozen shoulder incidence rates and severity. J Shoulder Elbow Surg 2022;31:1682-6. https://doi.org/10.1016/j.jse.2022.01.123.
4. Itoi E, Arce G, Bain GI, Diercks RL, Guttmann D, Imhoff AB, Mazzocca AD, Sugaya H, Yoo YS. Shoulder stiffness: current concepts and concerns. Arthroscopy 2016;32:1402-14. https://doi.org/10.1016/j.arthro.2016.03.024.
5. Sahu D, Shetty G. Frozen shoulder after COVID-19 vaccination. JSES Int 2022;6:682-5. https://doi.org/10.1016/j.jseint.2022.02.013.

DOI of original article: https://doi.org/10.1016/j.jseint.2022.02.013.

https://doi.org/10.1016/j.jseint.2023.06.026