



Bilateral Shoulder Anterior Dislocation with Proximal Humerus Fracture After Seizure Attack Post Covid-19 Vaccine

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Abstract

Background: Bilateral anterior shoulder dislocation which occurred after seizure is considered rare. This case is considered unique as it was caused by a seizure occurring after COVID-19 vaccination and association with fracture of the humerus. **Case report:** The study included a 38-year-old male who is a resident of Makkah city in Saudi Arabia. He is a known case of schizophrenia since 2002 on clozapine 2 mg tab TID. He received Covid-19 vaccine at 11 a.m. then he got a seizure attack at 8 p.m. in his home. He has bilateral shoulder severe tenderness and restricted range of motion. After that, bilateral shoulder x-ray showing right shoulder 3-part fracture with anterior dislocation and left shoulder greater tuberosity fracture with anterior dislocation. On 10/3/2022, he underwent open reeducation and internal fixation for the bilateral shoulder. **Conclusion:** Bilateral anterior dislocation of the shoulder resulting from seizure is considered rare; however, it is more common than perceived. It should be considered a true orthopedic emergency condition that requires prompt diagnosis and management.

Keywords: Covid-19 Vaccine, Seizure Attack, Proximal Humerus Fracture, Shoulder Anterior Dislocation, Bilateral Shoulder Anterior

Background

Bilateral dislocations of the shoulder are one of the rarest medical conditions; however, they arise on the joint the most subject to dislocations [1-3]. Moreover, this condition is most of the time presented as post-traumatic or secondary to convulsive seizures [2,4]. Anterior dislocation is rarer than posterior dislocation and few cases with anterior dislocations are reported in the literature [3,4]. Fractured neck of the humerus may be associated with simultaneous shoulder dislocation either in the posterior or anterior dislocations [2]. According to previous literature review, around 30 cases of bilateral anterior shoulder dislocations were reported where 15 of them were associated with simultaneous fractures which were associated with trauma or seizures [5,6]. According to the previous literature, it was known that anterior shoulder dislocations were occurred as a secondary condition to trauma while posterior shoulder dislocations were associated with unbalanced forceful muscle contractions that occur in case of electric shock or epileptic seizures [7,8].

In the last two years, huge process of urgent vaccinations from COVID-19 was processed in all countries around the world [9,10]. There were several vaccines which have been approved to use based on limited randomized, blinded, and controlled trials; however, due to the rapid uptake of the vaccine and the huge number of people who took the vaccine or will be vaccinated, safety profiles should be carefully considered [9]. Until April 2021, 9000 reports of side effects associated with vaccination against COVID-19 had been reported to the Adverse Event Reporting System (VAERS) including acute transient effects as neurological symptoms as muscle

spasm, paresthesia, headaches, dizziness, or myalgia and rare conditions as tremor, diplopia, seizures, dysphonia and reactivation of herpes zoster were also reported [11,12]. However, the relation between seizures and COVID-19 vaccination is not clear, rare cases of seizures followed vaccination were reported [9,10].

In the present report, we present a case of two rare conditions of bilateral anterior dislocation of shoulder at a 38-year-old patient with proximal humerus fracture after seizure attack post Covid-19 vaccine.

Case report

This gentleman is 38 years old Sudan male, non-smoker, right hand dominant, unemployed. He is a resident of Makkah city in Saudi Arabia. He is a known case of schizophrenia since 2002 on clozapine 2 mg tab TID, Leponex 100 mg tab TID and Depakin 300mg tab OD. He doesn't have surgical history.

He received Covid-19 vaccine at 11 a.m. then he got a seizure attack at 8 p.m. in his home. He was standing at his bed during the attack, after that he felt on his bed while he is shepherding. He got acute severe bilateral shoulder pain where he brought to emergency by ambulance. On examination; his tall 184 cm and weight 115 kg. He has bilateral shoulder severe tenderness and restricted range of motion. After that, bilateral shoulder x-ray showing right shoulder 3-part fracture with anterior dislocation and left shoulder greater tuberosity fracture with anterior dislocation (**Figure 1,2**). On 10/3/2022, he underwent open reeducation and internal fixation for the bilateral shoulder (**Figure 3**).



Figure 1: X-ray of the shoulder showing the bilateral anterior dislocation of the shoulder

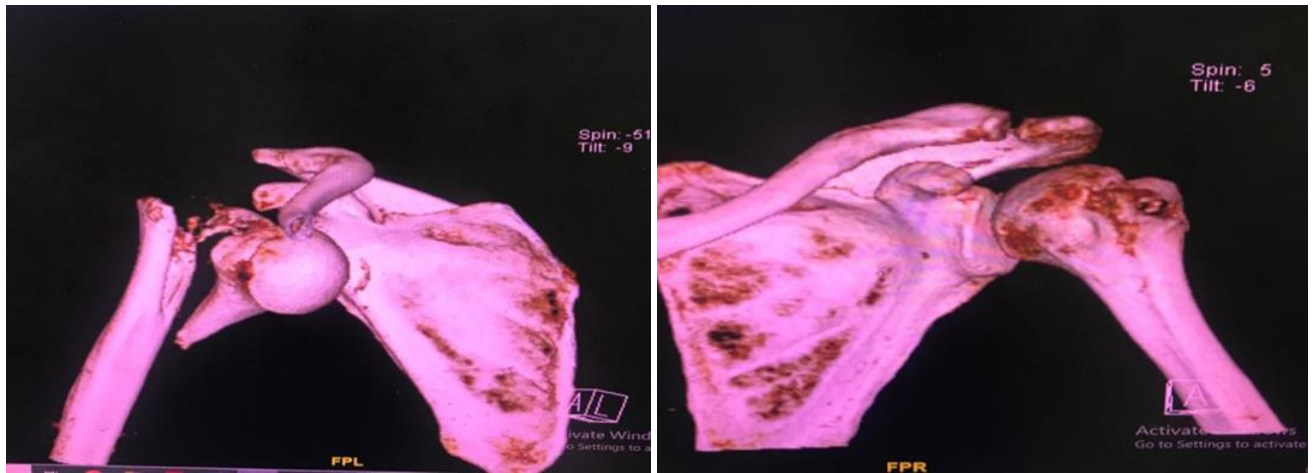


Figure 2: X-ray of the shoulder showing the right shoulder 3-part fracture with anterior dislocation and left shoulder greater tuberosity fracture with anterior dislocation.

Discussion

Recent review of the published literature showed that bilateral anterior dislocation is not as rare as was believed with Ballesteros demonstrating that there are 44 cases in the literature [13]. In some previous study, the authors reported that there is fewer than 50 cases of bilateral anterior shoulder dislocation have been described in the literature and caused because of violent muscle contractions during epileptic seizures [14,15]. The first description of bilateral anterior dislocation was presented in 1902 by Mynter in patients poisoned by Camphor overdose [16,17]. However, the previous literature reported slightly few cases of bilateral anterior dislocation, fewer cases were reported because of seizures (chronic or acute). In our study, we

reported 13 cases of bilateral dislocation caused after seizure episodes (Table 1). In other previous studies, the authors reported 69 cases of bilateral anterior dislocation because of seizures however, the same studies reported 125 cases of bilateral anterior dislocation because of trauma and accidents representing a ratio of trauma to seizure cause of about 2:1 [1,14,18]. Moreover, few cases of seizures caused after COVID-19 vaccine were reported in the literature review however, no was associated with fracture of shoulder dislocations [9-11]. According to our search over the literature review, this is the first study reported case of bilateral anterior dislocations which caused by seizure episode related to COVID-19 vaccination.

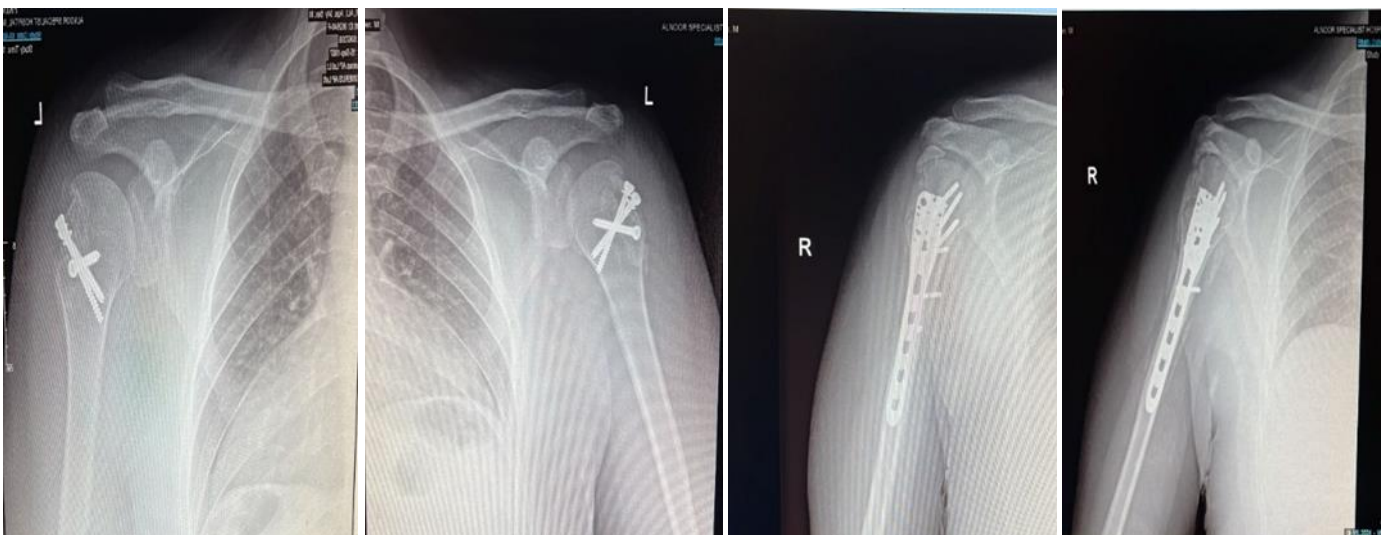


Figure 3: X-rays of right and left shoulders after open reeducation and internal fixation for the bilateral shoulder

Table 1: Literature review of studies reported anterior bilateral dislocation after muscular contraction of seizures

No.	First author	Year	Age (Year)	Sex	Diagnosis (Acute or Chronic)	Aetiological Categories	Fracture	Type of seizures	Bilateral dislocation
1	Segal [19]	1979	32	Male	Acute	Muscular contraction	Yes	On treatment	Yes
2	Sucunza [20]	2002	29	Male	Chronic	Muscular contraction	No	On treatment	Yes
3	Mofidi [21]	2010	30	Male	Acute	Muscular contraction	Yes	First time	Yes
4	Suryavansh [22]	2012	45	Male	Acute	Muscular contraction	Yes	Second time seizure	Yes
5	Manoharan [23]	2014	46	Male	Acute	Muscular contraction	Yes	First time	Yes
6	Shiber [24]	2014	33	Male	Acute	Muscular contraction	Yes	First time	Yes
7	Wheelton [25]	2015	32	Male	Acute	Muscular contraction	Yes	First time	Yes
8	Hiba [3]	2015	24	Non-specific	Acute	Muscular contraction	No	First time	Yes
9	Ahmad [26]	2017	20	Male	Chronic	Muscular contraction	No	On treatment	Yes
10	Joseph [27]	2019	21	Male	Acute	Muscular contraction	No	First time	Yes
11	Diallo [18]	2020	30	Male	Acute	Muscular contraction	No	First time	Yes
			27	Male	Chronic	Muscular contraction	No	On treatment	Yes
12	Rana [4]	2021	48	Male	Acute	Muscular contraction	No	On treatment	Yes
13	Our study	2022	38	Male	Acute	Muscular contraction	Yes	After Vaccination	Yes

Bilateral dislocation requires synchronous and simultaneous forces at both joints which can be occurred because of several mechanisms [28]. In general, both shoulders appear symmetrical, and diagnosis may be missed by physicians not familiar with similar cases. Because of the pathognomonic (symmetric square shoulder aspect) referring to bilateral flattened shoulders and inability to internally rotate either shoulder, it is rare to miss dislocations in trauma conditions however, in nontraumatic and seizures cases, it is highly possible to miss the dislocations [18].

Neglected cases of bilateral dislocations of the shoulder were reported in some previous studies which required surgical reduction with eventual internal fixation [16,29,30].

The mechanism of bilateral dislocation during seizures is the external rotators of the humerus is being overpowered by the more powerful internal rotators (latissimus dorsi, pectoralis major and subscapularis) which cause adduction and internal rotation which is strong enough to dislocate the humeral head anteriorly [1].

From our analysis of the literature, the mean age of patients reported bilateral anterior dislocations was 32.5 years with standard deviation of 8.89 years (Table 1). The youngest patient was 20 years old [26] and the oldest was 48 years old [4]. All patients reported in the reviewed literature included our study were males which confirms the previous results of other studies showed predominance of men over female in having bilateral anterior dislocations [1,18]. Moreover, 78.5 % of the patients presented in table 1, were due to acute injuries which similar to the results of Diallo M et al [18].

Moreover, forty-three percent of the patients with bilateral anterior dislocation had complications often bilaterally presented as fractures including proximal humerus, and isolated greater tuberosity fractures. Acute bilateral anterior dislocations are mainly managed by closed reduction [31,32]. The presence of an associated lesion often necessitates operative management. Displaced greater tuberosity fractures were managed by plate and screws with washers [18].

Conclusion

Bilateral anterior dislocation of the shoulder resulting from seizure is considered rare however, it is more common than perceived. It should be considered a true orthopedic emergency condition that requires prompt diagnosis and management. Early reduction of the shoulder is essential to reduce the pain and prevent the long-term complications as avascular necrosis of the humeral head. More health investigations should be conducted over the use of COVID-19 vaccinations. Benefit/ risk value of COVID-19 vaccination should be assessed for patients with known seizure episodes.

Conflicts of Interest

None

Funding Statement

None

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