ASS 2022 – OP 10

Thrombotic and immunological phenomena following COVID19 vaccination: experience from a tertiary care hospital

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Introduction

Vaccination has undoubtedly reduced COVID19-related mortality globally. However, being a new vaccine with limited clinical trial experience, post-marketing data is important to establish safety and side effect profile. Thrombotic and autoimmune phenomena have been reported globally following vaccination. A multicentre study in Sri Lanka failed to identify any significant adverse events following Covishield (Astra-Zeneca) first dose in Sri Lanka. Our study is the largest retrospective case series identifying serious thrombotic and autoimmune complications of all types of COVID vaccination in Sri Lanka in published literature.

Objectives

To describe the pattern of thrombotic and autoimmune phenomena observed following COVID vaccination in patients presenting to TH-Peradeniya.

Methods

Data was collected from patients who presented to TH-Peradeniya with thrombotic and immunological phenomena following COVID19 vaccination over a period of seven months (September 2021 to March 2022). A causal relationship was assumed in patients in whom the symptoms appeared within 6 weeks of vaccination, without similar symptoms preceding the vaccination. Demographic details, clinical picture with the working diagnosis, comorbidities, treatment given and the outcome were recorded.

Results

Of the 24 patients identified, 18 were female and 6 were male. Their age ranged from 19 to 78 years. All had received at least one of the five COVID vaccine types used in Sri Lanka (BNT162b2, mRNA-1273, BBIBP-CorV, Gam-COVID-Vac and AZD1222 (ChAdOx1)) while four had received cross-vaccination. Eight patients (33.3%) mentioned step-wise progression of symptoms with booster doses. One patient died while the remaining 23 patients recovered with varying degrees of disability.

The observed phenomena included distal digital thrombosis with digital loss (n=3), complex picture of digital thrombosis, cutaneous vasculitis and extensive mucosal ulceration (n=1), cerebral vasculitis (n=2, both were ANCA negative and ANA positive), de-novo inflammatory arthritis (n=9), worsening of previously diagnosed autoimmune rheumatological conditions (n=4), cutaneous vasculitis with inflammatory oligoarthritis (n=1), isolated cutaneous vasculitis (n=1), severe autoimmune haemolytic anaemia with positive ANA (n=1), steroid responsive cognitive symptoms with positive ANA (n=1) and an RS3PE-like picture (n=1).

The first observed patient, a 78-year old female with extensive digital thrombosis, was managed with apixaban and IV prostacyclin. However thrombosis progressed and later she

developed thromboembolic pulmonary hypertension. Despite multidisciplinary care, she succumbed to severe right heart failure 6 months later. Subsequent patients with digital thrombosis were tried on bosentan which was effective with rapid halt of progression of infarcts and pain relief. All patients with inflammatory arthritis needed DMARDs due to failure of inducing sustained remission with steroids and non-steroidal anti-inflammatory drugs. Rest of the patients needed intravenous immunoglobulins, pulsed high dose methylprednisolone, high dose oral prednisolone, cyclophosphamide, mycophenolate mofetil and in one case, rituximab. Treatment was tailored to the individual patient. Only one patient achieved complete resolution with a short course of steroids while all others needed long-term immunosuppression.

Conclusion

Despite being rare, COVID19 vaccination can be associated with unusual autoimmune phenomena which appear to intensify with repeated vaccination. Many patients showing autoantibodies might indicate an underlying susceptibility to vaccine-induced immunological complications. For thrombotic complications, prostacyclin is of dubious efficacy while bosentan is effective. The majority of patients needed sustained strong immunosuppression which had to be tailored to the individual patient.