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Chronic Inflammatory Demyelinating Polyneuropathy Incidence in Covid-19 and Covid-19 Vaccines

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Chronic Inflammatory Demyelinating Polyneuropathy [CIDP] is the most common autoimmune polyneuropathy in adults. CIDP is a demyelinating disease. It is an immune-mediated illness in which the precise mechanism behind the pathophysiology of the immune response is unknown. CIDP is an immune-mediated condition in which both T-cell and humoral mediated immune mechanisms act against myelin components. It is characterized by subacute to chronic onset [> 8 weeks], weakness [both proximal and distal], cyto-albuminologic dissociation [increased CSF protein without pleocytosis], and electrodiagnostic characteristics of asymmetric conduction velocity slowing with features of conduction block [1]. The presence of F-wave latency distinguishes CIDP from other demyelinating neuropathies [2, 3]. Nerve pathology findings of CIDP are segmental demyelination, onion bulb formation, perineural inflammation, and axonal degeneration.

CIDP is diagnosed mainly based on characteristic history and exam findings with the help of electrophysiological studies and CSF analysis. Occasionally, a nerve biopsy is needed to exclude other differentials. CIDP has a variable prognosis and a wide spectrum of presentation just like multiple sclerosis. 20-65% of the patients undergo a relapsing and remitting course, whereas others have a progressive course [4]. Monoclonal protein presence is a sign of poor prognosis along with a lack of response to the treatment.

As per the international Guillain-Barre syndrome [GBS] outcome study conducted during the COVID-19 pandemic, 22% of GBS patients had a preceding SARS-COV-2 infection. The occurrence was considered secondary to postinfectious disease mechanisms [5]. However, literature on CIDP association with demyelinating diseases is scarce and heterogeneous. Souza et al published a four case series of CIDP after ChAdOx1 nCoV-19 [AstraZeneca] vaccine [6]. Taga and Lauria conducted an extensive search of databases in the review article published in February 2022 [7]. They did find compelling evidence of GBS occurrence in association with COVID-19 infection. Interestingly, they did not find any report linking COVID-19 to a new diagnosis of CIDP. Although, they cited few reports mentioning exacerbation of CIDP symptoms with COVID-19 infection in known CIDP patients. Outside VAERS [Vaccine Adverse Event Reporting System] of CDC, the reported data on COVID vaccination-related CIDP is scarce. As of May 2022, there are sixty-one reported events in VAERS in the United States of America [USA] when searched under CIDP and COVID-19 vaccine. Most of these reported events are self-reported by patients or family members.

Concrete data exist on the occurrence of AIDP [Acute Inflammatory Demyelinating Polyneuropathy] with COVID-19 and COVID-19 vaccines. Abo-Zed and Pinevich reported a case of GBS that developed shortly after the Moderna COVID-19 vaccine which subsequently evolved into CIDP [8]. Of note, this patient had a history of GBS/AIDP four years ago after receiving the influenza vaccine. Chen et al described various neurological adverse reactions associated with COVID-19 vaccines [9]. Serious neurological symptoms such as GBS, cranial nerve neuropathies, and transverse myelitis are described in a few case reports [10,11]. Jee-Eun Kim et al reported a thirteen-patient case series that presented with a GBS and variants following COVID-19 vaccination in South Korea [12]. Out of thirteen patients, eight received AstraZeneca and five received Pfizer-BioNTech vaccine. Oo et al published inflammatory demyelinating polyneuropathy after administration of ChAdOx1 nCoV-19 vaccine in four patients. Out of four patients, one had GBS symptoms flareup, whereas three had new-onset GBS [13]. Bagella reported a case of GBS which progressed into CIDP after ChAdOx1 nCoV-19 vaccination [14].

To summarize, there is compelling evidence to date pointing to a probable link between COVID-19 and COVID-19 vaccines and inflammatory neuropathies. More commonly with AIDP than CIDP. Awareness of this uncommon but possible adverse effect is critical for prompt diagnosis and treatment. At this point, the true link between CIDP and COVID-19 along with COVID-19 vaccination remains uncertain. Further work will be required in the future to ascertain a true association rather than a mere coincidental finding [15]. When comparing the incidence of CIDP following COVID-19 or COVID-19 vaccination to the incidence of CIDP occurring spontaneously, large observational studies will be required to establish a causal relationship.

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