



# Dizziness and COVID-19

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Coronavirus 2019 or COVID-19 is a novel entity which had led to many challenges among physicians due to its rapidly evolving nature. Vertigo or dizziness has recently been described as a clinical manifestation of COVID-19. Countless studies, emerging daily from various parts of the world, have revealed dizziness as one of the main clinical manifestation of COVID-19. This is not surprising as dizziness has historically been associated with viral infections.

An earlier published study from China found dizziness to be the most common neurological manifestation of COVID-19.<sup>1</sup> Dizziness was proposed to occur ensuing the neuroinvasive potential of severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2 virus which causes COVID-19. Baig et al postulated that the virus enters the neural tissue from circulation and binds to the angiotensin-converting enzyme 2 receptors found in the capillary

**Table 1.** Summary of Characteristics and Main Findings of COVID-19 Patients With Dizziness.

Author	Country	Study design	Total patients with dizziness (%)	Investigation for dizziness	Treatment for dizziness	Outcome of dizziness
Chen et al <sup>4</sup>	China	CS	29 (20)	N/A	N/A	N/A
Chen et al <sup>5</sup>	China	CS	21 (8)	N/A	N/A	N/A
Han et al <sup>6</sup>	China	CR	1	N/A	N/A	N/A
Hu et al <sup>7</sup>	China	CS	1 (4.16)	N/A	N/A	N/A
Karadas et al <sup>8</sup>	Turkey	CS	16 (16.7)	N/A	N/A	N/A
Kong et al <sup>9</sup>	China	CR	1	Electronystagmography, Pure tone, MRI brain	Betahistine, Danshenchuanomazine	N/A
Lo et al <sup>10</sup>	China	CS	2 (20)	N/A	N/A	N/A
Malayala et al <sup>11</sup>	United States	CR	1 (Vestibular neuritis)	Bedside neurological examination, CT brain	Meclizine, Benzodiazepine, Steroids, Vestibular rehabilitation	Resolve
Mao et al <sup>1</sup>	China	CS	36 (16.8)	N/A	N/A	N/A
Mi et al <sup>12</sup>	China	CS	3 (30)	N/A	N/A	N/A
Sia et al <sup>13</sup>	Canada	CR	1 (Isolated)	N/A	N/A	N/A
Vacchiano et al <sup>14</sup>	Italy	CS	11 (10)	N/A	N/A	N/A
Wang et al <sup>15</sup>	China	CS	13 (9)	N/A	N/A	N/A
Wang et al <sup>16</sup>	China	CS	5 (7)	N/A	N/A	N/A

Abbreviations: CR, case report; CS, cross-sectional study; CT, computed tomography; MRI, magnetic resonance imaging; N/A, not available.

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Received: August 16, 2020; revised: August 21, 2020; accepted: August 26, 2020

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endothelium.<sup>2</sup> Apart from that, direct invasion, hypoxia, hypercoagulopathy, as well as immune-mediated insult were among the postulated mechanism of neuroinvasion leading to dizziness.<sup>3</sup>

A literature search was performed using articles published in PubMed on August 1, 2020, to identify dizziness as a clinical manifestation of COVID-19. The keywords used for the article search include giddiness, dizziness, vertigo, COVID-19, SARS CoV 2, Coronavirus disease. To our knowledge, this is the first article that outlines the association between dizziness and COVID-19.

We obtained 14 articles, which include 3 case reports and 11 studies (Table 1). A total of 141 patients were pooled from this review. All patients included in this review had dizziness/vertigo as a presenting symptom. Dizziness was the initial presentation of COVID-19 in 3/141 patients (2.13%),<sup>9,11,13</sup> whereby in 2 of these patients, dizziness was later followed by respiratory symptoms.<sup>9,13</sup> Most of the studies reporting on dizziness as a clinical manifestation hails from China (11/14), the epicenter which gave rise to the pandemic. Of the 14 studies included, dizziness was specifically investigated and treated only in 2 studies<sup>9,11</sup> as dizziness was not the highlight in most studies, it was not investigated and described thoroughly. Additionally, the outcome of dizziness was mentioned only in 1 study by Malayala et al,<sup>11</sup> whereby vestibular rehabilitation was carried out for the patient successfully.

Dizziness, albeit a nonspecific COVID-19 symptom, requires thorough investigation notably to determine its leading cause including, acute labyrinthitis, vestibular neuritis, acute otitis media, or secondary to stroke following COVID-19.

We would like to emphasize that dizziness should not be taken lightly as it has been proven to be a notable clinical manifestation among COVID-19 patients. Parallel to that, association with other audiovestibular manifestations such as hearing loss and tinnitus ought to be determined. Persistent dizziness posttreatment from COVID-19 requires referral to the Otorhinolaryngology Department for thorough examination and investigation. Additionally, we recommend vestibular rehabilitation therapy, which has revealed promising results, to be carried out for stable COVID-19 patients with dizziness. Lastly, it is imperative that attending physicians remain vigilant, especially when managing nonspecific symptoms such as dizziness, as it can be easily overlooked.

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