



Anomic aphasia after COVID-19 infection: a case report

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Abstract

Purpose: This case reports on anomic aphasia related to COVID-19. Increasing knowledge about rare symptoms and complications may aid in the characterization of the disease, understand its pathophysiology, identify more quickly possible infected people and break the transmission chain.

Case description: This work reports on the case of a middle-aged man who presented to his assistant psychiatrist complaining about difficulty with naming objects in his daily routine surroundings, with ten weeks of duration and following a SARS-CoV-2 infection. The organic study, including brain magnetic resonance imaging, was unremarkable. The symptoms resolved spontaneously within fourteen weeks.

Comment: Neurological manifestations of COVID-19 may be related to the dysfunction of the blood-brain barrier, resulting in immune cell infiltration and neuroinflammation that can persist for weeks or months after the resolution of the infection. Weakened health after overcoming the infection acute phase is being reported increasingly and called post-COVID-syndrome. Rare disorders such as anomic aphasia can occur in this syndrome.

Key words: neurology, psychiatry, encephalitis, SARS-CoV-2 infection, cytokine release syndrome.

PURPOSE

This case reports an atypical symptom related to COVID-19. Neuropsychiatric symptoms are increasingly being correlated with this infection. However, the most common neurological symptoms include headache, dizziness, ageusia, and anosmia [1]. Anomic aphasia seems to be a very rare manifestation of COVID-19. Only a few other cases were found reporting the relation between aphasia and the disease [2-4]. Increasing knowledge about rare symptoms and complications may help with better characterization of the disease, understanding its pathophysiology, identifying more quickly possible infected people, and breaking the transmission chain.

CASE DESCRIPTION

A 37 year-old Caucasian male, a right-handed police officer, followed-up in psychiatric consulting because of a condition of generalized anxiety without other relevant antecedents, presented with complaints of permanent

difficulty remembering the name of objects or people integrated into his usual daily life *de novo*; this he noticed right after a SARS-CoV-2 infection, ten weeks previously. He decided not to seek help earlier because he was able to overcome this difficulty using circumlocus. The patient denied the subjective notion that his anxiety had recently worsened. He was medicated with venlafaxine 37.5 mg ID and prolonged release trazodone 150 mg ID. Objectively, the patient presented fluent speech, maintaining comprehension and repetition. However, he had some difficulties with naming in his spontaneous speech or writing. Some brief naming exercises with speech and writing were done – we asked the patient to name or write the names of common objects: a button, a telephone, a pen, a watch, a necklace, a ring, a chair, and a table. He could not name any of them immediately. The anomia was the only change in the summary neurological examination and his Mini-Mental State Examination score was 28 points; he failed only the naming test.

His COVID-19 infection had presented with mild symptoms, and, at the time of observation the patient met

the cure criteria considered by the Portuguese government as normative in the return to good health, issued on March 3rd of 2020 and in force at the date of observation (a negative RT-PCR SARS-CoV-2 test taken at least fourteen days after the beginning of the symptoms, for patients not in need of hospitalization). An ambulatorial study was requested, including brain magnetic resonance imaging (MRI) and an analytical study with complete blood count, a coagulation study, an ionogram, C-reactive protein, renal function parameters, hepatic function parameters, glucose, and thyroid function parameters. None of these diagnostic tests revealed alterations. The patient was seen again four weeks later in a follow-up consultation and presented with almost complete and spontaneous remission of the aphasia.

COMMENT

Aphasia is associated with encephalic damage, more frequently in the left-brain hemisphere, in or surrounding Broca's or Wernicke's areas' [5]. Naming tasks, however, seem to be associated with the left triangularis in the frontal lobe and superior temporal-lobe regions (including the *planum temporale*) [6].

As the beginning of the symptoms of our patient was acute and had no traumatic history; we wanted to exclude a small and localized cerebral vascular accident. Indeed, COVID-19 has been associated with an increased risk of stroke [7]. However, when he arrived at our office his symptoms had been evolving for weeks, so we thought that there no basis on which to send him to the emergency department. This, and other hypotheses such as a brain tumor or hemorrhage, were excluded with the brain MRI. At the moment we saw the patient, we thought immediately about excluding some vascular event first and then sending him for neuropsychiatry evaluation. Such was not needed, because when the patient returned four weeks later, the aphasia was resolved. However, some formal naming tests could have been conducted with this patient to better quantify his deficit, such as the Boston Naming Test, a confronting naming test consisting of 60 black and white line drawings of objects, or the PALPA-P, a Portuguese aphasia test, conceived by revisiting the concept of aphasia and language impairment in aphasia and that brings together 60 psycholinguistic tests that assess image naming, auditory discrimination, repetition and comprehension of words and sentences, memory range, letter/grapheme knowledge, phonological awareness, high reading voice and writing by dictation.

The recent scientific evidence strongly suggests that although most COVID-19 patients recover completely, many continue to experience symptoms after the disappearance of the symptoms and others may even develop new ones. This clinical spectrum is being called post-COVID-syndrome and includes neuropsychiatric complications of the infection [8]. Rare disorders such as anomic aphasia can also occur in this syndrome, and it seems to be that in the case of this patient there was a temporal association between the aphasia and the SARS-CoV-2 infection. Actually, encephalopathy caused by COVID-19 has been shown to have very heterogeneous manifestations and a very wide range of severity, but is normally characterized by acute or subacute onset with fluctuations or progressive course, but can eventually reverse spontaneously [4], as presented in this case. This may be a case of mild encephalopathy. One other case report of language disturbance related to COVID-19 was found that pointed to-cilizumab as a potential treatment for COVID-19-related encephalopathy [3].

On the subject of etiopathogenesis, we should consider that most other coronaviruses (such as OC-43, 229E, MERS, and SARS) have the potential for neuro-invasion and can provoke neurological manifestations [7]. While the SARS-CoV-2 virus has rarely been found in the cerebrospinal fluid, the systemic inflammatory response can lead to blood-brain barrier (BBB) dysfunction, resulting in immune cell infiltration and neuroinflammation that can persist for weeks [9]. SARS-CoV-2's entry into host cells is mediated by its spike protein and the angiotensin-converting enzyme 2 (ACE2) is the cellular receptor. The role of ACE2 is to modulate cardiovascular function and has been identified in different tissues, including the central nervous system. The SARS-CoV-2 spike protein could also play a role in the ability of COVID-19 to cause neuropsychiatric manifestations because the contribution that this protein makes to the increasing of the permeability of the BBB has been observed [2, 9].

CONCLUSIONS

Neuropsychiatric symptoms related to COVID-19 are common, and because these are likely to occur simultaneously with other medical symptoms patients should be assisted by a multidisciplinary team comprised of different medical specialists. To enable rapid detection and improve the quality of the health care response, more research in this field must be done.

Conflict of interest

Absent.

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