

A Prototypical Case of Long COVID: A Detailed Case Report

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Purpose: This report aims to inform both clinical and non-clinical researchers about the complex nature of Long COVID, highlighting its significant impact on patients' lives. By sharing this detailed case, we hope to underscore the urgent need for interdisciplinary research and collaboration to better understand and manage this condition.

This case exemplifies the typical progression from one or more episodes of acute COVID-19 to chronic COVID-19. The clinical picture, which rapidly and profoundly alters the course of a person's life, is unique. The specialized imaging required (SPECT CT) is highly characteristic. This case is part of a cohort of more than 180 patients for whom multi-omics analyses are underway. Increasing the level of diagnostic certainty using reproducible biomarkers is an essential step in both refining the diagnosis and guiding therapy.

Case Presentation

Patient Profile

- **Gender:** Female
- **Age:** 42
- **Occupation:** Independent consulting engineer
- **Family:** Mother of 2 children

Relevant Health Conditions (ICPC2 Codes)

- **P17:** Tobacco addiction (since June 2000)
- **T82:** Obesity (BMI \geq 30) (since June 2015)
- **R96:** Asthma, pollen, and mite allergy (since June 2015)
- **X99:** Endometriosis (since June 2020)
- **A77:** COVID-19 infection (10/2020, 09/2021, 08/2022)
- **A77:** Long COVID (diagnosed May 2024)
- **R96:** Post-COVID asthma (diagnosed June 2024)
- **T93:** Post-COVID hypercholesterolemia (diagnosed June 2024)

Clinical History

Long Covid was diagnosed in 2024 after two years of medical wandering and a wrong diagnosis of burnout. The patient worked full time since years and has been off work for two years since the last episode of covid 19. The insurance company did not recognize her disability because a doctor diagnosed her as suffering from burnout.

The patient's journey with Long COVID began after three acute COVID-19 infections. Despite being vaccinated, she experienced multiple episodes, each leaving her more

debilitated. Initially misdiagnosed with burnout, her actual condition was only recognized after extensive suffering and multiple medical consultations.

Acute COVID Episodes

1. October 2020:

- Symptoms: Loss of taste and smell (lasting six months), intense migraine, fatigue, flu-like symptoms.
- Work Impact: Two weeks off work.

2. September 2021 & August 2022:

- Symptoms: Similar flu-like symptoms.

Post-COVID Symptoms and Diagnosis

After this third episode of COVID-19, inexplicable symptoms began to creep in, eventually diagnosed as burnout; she has been off work for 2 years. Sleep disturbance appeared after the first contamination with COVID-19, with unexplained insomnia. The symptoms are dominated by extreme fatigue, totally unknown before, with brain fog and difficulty concentrating. The patient indicated the following symptoms on the APHP ComPare form):

- Paraesthesia (abnormal sensations, tingling, burning, etc.)
- Memory problems
- Word loss (difficulty finding words)
- Hypoesthesia (reduced sensitivity to touch in the extremities of the limbs)
- Chills with or without fever
- Insomnia/sleep disorders
- Mood swings, irritability, low morale
- Courbatures
- Sweating
- Drowsiness
- Sensitivity to heat or cold
- Hot flushes
- Dyspnoea (difficulty breathing)
- Tachycardia / arrhythmia / palpitations
- Chest pain / burning
- Chest tightness
- Muscle pain
- Bone and joint pain
- Cervical, back, or lumbar pain
- Abdominal discomfort/pain
- Diarrhea
- Dry/irritated / watery eyes
- Photo/phonophobia (sensitivity to light and noise)
- Spontaneous haematomas

There was a significant reactivation of asthma and a progressive rise in cholesterol levels after the Covid episodes. The various investigations, specialist opinions and laboratory tests were non-contributory. At the time of our meeting, the patient was still being diagnosed as suffering from burnout, although this diagnosis was not supported by any specific cause.

Functional Status Evaluation (COOP-Charts, June 2024)

Completed by the patient in June 2024.

A self-assessment grid for her state of health called COOP-Charts, a validated tool for overall health assessment. The results are expressed in points. 5 points per question, 6 questions. The patient is in excellent shape with 6 points in total, but is in a very poor state with 30 points).

The patient obtains 30/30 in the test on 25/06/2024

- Very bad health
- Unable to make any effort
- Greatly affected by emotional problems
- Unable to perform usual activities
- Severely disrupted social life
- Overall health significantly worsened

With a score of 30 out of 30, the patient's general state of health is profoundly affected. The patient is mourning the loss of the bright, lively person she once was, and is constantly looking for an explanation and a solution to her problem. Her husband does not give up on her and the couple face this dramatic situation together.

Brain Imaging Findings

A cerebral perfusion tomoscintigraphy with CT fusion (HMPAO-Tc99m), or brain SPECT-CT, was performed, revealing:

- Heterogeneous tracer fixation across the cerebral cortex
- Notable hypofixation in the right frontal region
- Normal and symmetrical uptake in the basal ganglia, thalamus, and cerebellum

Management and Follow-Up

Management Plan

- Acknowledge and validate the condition
- Explain the disease and address unknowns
- Support the patient's grieving process
- Provide a medical-legal report
- Suggest a Long COVID care pathway
- Recommend neuropsychological consultation
- Refer to a physiotherapist experienced in Long COVID
- Prescribe anticoagulant and symptomatic treatments
- Request brain SPECT-CT
- Conduct biological screening for known Long COVID risks
- Seek permission for multiomic research on the patient's blood

Follow-Up Emails

Patient to Dr. Jamouille:

"Hello Dr. Jamouille,

I just had a brain scan at the hospital and the results have been sent to you and to my GP. Thank you in advance for your analysis and for reading."

Dr. Jamouille to Patient:

"Dear Madam,

The scan shows an area of cerebral hypoperfusion and heterogeneous distribution, confirming suboptimal blood perfusion in the brain. This reinforces the need to make the blood more fluid. So, your condition has nothing to do with burnout. It is a consequence of SARS-CoV-2.

Kind regards."

Extract from the Brain SPECT-CT Protocol:

On reoriented tomographic sections, relatively heterogeneous tracer fixation is observed throughout the cerebral cortex, with a more marked area of hypofixation in the right frontal region. Normal and symmetrical uptake in the basal ganglia, thalamus, and cerebellum.

Patient to Dr. Jamouille:

"Hello Dr. Jamouille,

Thank you for your prompt feedback. I understand that this scan shows chronic COVID.

What should I do following this analysis? What does it mean in terms of nervous or cognitive impact? Does it show anything specific? Hypofixation in the right frontal area... does this mean that this area is not well irrigated? What I read about the frontal lobes:

The frontal lobes: speech and language, reasoning, memory, decision-making, personality, judgment, movement. The right frontal lobe manages movements on the left side of the body, and vice versa. Does this area being affected explain my short-term memory

problems, decision-making difficulties, word-finding issues, reasoning difficulties, bumping into things, etc.? Could you tell me more? Is my analysis correct? Can I hope to recover with neuropsychology? What about the treatments you prescribed? What experience do you have with this condition?

Sincerely."

Dr. Jamouille to Patient:

"Dear Madam,

You express the problem better than most neurologists. This disease has only existed for three years, and we still do not know its natural history. I check the SPECT-CT every six months, and some patients improve, but I do not know why. Some patients on low-dose cortisone (e.g., 4 mg Medrol) for other illnesses have improved, but this may be due to chance. There are no publications to guide us. We are in the same situation as AIDS in the 1980s, except research is moving faster.

Try one month of Naltrexone. We will consider Piracetam later. Continue with 80 mg Aspirin. Do some exercises on the neuronation.com application and follow the advice of your neuropsychologist.

And do not lose hope.

I remain at your disposal."

Note

For further information on Long COVID, readers are encouraged to refer to the following publication:

Jamouille, M., & Van Weyenbergh, J. (2024). The Covid Resistance Study project - Start 2021- Update June 2024. ORBi-University of Liège.

<https://orbi.uliege.be/handle/2268/319832>

Edited with the patient's permission
