



Progressive Recovery in Neurological-Predominant Post-COVID Condition During a Multimodal Integrative Electromolecular Program: A Case Report

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Case Report

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Abstract

Background: Post-COVID condition (Long COVID) is clinically heterogeneous and may include neurological, autonomic, sleep-related, respiratory, constitutional, and neuropsychiatric symptoms. Because recovery trajectories vary substantially, responses observed in a single patient require cautious interpretation.

Case presentation: A 42-year-old Spanish woman with a history of Graves-Basedow disease treated by subtotal thyroidectomy, thyroid-associated orbitopathy, chronic iron-deficiency anemia, and previous depression developed antigen-confirmed SARS-CoV-2 infection in June 2024. During the acute illness she had fever, headache, vertigo, generalized paresthesia, leukopenia, mild neutropenia, and lymphopenia. She additionally reported an abrupt neurological episode while driving, characterized by right-sided visual disturbance, a floating sensation, transient impaired control of the upper extremities, and predominantly left-sided electric-shock-like paresthesia's. During the following weeks she developed severe asthenia, disabling dizziness, sleep disruption, occipital burning/pressure, otalgia, orthopnea-like subjective respiratory discomfort, anxiety, ego-dystonic intrusive suicidal thoughts, and marked weight loss. Internal Medicine documented intense post-COVID asthenia with vegetative symptoms and dizziness. Brain MRI showed no significant structural abnormality other than an incidental 8-mm pineal cyst without mass effect.

Intervention: On July 17, 2024, approximately five weeks after the acute infection, a physician-supervised multimodal integrative program was initiated within the treating team's electro molecular framework. It combined nutritional and lifestyle measures, antioxidant and micronutrient support, autologous/homeopathic preparations, intravenous treatments, and aqueous chlorine dioxide. The chlorine dioxide stock solution was 3,000 ppm (3 mg/mL); the initial oral preparation used 10 mL (30 mg ClO₂) diluted in approximately 600 mL water and divided across the day. The initial rectal preparation used 15 mL (45 mg ClO₂) diluted in approximately 150 mL isotonic saline. These doses describe the treatment received by this patient and are not therapeutic recommendations.

Outcomes: During follow-up, the treating physician's longitudinal assessment and the patient's global report of function suggested approximately 25% recovery in one month, 50% at three months, 75% at six months, and complete functional recovery at approximately twelve months. These estimates were not derived from a validated Long COVID outcome scale. Recovery was not synchronous across all domains: weight fell from 54 kg in August 2024 to 50.4 kg in October before increasing again, while mild anemia and thyroid abnormalities persisted during late 2024.

Conclusion: The patient improved progressively over twelve months while receiving a complex multimodal program after a neurological-predominant post-acute SARS-CoV-2 syndrome that later fulfilled temporal criteria for post-COVID condition. The sequence is clinically relevant, but a single uncontrolled case cannot determine whether the intervention caused the recovery. The observation is best considered hypothesis-generating and supports prospective studies using predefined interventions and standardized efficacy and safety measures.

Keywords: Long COVID; Post-COVID Condition; Neurological Symptoms; Integrative Medicine; Electro Molecular Medicine; Chlorine Dioxide; Case Report

Introduction

Post-COVID condition, commonly termed Long COVID, encompasses a heterogeneous spectrum of symptoms that persist or newly develop after SARS-CoV-2 infection. The World Health Organization clinical case definition describes the condition as occurring in individuals with a history of probable or confirmed SARS-CoV-2 infection, usually three months from the onset of COVID-19, with symptoms lasting at least two months and not adequately explained by an alternative diagnosis [1].

Neurological and neuropsychiatric manifestations are common and include fatigue, cognitive dysfunction, headache, dizziness/lightheadedness, sleep disorders, paresthesia's, dysautonomia, anxiety, and depressive symptoms [2,3]. Current pathophysiological models remain incomplete and likely overlap; proposed mechanisms include persistence of viral material, immune dysregulation and autoimmunity, endothelial or microvascular abnormalities, autonomic dysfunction, altered coagulation, gut/microbiome changes, and metabolic or mitochondrial perturbations [2,4].

The natural history of Long COVID is equally variable. Prospective cohorts have described persistent, fluctuating, improving, and relapsing trajectories [5]. This variability is particularly important when a therapeutic response is observed without a comparator.

We report the longitudinal course of a woman whose neurological, autonomic, constitutional, sleep-related, and neuropsychiatric manifestations began during laboratory-confirmed acute COVID-19 and persisted thereafter. Her subsequent recovery occurred during a prolonged multimodal integrative program. The report was structured according to the CARE Case Report Guidelines [6].

Patient Information

The patient was a Spanish woman born in July 1981 and aged 42 years at the onset of the index SARS-CoV-2 infection. She had previously worked in a shift-based law-enforcement/public-safety occupation and was medically retired.

Relevant medical history included Graves-Basedow disease diagnosed in 2004, associated with palpitations, tremor, muscle weakness, hyperhidrosis, bilateral exophthalmos, and diplopia; depression diagnosed during the same period; bilateral subtotal thyroidectomy in October 2005, with reported histopathology showing nodular and diffuse hyperplasia with lymphocytic thyroiditis; and orbital

decompression with correction of eyelid retraction in May 2006 for thyroid-associated orbitopathy.

Additional history included chronic iron-deficiency anemia dating from adolescence, recurrent sinusitis and upper-airway symptoms, septoplasty approximately in 2014, allergic rhino conjunctivitis attributed to sensitization to *Olea europaea* and *Artemisia* in 2021, and patient-reported episodes of urinary infection, diarrhea, menstrual irregularity, and calcium/parathyroid dysfunction during 2022-2023.

The patient reported two adverse reactions to intravenous iron in 2023, including pruritus and rash that led to discontinuation of intravenous iron therapy. These reactions were not reflected as allergies in the 2024 hospital record, which listed no known allergies.

Family history included maternal hypothyroidism and paternal death from liver cirrhosis. Before the index illness, the patient described a Mediterranean-style diet and a history of sustained occupational stress related to shift work. She also reported receiving a Janssen COVID-19 vaccine in July 2021 and experiencing acute dizziness, right-leg tremor, and cognitive fog immediately afterward. No contemporaneous medical record of that reaction was available for this report; no causal relation with the 2024 illness is inferred.

Clinical Course and Diagnostic Assessment

COVID-19 Vaccination

On July 23, 2021, the patient reported receiving a dose of the COVID-19 vaccine from Janssen, lot XE393, in Ciudad de la Luz, Alicante. According to her account, immediately after receiving the vaccine, she experienced tremors in her right lower limb, dizziness, and "brain fog," which is why she was transported in a wheelchair to the observation area. The following day, she reportedly developed an extensive bruise on her right calf, as well as weakness and general malaise that lasted for several days. Since then, she claims to have experienced permanent deterioration in her health, particularly chronic fatigue syndrome.

Acute SARS-CoV-2 Infection

On June 9, 2024, the patient reported onset of fever, cough, severe left-sided otalgia associated with cervical/cranial pressure, marked asthenia, and severe myalgia. She considered this presentation qualitatively different from previous sinusitis episodes.

On June 12, 2024, while driving, she reported an abrupt neurological episode characterized by impaired visual clarity predominantly affecting the right side of the visual field, a sensation of floating, difficulty controlling the upper extremities, and left-sided paresthesia's described as an

electric discharge extending from the head to the foot. She stopped driving and was transported to the emergency department by her partner.

The emergency report documented a five-day history of generalized paresthesia's accompanied by vertiginous sensation, fever up to 38°C during the preceding 48 hours, and moderate headache. At evaluation, blood pressure was 130/80 mmHg, pulse 66 beats/min, temperature 36.5°C, and oxygen saturation 99%. The cardiopulmonary examination was unremarkable, and no focal central nervous system abnormality was recorded at that time.

The SARS-CoV-2 antigen test was positive. Laboratory findings included leukocytes 2,720/ μ L, absolute neutrophils 1,250/ μ L, lymphocytes 980/ μ L, hemoglobin 13.2 g/dL, hematocrit 38.8%, platelets 168,000/ μ L, D-dimer 300, troponin I <3, AST 16 U/L, ALT 12 U/L, LDH 182 U/L, and CRP 1.60. Electrocardiography showed sinus rhythm without significant wave or segment abnormalities. The emergency diagnosis was SARS-CoV-2 infection with leukopenia, mild neutropenia, and lymphopenia attributed to the acute viral illness. Outpatient management, hydration, isolation, ascorbic acid, paracetamol, and return precautions were prescribed.

Post-acute Deterioration

During the following weeks, the patient reported severe disabling asthenia, persistent dizziness and altered bodily perception, neuropathic/electric-shock-like sensory phenomena, persistent occupation and pressure, deep left otalgia, and profound sleep disruption. At the worst point she reported less than approximately two hours of fragmented sleep per day and a need to remain upright or semi-upright because of subjective breathing difficulty.

She described three transient episodes of inability to voluntarily initiate inspiration, severe unilateral ear/nasal/submandibular obstruction, intense anxiety, and recurrent nocturnal intrusive suicidal thoughts that she experienced as ego-dystonic and without reported intent; she relied on her partner for support and containment. She also reported an approximately 14-kg weight loss during June-July 2024. These manifestations derive from the patient's detailed retrospective account and were not all recorded contemporaneously in the emergency documentation.

Internal Medicine and Neuroimaging

On July 2, 2024, Internal Medicine explicitly documented "after COVID infection, intense asthenic syndrome with vegetative symptoms and dizziness." Oxygen saturation was 99%, heart rate 78 beats/min, and respiratory rate 14/min. The patient was conscious and oriented, eupneic, and without peripheral cyanosis. Brain MRI and repeat laboratory testing

were requested.

Brain MRI was performed on July 4 and reported on July 5, 2024. The examination showed a centered midline, normal ventricular size, normal brain parenchymal morphology and signal, no intra- or extra-axial lesions, no diffusion restriction indicating recent ischemia, preserved dural spaces and coverings, normal posterior fossa and brainstem signal, and normal occipitocervical transition. An incidental 8-mm pineal cyst without mass effect was identified. The radiological conclusion was no significant abnormality on brain MRI.

On July 12, 2024, Internal Medicine reviewed the MRI and laboratory results. The diagnostic impression remained asthenia, and oral iron supplementation (Fisiogen Ferro Forte) was prescribed.

Diagnostic Reasoning

Given the direct temporal relationship with microbiologically confirmed SARS-CoV-2 infection, we considered the post-infectious syndrome the central clinical problem. At the same time, the presentation required consideration of cerebrovascular disease, structural central nervous system pathology, vestibular disease, thyroid dysfunction, iron deficiency/chronic anemia, psychiatric relapse, post-infectious dysautonomia, peripheral or small-fiber neuropathic involvement, and post-acute sequelae of SARS-CoV-2 infection.

The normal structural brain MRI made a major cerebral lesion or recent ischemic stroke less likely, but it did not exclude autonomic, inflammatory, small-fiber, peripheral neuropathic, metabolic, or microvascular mechanisms. The records available for this report do not include formal autonomic testing, nerve-conduction studies, skin biopsy for small-fiber neuropathy, electroencephalography, cerebrospinal fluid analysis, or standardized neuropsychological testing.

When we first evaluated the patient on July 17, 2024, approximately five weeks had elapsed since the acute infection. We therefore describe the syndrome at that stage as post-acute COVID rather than established WHO-defined post-COVID condition. Because the symptoms persisted beyond three months, the later course fulfilled the temporal component of the WHO definition [1].

Initial Integrative Assessment - July 17, 2024

The patient was evaluated in Alicante, Spain, because of persistent disabling neurological and systemic manifestations following SARS-CoV-2 infection. The dominant

manifestations were the neurological and neurovegetative symptoms described above.

An exploratory MAIApoint assessment yielded a global meaning reading of approximately 40 on the device's proprietary measurement system. Because MAIApoint is not an internationally validated diagnostic or outcome instrument for Long COVID, the result was treated as exploratory, was not used to establish the diagnosis, and was not designated as a primary clinical outcome.

We established a working diagnosis of post-acute SARS-CoV-2 syndrome with neurological and multisystem predominance and initiated a multimodal integrative program within our electromolecular clinical framework.

Therapeutic Intervention

Several treatments were started together, and the regimen evolved during follow-up. We therefore describe the intervention as a multimodal program; this case does not permit attribution of the clinical response to any single component. The doses below reproduce the care received by this patient and should not be interpreted as treatment recommendations.

Phase I - Initial regimen (July 17, 2024)

- Autologous/homeopathic preparations: Aurum metallicum D6/D12/D30, Argentum metallicum D6/D12/D30, and Antimonium crudum D6/D12/D30. The written prescription instructed addition of one drop of autologous blood to each vial, homeopathic processing, refrigeration, and administration of five drops of each preparation daily in water.
- Thiamine: Vitamin B1: one tablet/capsule three times daily.
- Alpha-lipoic acid: 800 mg orally three times daily.
- Holodren Combination: Hepedib + Inmunodib + Berberis preparation + Nux vomica preparation; 30 drops of each in approximately 200 mL water, consumed during the day. These were proprietary/homeopathic drainage preparations used within the treating authors' framework; efficacy for Long COVID has not been established in controlled trials.
- Intravenous program: Twelve weekly "detox" infusions over approximately three months were prescribed, incorporating Quelomem and Oligomem ampoules; one ampoule of intravenous glutathione was given slowly before the infusion according to the written prescription. A separate saline-based regimen with Hepa-Merz or L-ornithine was prescribed as four weekly infusions.
- Aqueous chlorine dioxide - oral: Stock solution: 3,000 ppm ClO_2 , equivalent to 3 mg/mL. Ten milliliters of

stock solution contained 30 mg ClO_2 and were diluted in approximately 600 mL water, divided into four portions, and consumed across the day.

- Aqueous chlorine dioxide - rectal: Initial prescription: 15 mL of 3,000-ppm stock solution (45 mg ClO_2) diluted in approximately 150 mL isotonic saline, administered as a slow rectal infusion for approximately 30 minutes.
- Zeolite: 500-mg capsules: two capsules every eight hours.
- Glutathione: 500 mg orally three times daily.
- L-ornithine: 500 mg orally three times daily.

Composition of injectable multicomponent preparations

According to formulation information supplied by the treating team:

- Quelomem: Acidum aceticum D3; Adonis vernalis D6; Apocynum cannabinum D6; Baryta muriatica C5; Cactus grandiflorus D6; Cimicifuga racemosa D6; Convallaria majalis D6; Cuprum metallicum C6; Chamomilla D6; Gelsemium Sempervirens D6; Graphites C6; Natrum phosphoricum D6; Nux vomica D6; Oleander D6; Robinia pseudoacacia D6; Silicea C6; Strophanthus D6; saline vehicle.
- Oligomem: Argentum metallicum C6; Aurum metallicum C6; Calcareo phosphorica C6; Cobaltum metallicum C6; Cuprum metallicum C6; Iodum C6; Kali iodatum C6; Lithium carbonicum C6; Magnesia carbonica C6; Manganum metallicum C6; Niccolum metallicum C6; Phosphorus C6; Selenium metallicum C6; saline vehicle.

The source document for Oligomem contained an internal inconsistency in the stated nominal ampoule volume. Rather than introduce a correction that could not be verified from the source, we report the ingredient identities and potencies without reproducing that inconsistent volume notation.

Nutritional and Lifestyle Program

A structured "Red-Ox nutrition" program was documented beginning in August 2024. It emphasized vegetables, legumes, fruits, fermented foods, iron-containing foods, adequate protein, unsaturated fat sources, controlled carbohydrate intake, sleep restoration, progressive physical activity as tolerated, and psychological/existential support. The nutritional document proposed an approximate macronutrient distribution of 40% fat, 30% protein, and 30% or less carbohydrate. The written follow-up prescriptions also documented continued psychological/lifestyle sessions described as IKIGAI-oriented support.

Subsequent Regimen Modifications

On September 6, 2024, the regimen continued oral and rectal aqueous chlorine dioxide, autologous/homeopathic preparations, bee pollen plus vitamin C, thiamine, zeolite, the Holodren components, glutathione, L-ornithine, and IKIGAI-oriented sessions. The rectal chlorine dioxide prescription at this stage used 10 mL of 3,000-ppm stock solution (30 mg ClO₂) in approximately 150 mL saline, administered every other day.

On October 21, 2024, the same general framework was continued, and mebendazole 100 mg daily was added.

By May 27, 2025, during an advanced recovery phase, the prescription had evolved further and included continued oral/rectal aqueous chlorine dioxide, autologous/homeopathic preparations, bee pollen plus vitamin C, intermittent albendazole, glutathione/L-ornithine support, zeolite/clinoptilolite, curcumin, zinc, MAG3, low-volume 1% methylene blue, and Floradix. Because substantial improvements have already occurred before these later additions, they cannot be considered part of a single fixed exposure Table 1.

Timeline

Date / Interval	Clinical Event
Mar-04	Graves-Basedow disease and depression diagnosed.
Oct-05	Bilateral subtotal thyroidectomy.
May-06	Orbital decompression and eyelid surgery for thyroid-associated orbitopathy.
~2014	Septoplasty.
20-May-21	Allergic rhinoconjunctivitis reportedly diagnosed.
23-Jul-21	Janssen COVID-19 vaccination; immediate reaction reported by
May-Jun 2023	Two patient-reported adverse reactions to intravenous iron.
~9 Jun 2024	Acute febrile respiratory/systemic illness begins.
12-Jun-24	Acute neurological episode; SARS-CoV-2 antigen positive; patient, without contemporaneous record available. leukopenia, mild neutropenia, lymphopenia.
Jun-Jul 2024	Severe neurological, vegetative, sleep, respiratory-subjective, and neuropsychiatric symptoms; ~14-kg patient-reported weight loss. neuropsychiatric symptoms; ~14-kg patient-reported weight loss.
02-Jul-24	Internal Medicine documents intense post-COVID asthenia with vegetative symptoms and dizziness.
4-5 Jul 2024	Brain MRI essentially normal; incidental 8-mm pineal cyst.
12-Jul-24	Internal Medicine follow-up; oral iron prescribed.
17-Jul-24	Initial integrative/electro molecular consultation; multimodal program initiated.
14-Aug-24	Weight 54 kg; structured nutritional program documented.
~1 month	~25% global clinical recovery recorded/reported.
06-Sep-24	Treatment continuation/modification.
~3 months	~50% global recovery; weight 50.4 kg documented on 23 Oct.
21-Oct-24	Further therapeutic modification.
21-Nov-24	Hb 11.5 g/dL, Hct 34.3%, MCV 94.5 fL, TSH 6.66, free T4 0.96, transferrin 230.
~6 months	~75% global clinical recovery.
27-May-25	Advanced-phase regimen modification.
~12 months	Patients reported complete functional recovery ("100% or better than before")
2025-2026	Recovery reported as sustained.

Table 1: Chronological timeline of the patient's relevant medical history.

Follow-Up and Outcomes

The patient's improvement was gradual. Based on the treating physician's longitudinal chart together with the patient's global functional assessment, recovery was estimated at approximately 25% in one month, 50% at three months, 75% at six months, and approximately 100% at twelve months. These figures were not produced by a validated Long COVID scale and are presented as clinical estimates, not as quantitative evidence of treatment efficacy.

At approximately one year after initiation of the integrative program, the patient reported recovery of her pre-illness function and described herself as feeling "as well as or better than before." She also reported that symptoms tended to remit in approximately the reverse order of their appearance.

Clinical improvement and biological recovery did not occur at the same pace. On August 14, 2024, weighed 54 kg at a height of 1.71 m (calculated BMI approximately 18.5;

the nutritional document recorded approximately 18). On October 23, 2024, weighed 50.4 kg with a documented BMI of 17.23. A later weight of approximately 53 kg was recorded. In October 2024, hemoglobin was 11.8 g/dL, hematocrit 33.9%, and MCV 86 fL. November 21, 2024,

hemoglobin was 11.5 g/dL, hematocrit 34.3%, MCV 94.5 fL, TSH 6.66, free T4 0.96, and transferrin 230 (reference interval in the nutritional document: 250-380). These findings demonstrate persistence of hematological/nutritional and thyroid-related abnormalities during a period in which neurological and functional recovery was already progressing.

Adverse events were not collected with a standardized instrument. No treatment-emergent adverse event appears in the records reviewed for this report, but the absence of a recorded event cannot be taken as evidence that the regimen was safe Table 2.

Domain	Finding	Interpretation / limitation
SARS-CoV-2	Antigen positive, 12 Jun 2024	Confirms index infection.
Leukocytes	2,720/ μ L	Leukopenia is acute infection.
Neutrophils	1,250/ μ L	Mild Neutropenia.
Lymphocytes	980/ μ L	Lymphopenia.
Oxygen saturation	99% at emergency and Internal Medicine evaluations	No resting hypoxemia documented.
Brain MRI	No significant structural abnormality; incidental 8-mm pineal cyst	No structural explanation for symptom
Weight	54 kg Aug 2024; 50.4 kg Oct 2024; ~53 kg later	Demonstrate non-linear nutritional recovery.
Hemoglobin	13.2 g/dL acute; 11.8 Oct; 11.5 Nov 2024	Mild anemia during follow-up.
TSH / free T4	TSH 6.66; free T4 0.96 on 21 Nov 2024	Thyroid dysfunction is a potential confounder.
MAIApoint	Global means ~40	Exploratory proprietary measurement; not diagnostic for Long COVID.
Global functional recovery	~25%, 50%, 75%, ~100% at 1, 3, 6, 12 months	Clinical/patient estimate; not a validated outcome scale.

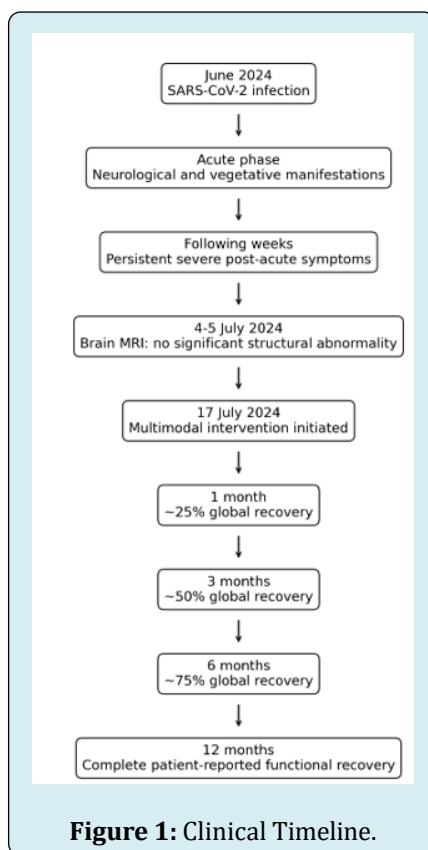
Table 2: Principal objective and semi-objective findings.

Patient Perspective

The following perspective was provided by the patient and is intentionally presented as subjective experience rather than objective evidence of treatment efficacy: "At that point I felt abandoned by conventional medicine. There was no clear diagnosis, there was no treatment, and I did not feel understood. Doors seemed to be closed without providing

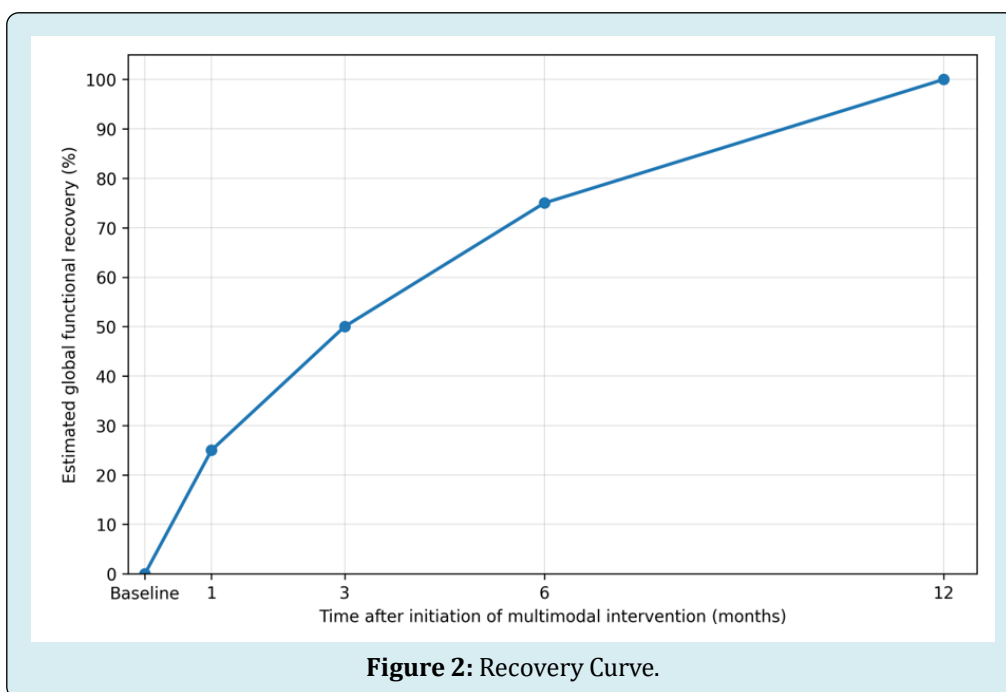
an answer to what was happening to me. It was from that sense of helplessness that I began searching for another way forward and eventually came to Dr. Eduardo and Dr. Blanca, who completely changed my life." She subsequently described having "returned to living," regaining quality of life, and ultimately feeling at least as well as before the illness Figure 1.

Integrated Figures and Tables



Clinical sequence from acute SARS-CoV-2 infection in June 2024 through neurological/vegetative manifestations, persistent post-acute symptoms, structural brain MRI,

initiation of the multimodal intervention on July 17, 2024, and subsequent global recovery estimates at 1, 3, 6, and 12 months Figure 2.



Percentages represent longitudinal global clinical estimates based on physician follow-up and patient-reported

functional recovery. They do not represent a validated Long COVID outcome scale Table 3.

Domain	Acute/baseline	Follow-up
SARS-CoV-2	Antigen positive, 12 Jun 2024	—
Leukocytes	2,720/ μ L	Later values not currently available
Neutrophils	1,250/ μ L	—
Lymphocytes	980/ μ L	—
Oxygen saturation	99%	99% at Internal Medicine review
Brain MRI	No significant abnormalities	No repeat MRI documented
Weight	~14-kg patient-reported loss	54 kg Aug; 50.4 kg Oct; ~53 kg later
Hemoglobin	13.2 g/dL acute infection	11.8 Oct; 11.5 Nov
TSH	Not available in index record	6.66 Nov 2024
MAIApoint	Global means ~40	Exploratory only
Functional recovery	Severe impairment	~25%, ~50%, ~75%, ~100% at 1, 3, 6, and 12 months

Table 3: Main Objective Findings.

Key Message for Scientific Presentation

The principal value of this case is the documented temporal sequence: a neurological-predominant post-COVID phenotype, substantial symptoms despite normal structural neuroimaging, and progressive functional recovery during a complex multimodal intervention. The observation does not establish efficacy of an individual treatment component and should be used to generate prospective, controlled research questions.

Discussion

Several aspects of this case deserve attention. First, the index SARS-CoV-2 infection was microbiologically confirmed, and the acute record documented paresthesia's, vertigo, fever, headache, leukopenia, mild neutropenia, and lymphopenia. The patient also described lateralized visual and sensory phenomena that were more extensive than those captured in the emergency note. Internal Medicine subsequently documented severe post-COVID asthenia with vegetative symptoms and dizziness.

Second, the neurological and vegetative symptom burden was substantial despite a conventional brain MRI that did not identify an explanatory structural lesion. This is not inconsistent with current descriptions of neurological Long COVID, in which fatigue, cognitive complaints, headache, dizziness, sleep disturbance, autonomic symptoms, sensory phenomena, anxiety, and depression may occur without a single abnormality on routine structural imaging [2-4].

A third point is timing. At the July 17 consultation, only about five weeks had passed since acute infection, so the most

precise description was post-acute COVID syndrome. The designation post-COVID condition became appropriate only after persistence beyond the usual three-month threshold [1].

The biology of Long COVID remains unsettled. Viral persistence or residual antigen, immune dysregulation and autoimmunity, endothelial and microvascular abnormalities, autonomic dysfunction, altered coagulation, microbiome disturbance, and mitochondrial or metabolic dysfunction have all been proposed as overlapping mechanisms [2,3]. None of these mechanisms were directly demonstrated in this patient, and we do not use this case to confirm any one of them.

Our therapeutic rationale was based on the electro molecular framework used in our clinical practice and combined nutritional and lifestyle measures with antioxidant/micronutrient support, proprietary/homeopathic preparations, intravenous treatments, and aqueous chlorine dioxide. Because these components were introduced together and later modified, the case cannot determine which, if any, contributed to the observed recovery.

Our group has previously published a molecular hypothesis concerning chlorine dioxide and SARS-CoV-2 proteins [6] and a small quasi-experimental study of aqueous chlorine dioxide in acute COVID-19 [7]. Those studies formed part of the background to our therapeutic reasoning, but they concern acute infection and do not establish efficacy in post-COVID condition. In vitro observations and findings from acute disease cannot be directly extrapolated to Long COVID.

The chlorine dioxide component requires caution in interpretation. The Spanish Agency for Medicines and Health Products (AEMPS) has warned that consumption of chlorine dioxide/chlorite solutions may pose serious health risks and states that these products are not authorized as treatments for COVID-19 or other diseases [8]. We report on the exposure because it was part of the care delivered. This case is not a recommendation for oral or rectal chlorine dioxide, and the absence of documented toxicity in one patient cannot establish safety.

The pattern of recovery also has more than one possible explanation. Improvement occurred progressively over months, but prospective Long COVID studies show that some patients recover over time while others remain persistently symptomatic or fluctuate [5]. Natural recovery therefore remains an important competing explanation and cannot be separated from any treatment-associated effect in this case.

One useful feature of the record is that improvement was not synchronous across all domains. Neurological and global function improved while low body weight, anemia, and thyroid abnormalities persisted. This makes clinical chronology more informative, although it does not overcome the causal limitations of an uncontrolled case report [8].

Strengths and Limitations

The main strengths are the microbiologically confirmed index infection, contemporaneous emergency records with objective hematological abnormalities, independent Internal Medicine documentation of persistent post-COVID symptoms, brain MRI excluding major structural cerebral pathology and recent ischemia, dated prescriptions documenting the intervention and its modifications, more than one year of follow-up, objective anthropometric and laboratory data, a detailed patient perspective, and written authorization for scientific presentation and publication.

The limitations are substantial. This is a single uncontrolled case with no comparator, randomization, or blinding; several interventions were initiated simultaneously and the regimen changed over time. No validated Long COVID outcome instrument was used serially from baseline, and the 25%-50%-75%-100% sequence is a global physician/patient estimate. Objective neurological testing was limited beyond structural MRI, with no documented formal autonomic evaluation, small-fiber neuropathy testing, or validated mechanistic biomarker. Pre-existing thyroid disease and chronic iron-deficiency anemia are significant confounding factors; it is not possible to distinguish between spontaneous recovery and recovery associated with treatment; the systematic assessment of adverse events was incomplete; and some severe post-acute manifestations are based, in

part, on the patient's own retrospective account. The active ingredient in Oligomem is a mixture of trace minerals, and the mechanism of action—particularly that of zinc and gold—is based on the researchers' own hypotheses [9].

Conclusion

In summary, this patient developed a severe post-acute multisystem syndrome after antigen-confirmed SARS-CoV-2 infection, with neurological, autonomic, sleep-related, constitutional, and neuropsychiatric manifestations. The later persistence of symptoms met the temporal criteria for post-COVID condition, while conventional structural brain MRI did not identify an anatomical explanation for the symptom burden.

During approximately twelve months of a physician-supervised multimodal integrative/electro molecular program, she reported gradual and sustained functional improvement, with clinical estimates of about 25% recovery at one month, 50% at three months, 75% at six months, and complete functional recovery at approximately one year.

This observation does not establish efficacy of the overall program or of any individual component. Its value is the detailed longitudinal sequence and the testable hypothesis it generates. Future studies should prospectively define the intervention, use validated patient-reported and objective functional outcomes, and include structured safety monitoring and an appropriate comparator.

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