

ISSN: 2162-5816 Volume 14, Number 1, March 2024



Open Journal of Clinical Diagnostics



ISSN: 2162-5816



<https://www.scirp.org/journal/ojcd>

Journal Editorial Board

ISSN: 2162-5816 (Print) ISSN: 2162-5824 (Online)

<https://www.scirp.org/journal/ojcd>

Editor-in-Chief

Prof. Natalia Bizunok

Belarusian State Medical University, Belarus

Associate Editor-in-Chief

Dr. Rosenberg Nahum

Israel Institute of Technology, Israel

Editorial Board

Dr. Rajendra Badgaiyan

University at Buffalo, USA

Prof. Sergio D. Bergese

The Ohio State University Medical Center, USA

Dr. Patrizio Capasso

University of Kentucky, USA

Dr. Jun Deng

Yale University School of Medicine, USA

Prof. Tamar S. Ference

University of Miami Miller School of Medicine, USA

Dr. SM Hadi Hosseini

Stanford University School of Medicine, USA

Dr. Nikolaos Kakouros

University of Massachusetts School of Medicine, USA

Dr. Nilesh Kashikar

University of Miami, USA

Dr. Junjie Liu

Yale University, USA

Prof. James M. Mountz

University of Pittsburgh, USA

Dr. Arathy D. S. Nair

Kansas State University, USA

Prof. Wei Shen

Columbia University, USA

Dr. Bogdan Socea

Carol Davila University of Medicine and Pharmacy, Romania

Prof. Sam M. Wiseman

The University of British Columbia, Canada

Prof. Shirley Shidu Yan

University of Kansas, USA

Dr. Guoqiang Yu

University of Kentucky, USA

Table of Contents

Volume 14 Number 1

March 2024

**COVID-19 and the Vascular Elderly Subject: Illustration of Therapeutic Management
with Corticosteroids in an Elderly Diabetic Patient with COVID-19**

I. A. Dembele, A.-A. Zulfiqar, R. N. Nyanke, S. Landoure, S. L. Djeugoue, A. Sinayoko, N. Kone,

P. Antoni, A. Nouroudine, R. Ahsveen, Y. Koné, A. Diarra, T. M. Ngeupi, M. Cissoko, M. Mallé,

K. Kaly, D. Sy, D. Traoré, D. M. Tshialala, A. S. Kaya, E. Andres..... 1

Open Journal of Clinical Diagnostics (OJCD)

Journal Information

SUBSCRIPTIONS

The *Open Journal of Clinical Diagnostics* (Online at Scientific Research Publishing, <https://www.scirp.org/>) is published quarterly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2024 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2024 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: ojcd@scirp.org

COVID-19 and the Vascular Elderly Subject: Illustration of Therapeutic Management with Corticosteroids in an Elderly Diabetic Patient with COVID-19

Ibrahima Amadou Dembele^{1,2}, Abrar-Ahmad Zulfiqar¹, Romuald Nounga Nyanke^{2,3*}, Sékou Landoure², Stéphane Loique Djeugoue^{2,4}, Adama Sinayoko², Nouhoum Kone², Paul Antoni¹, Amadou Nouroudine¹, Rosunee Ahsveen¹, Yacouba Koné², Aoua Diarra², Tania Mekuiko Ngeupi³, Mamadou Cissoko², Mamadou Malla², Keïta Kaly², Djibril Sy^{2,3}, Djénébou Traoré^{2,3}, Didier Mukéba Tshialala⁴, Assétou Soukho Kaya^{2,3}, Emmanuel Andres¹

¹Internal Medicine Department, Medical Clinic B, University Hospital Center of Strasbourg, Strasbourg, France

²Internal Medicine Department, University Hospital Center Point G, Bamako, Mali

³Faculty of Medicine and Odontostomatology, University of Sciences, Techniques and Technologies of Bamako, Bamako, Mali

⁴Faculty of Medicine, Pharmacy and Public Health, University of Mbuji-Mayi, Democratic Republic of Congo

Email: *yromulus8889@gmail.com

How to cite this paper: Dembele, I.A., Zulfiqar, A.-A., Nyanke, R.N., Landoure, S., Djeugoue, S.L., Sinayoko, A., Kone, N., Antoni, P., Nouroudine, A., Ahsveen, R., Koné, Y., Diarra, A., Ngeupi, T.M., Cissoko, M., Malla, M., Kaly, K., Sy, D., Traoré, D., Tshialala, D.M., Kaya, A.S. and Andres, E. (2024) COVID-19 and the Vascular Elderly Subject: Illustration of Therapeutic Management with Corticosteroids in an Elderly Diabetic Patient with COVID-19. *Open Journal of Clinical Diagnostics*, **14**, 1-6.

<https://doi.org/10.4236/ojcd.2024.141001>

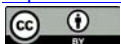
Received: January 14, 2024

Accepted: March 26, 2024

Published: March 29, 2024

Copyright © 2024 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Introduction: The severity of Sars-Cov-2 infection is associated with the development of acute respiratory distress syndrome (ARDS). The progression to ARDS appears to be driven by a major inflammatory mechanism potentially sensitive to corticosteroids. **Observation:** This article describes the case of an elderly patient was admitted to emergency departments for intense ashenia, accompanied by motor diarrhoea, dyspnoea with desaturation in ambient air, in a context of strong suspicion of infection linked to COVID-19. The article also reviews the existing literature on the diagnosis and treatment of this severe form of the disease. **Conclusion:** Corticosteroids, and in particular dexamethasone, have been shown to be effective in the management of patients with COVID-19, an oxygen-releasing disease.

Keywords

COVID-19, Diabetes Mellitus, Elderly person, Corticosteroids, Internal Medicine

1. Introduction

Coronavirus disease 2019 (COVID-19) is associated with diffuse lung damage.

Glucocorticoids may modulate inflammation-mediated lung injury and thereby reduce progression to respiratory failure and death [1]. Many studies have established a typology of patients at risk of developing a severe form of COVID-19. The factors that predict severe forms are: advanced age, male gender, comorbidities such as high blood pressure, liver disease, chronic obstructive pulmonary disease, diabetes mellitus, cardiovascular disease, malignant tumors, body mass index $> 25 - 30 \text{ kg/m}^2$, increased troponins, high leukocyte count and elevated C-reactive protein [2]. The severity of Sars-Cov-2 infection is linked to the occurrence of acute respiratory distress syndrome (ARDS). The progression towards ARDS appears to respond to a major inflammatory mechanism potentially sensitive to corticosteroids. Very few case reports have been published in elderly vascular patients with severe forms of COVID-19. We thus describe the case of an elderly diabetic patient suffering from severe lung damage. The purpose of this report is to present to you our experience through this clinical case and the particularity in the management of this type of patient.

2. Observation

We report the case of a 87-year-old patient of malian nationality, was admitted to the emergency room due to intense asthenia for 5 days, accompanied by motor diarrhea, dyspnea with 85% desaturation in ambient air, in a context of strong suspicion of infection linked to COVID-19, due to the positivity of the test carried out by nasopharyngeal swab on his wife. His medical history included high blood pressure, non-insulin-requiring type 2 diabetes mellitus (DT2) since the age of 40, dyslipidemia, non-clamped aortic stenosis, ventricular extra systole, gastroesophageal reflux disease (GERD) as well as vitamin B12 and substituted iron deficiency (etiology undetermined). His usual treatment included oral antidiabetics with Metformin 1000 mg, Glimepiride 1 mg, antihypertensives with Nitrendipine 10 mg, Ramipril 10 mg, Nebivolol 2.5 mg, Furosemide 40 mg, Atorvastatin 20 mg, and Esomeprazole 40 mg.

His weight was estimated at 76 kg and he measured 1.72 m. His body mass index was 25.69 kg/m^2 , indicating a slightly overweight patient. He was independent, moved without technical assistance and lived with his wife in an apartment. On arrival, he was hemodynamically stable with an oxygen saturation of 93% on 4 L of oxygen (O₂), subfebrile at 37.9°. Pulmonary auscultation revealed widespread crackles in the right lung. Note the absence of cough and sputum; absence of signs of respiratory severity. The biological assessment carried out revealed a biological inflammatory syndrome with a C-reactive protein (CRP) at 215.3 mg/L (N < 4 mg/L), without hydro-electrolyte disorders and an alteration of his renal function with clearance of the creatinine at entry at 41 mL/min/1.73m², functional in appearance. Glycated hemoglobin (HbA1c) was 8.3%. A chest CT scan was performed and revealed a ground glass hyperdensity with subpleural peripheral topography of significant bilateral distribution (25% - 50%). In addition, fine arcuate subpleural condensations of the right upper and lower lobe suggestive of organizing pneumonia were found (**Figure 1**).



Figure 1. Patient CT-Scan image (Dr Zulfiqar Abrar-Ahmad).

These infectious abnormalities were typical of widespread COVID-19 disease. The patient did not require a visit to the intensive care unit. The SARS-CoV-2 - Gene RdRp RNA nasopharyngeal swab was carried out on admission of the patient returning positive, he was transferred to the specialized Internal Medicine COVID unit. Medical treatment consisted of the implementation of oxygen therapy, preventive anticoagulation with enoxaparin 4000 UI/12h subcutaneously coupled with corticosteroid therapy with dexamethasone 6 mg/day orally (Day 1 to Day 4), following the latest recommendations.

On the clinical and respiratory level, the patient evolved favorably, oxygen weaning was finally achieved gradually after a few days of oxygen therapy; complete weaning was achieved on the 12th day. The diarrhea improved with symptomatic treatment, with a stool culture proving sterile; the patient presented a glycemic imbalance requiring a readjustment of his insulin therapy. Additionally, blood pressure was unstable after temporary discontinuation of Ramipril treatment due to renal insufficiency, but was quickly brought under control. We noted a regression of the inflammatory syndrome with a CRP of 76.4 mg/L on Day 8 reaching 12.2 mg/L on Day 18.

3. Discussion

The clinical presentation of COVID-19 infection in the geriatric population mentions an atypical presentation marked by an alteration in general condition, a lower fever threshold, respiratory signs, digestive signs, etc. [3] [4]. This could confuse the diagnostic process in this population and cause a diagnostic delay. In our 87-year-old patient we mainly found significant asthenia, motor diarrhea, fever, dyspnea with desaturation without cough. The notion of a contact case (his positive wife) allowed us to quickly think of a COVID-19 infection. Thus our observation underlines this particularity of the atypical symptoms in the elderly but also the importance of comorbidities in this population. Indeed, comorbidities, particularly cardiovascular ones, expose the elderly patient to more serious forms with admission to intensive care units but also a compromised functional and vital prognosis [5]. For our patient, despite all his comorbidities,

he was not admitted to the intensive care unit following a predictable limited autonomy after a stay in intensive care.

Subjects affected by COVID-19 have been shown to develop inflammatory reactions with the involvement of cytokines and inflammatory biomarkers, leading to lung damage [6]. The full spectrum of COVID-19 infection ranges from asymptomatic disease to mild respiratory tract illness to severe pneumonia, acute respiratory distress syndrome (ARDS), multiorgan failure, and death. Clinical presentation of some critically ill patients with COVID-19 suggest a “Cytokine Storm Syndrome” or hyperinflammatory state in which the immunosuppressive effects of corticosteroids may be beneficial [7]. There is clear evidence that deregulated inflammatory conditions along with coagulation associated with COVID-19 are comparable with that of ARDS, while the capacity of corticosteroid treatment (CST) in decreasing inflammation-coagulation-fibroproliferation and increasing illness improvement has been confirmed [7]. It has been reported that COVID-19 induced an increase in cytokine level evoking less important hemophagocytic lymphohistiocytosis, a situation reactive to CST [6].

National and international studies have shown that the use of corticosteroids could advantageously modulate the host immune response to COVID-19 pneumonia [7] [8]. The international randomized RECOVERY trial showed that treatment with dexamethasone, a synthetic corticosteroid, reduced 4-week mortality by approximately 11% in patients hospitalized for an infection linked to Covid-19, compared to usual treatment. This benefit only seemed to be observed in patients receiving oxygen, and was greater in patients receiving mechanical ventilation, whose relative mortality decreased by almost 30% [9].

Another international study whose results include CAPE-COVID, REMAP-CAP and RECOVERY compiled data from 1703 patients from 12 countries who received either standard care, a placebo combined with standard care, or a corticosteroid (dexamethasone, hydrocortisone or methylprednisolone). Between 3 and 4 weeks after the start of treatment, patients treated with a corticosteroid had a relative risk of mortality lower than 21% compared to patients receiving symptomatic treatment alone or symptomatic treatment combined with placebo. In addition, no side effects specific to corticosteroid treatment have been demonstrated [9]. Moreover, the WHO made a recommendation, the administration of treatment with systemic corticosteroids in patients with a serious or critical form of COVID-19 in 2020 and remains unchanged in 2023 [10].

Corona virus disease 19 (COVID-19) affects especially the respiratory tract, and induces lung injury which may progress to the acute respiratory distress syndrome (ARDS). Corticosteroid therapy is an effective way in the management of COVID-19; it reduces the risk of complications mainly acute lung injury and the development of ARDS. Various treatment options were tried all over the world, corticosteroids had showed beneficial effects. Our elderly patient thus benefited from the use of a synthetic corticosteroid, dexamethasone, which helped improve respiratory symptoms and oxygen withdrawal. Reactive hyperglycemia was observed to be quickly controlled by insulin therapy and quickly

returned to normal. No other side effects had been reported, particularly on the psycho behavioral side.

4. Conclusion

Corticosteroids and in particular dexamethasone have proven their effectiveness in the treatment of patients affected by oxygen-requiring COVID-19. Its use in elderly and very elderly subjects should require the clinician to monitor possible side effects, particularly through their glucocorticoid and mineralocorticoid effects; this must also lead to psycho behavioral monitoring (confusiogenic effect), which is very significant in elderly subjects.

Consent

Written informed consent was obtained from the patient to publish this report in accordance with patient consent policies.

Authors' Contributions

All authors participated in the evaluation and follow-up of the patient, in the writing and correction of the case report. All the authors of the manuscript have read and agreed to its content.

Conflicts of Interest

The authors declare no conflict of interest.

References

- [1] RECOVERY Collaborative Group (2021) Dexamethasone in Hospitalized Patients with Covid-19. *The New England Journal of Medicine*, **384**, 693-704. <https://doi.org/10.1056/NEJMoa2021436>
- [2] Muller, M., Bulubas, I. and Vogel, T. (2021) Les facteurs pronostiques dans la Covid-19. *NPG Neurologie—Psychiatrie—Gériatrie*, **21**, 304-312. <https://doi.org/10.1016/j.npg.2021.06.002>
- [3] Nguyen, S., Major, K., Cochet, C., Bizzozzero, T., Barbarossa, L., Bosshard, W., *et al.* (2020) Infection COVID-19 chez les personnes âgées en Suisse Romande: Un état des lieux entre croyances, convictions et certitudes. *Revue Médicale Suisse*, **16**, 835-838. <https://doi.org/10.53738/REVMED.2020.16.691.0835>
- [4] Sacco, G., Brière, O., Asfar, M., Guérin, O., Berrut, G. and Annweiler, C. (2020) Symptômes du Covid-19 chez la personne âgée: Revue systématique de la littérature biomédicale internationale. *Gériatrie et Psychologie Neuropsychiatrie du Vieillessement*, **18**, 135-140. <https://doi.org/10.1684/pnv.2020.0863>
- [5] Boureau, A.S., de Decker, L., Berrut, G. and Hanon, O. (2020) Pathologies cardiovasculaires et Covid-19: Particularités chez les personnes âgées. *Gériatrie et Psychologie Neuropsychiatrie du Vieillessement*, **18**, 141-149. <https://doi.org/10.1684/pnv.2020.0864>
- [6] Mehta, P., McAuley, D.F., Brown, M., Sanchez, E., Tattersall, R.S. and Manson, J.J. (2020) COVID-19: Consider Cytokine Storm Syndromes and Immunosuppression. *Lancet*, **395**, 1033-1034. [https://doi.org/10.1016/S0140-6736\(20\)30628-0](https://doi.org/10.1016/S0140-6736(20)30628-0)

- [7] Sterne, J.A.C., Diaz, J., Villar, J., *et al.* (2020) Corticosteroid Therapy for Critically Ill Patients with COVID-19: A Structured Summary of a Study Protocol for a Prospective Meta-Analysis of Randomized Trials. *BMC*, **21**, Article No. 734.
<https://doi.org/10.1186/s13063-020-04641-3>
- [8] Villar, J., Ferrando, C., Martínez, D., *et al.* (2020) Dexamethasone Treatment for the Acute Respiratory Distress Syndrome: A Multicentre, Randomised Controlled Trial. *The Lancet Respiratory Medicine*, **8**, 267-276.
[https://doi.org/10.1016/S2213-2600\(19\)30417-5](https://doi.org/10.1016/S2213-2600(19)30417-5)
- [9] The WHO Rapid Evidence Appraisal for COVID-19 Therapies (REACT) Working Group (2020) Association between Administration of Systemic Corticosteroids and Mortality among Critically Ill Patients with COVID-19: A Meta-Analysis. *JAMA*, **324**, 1330-1341.
- [10] Organisation Mondiale de la Santé (2023) Traitements contre la COVID-19: Orientations évolutives. OMS, Genève.



Open Journal of Clinical Diagnostics (OJCD)

ISSN 2162-5816 (Print) ISSN 2162-5824 (Online)

<https://www.scirp.org/journal/ojcd>

Open Journal of Clinical Diagnostics (OJCD) is an international peer-reviewed, open access journal publishing in English original research studies, reviews and case report in clinical diagnostics. Symposia or workshop papers may be published as supplements.

Open Journal of Clinical Diagnostics (OJCD) is an international journal dedicated to the latest advancement of clinical diagnostics. The goal of this journal is to provide a platform for scientists and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of clinical diagnostics. All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Accepted papers will immediately appear online followed by printed hard copy. The journal publishes original papers including but not limited to the following fields:

- Alternative and Complementary Medicine
- Anesthesiology
- Clinical Radiology
- Critical Care Medicine
- Dermatology
- Emergency Medicine
- Family Practice
- Functional Diagnostics
- Geriatric Medicine
- Health Care Economics
- Internal Medicine
- Laboratory Diagnosis
- Medical Education
- Medical Ethics
- Medical Imaging
- Nursing
- Obstetrics and Gynecology
- Occupational Medicine
- Pediatrics
- Physical Diagnosis
- Physical Medicine and Rehabilitation
- Psychiatry
- Symptoms Diagnosis

We are also interested in: 1) Short Reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book Reviews—Comments and critiques.

Notes for Intending Authors

Submitted papers should not be previously published nor be currently under consideration for publication elsewhere. Paper submission will be handled electronically through the website. For more details, please access the website.

Website and E-mail

<https://www.scirp.org/journal/ojcd>

E-mail: ojcd@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Scientific
Research
Publishing**

Website: <https://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org