

Extremely severe case of COVID-19 pneumonia recovered despite bad prognostic indicators: a didactic report

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Case Report

Keywords: Covid-19, SARS-CoV-2, Prognosis, Imaging

Posted Date: June 9th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-34045/v1>

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Version of Record: A version of this preprint was published at SN Comprehensive Clinical Medicine on June 29th, 2020. See the published version at <https://doi.org/10.1007/s42399-020-00383-0>.

Abstract

Introduction: COVID-19 is a highly infectious respiratory disease caused by Severe Acute Respiratory Syndrome - Coronavirus - 2 (SARS-COV2). Starting from Wuhan (China) where it was firstly reported, it rapidly spread to the rest of the world, causing a pandemic with more than 300.000 deaths to date.

Case presentation: we report an extremely severe case of coronavirus pneumonia in an over-80 years old patient with hypertension, coronary heart disease, chronic heart failure and chronic obstructive pulmonary disease. Despite several bad anamnestic indicators, the severe clinical conditions and complications that arose during hospitalization, the patient recovered and was discharged.

Conclusions: Although a higher vulnerability of geriatric patients has been observed, the literature on elderly COVID-19 patients have remained very scarce, especially in those over 80. The aim of this paper is to describe an extremely severe case of coronavirus pneumonia in an over-80 years old patient that, despite a clearly poor anamnestic and clinical prognostic forecast was successfully discharged thanks to a careful evaluation of the case and of the complications that have arisen. Several efforts have been made to identify therapeutic strategies and prognostic indicators of COVID-19 but there is still much to learn. With this report, we hope to provide important elements to better understand this disease.

Introduction

Severe Acute Respiratory Syndrome - Coronavirus - 2 (SARS-COV2) is a human coronavirus that causes COVID-19, a highly infectious respiratory disease. From Wuhan (China) where it was firstly reported, it rapidly spread to the rest of the world causing a pandemic [1]. To date it has caused more than 300.000 deaths [2] showing a higher prevalence in regions with high levels of pollution [3]. It has therefore triggered a great effort by the scientific community to study and identify important information for treatment and prognostic stratification. Herein, we present an interesting case of an extremely severe COVID-19 pneumonia in 87-years old woman with several risk factors, bad prognostic indicators, and complex respiratory involvement.

Case Presentation

An 87-year-old woman with positive anamnesis for hypertension, coronary heart disease, chronic heart failure and chronic obstructive pulmonary disease presented to the emergency room with severe dyspnoea and cough from 1 week. At admission the patient was afebrile and severe type I respiratory failure was observed: arterial blood gas analysis showed partial arterial oxygen pressure of 46 mmHg at 40% of fraction of inspired oxygen (FiO₂). Chest high-resolution computed tomography (HRCT) showed parenchymal alteration localized to all lung lobes: in particular, multiple areas of ground glass hyperdensities in the context of which several “crazy paving” pattern areas were observed. Large areas of parenchymal consolidation with air bronchogram in the context, with similar distribution, were also

present with abundant bilateral pleural effusion (Figures 1, 2, 3). Blood exams showed lymphopenia and neutrophilia (L: 750/mm³; N: 14600/mm³), high D-dimer (1100 ng/ml), Lactic Acid Dehydrogenase (LDH) (383U/L) and C-reactive protein (CRP) (12,5 mg/dl) plasma levels. Each of the elements mentioned above are recognized in the literature as poor prognostic indicators. Intravenous furosemide and methylprednisolone were administered and non-invasive ventilation (NIV) in CPAP (continuous positive airway pressure) modality was initiated. After the positive result of the nasopharyngeal swab for SARS-CoV-2 research, lopinavir/ritonavir and hydroxychloroquine were administered. It is important to note that, in course of the hospital stay, lymphopenia worsened and thrombocytopenia appeared. Along 15 days of hospital stay, several complications arose, such as severe dysionemias and psychomotor agitation, but they were successfully treated. At the end of hospitalization, the clinical situation had much improved, with oxygen saturation being 97% in 35% of FiO₂ with no dyspnoea. Another chest HRTC observed important reduction of ground glass and consolidation areas with onset of reticular pattern and initial fibrosis (Figures 4, 5, 6). The patient was therefore transferred to low intensity ward for convalescence.

Conclusions

COVID-19 is a highly infectious respiratory disease caused by Severe Acute Respiratory Syndrome - Coronavirus - 2 (SARS-COV2), a human coronavirus. This virus was first reported in Wuhan, Hubei Province, China, after which it rapidly spread to the other countries [1] and mostly in regions with higher levels of pollution [3]. In January 30, 2020, the World Health Organization (WHO) declared Public Health Emergency of International Concern and confirmed as a Pandemic on 11 February [4]. Although nasopharyngeal swab is the diagnostic method recommended by WHO, CT has been given increasing importance with regards to the diagnosis of false negatives [5,6], for monitoring the course of the disease and response to therapies [7]. Several efforts have been made to identify therapeutic strategies and prognostic indicators. Among risk factors for mortality in COVID-19 patients, arterial hypertension seems to be the most important one [8]. Laboratory markers that indicate poor outcome are thrombocytopenia [9, 10] and lower lymphocyte counts [11]. High CRP and LDH levels are also important indexes of severe disease: in particular it was observed that their levels are significantly higher in non-survivors respect to survivors [12, 13]. It has also been observed that SARS-COV2 infection strongly alters coagulations pathway. Non-survivors COVID-19 patients have shown significant higher levels of activated partial thromboplastin times, prothrombin times and plasma D-dymer levels compared to survivors. In particular, higher D-dymer levels seems to be the strongest independent factor that predicts mortality [14]. Among the anamnestic factors that indicate a poor prognosis, hypertension, cardiovascular diseases and pulmonary diseases such as chronic obstructive pulmonary disease have been clearly identified. Clinical conditions observed at time of admission are also important for prognostic stratification: it has been observed that absence of fever at time of respiratory symptoms onset and lower respiratory tract infection symptomatology correlate with poor outcome [15].

Many studies have analysed how age also plays a key role in mortality. Unlike other infectious lung diseases that have a “U shaped” lethality curve, mortality of novel coronavirus seems to increase in elderly patients [16]. However, although a higher vulnerability of geriatric patients has been observed, the literature on elderly COVID-19 patients has remained very scarce, especially in those over 80. Since the population in China aged 60 or above only accounted for about 6%, there are few studies in over 80 patients which describe the clinical course and the laboratory changes in this category of patients.

Against this picture, we describe an extremely severe case of coronavirus pneumonia in an over-80 years old patient that recovered despite having all the negative prognostic factors described above, and was successfully discharged thanks to a careful evaluation of the case and of the complications that have arisen. The aim of this paper is to provide important elements to better understand this disease reporting a case that recovered despite the bad prognosis.

Declarations

Conflicts of interest

None of the authors have any conflict of interest.

Funding

None.

Ethical approval

NA

Consent

Written informed consent was obtained by relatives of the patients for publication of this case report and accompanying images.

Author contribution

All authors materially participated in the research.

Dr. Bentivegna participated in data collection and in article preparation.

All authors have approved the final article.

Registration of research studies

NA

Guarantor

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Figures

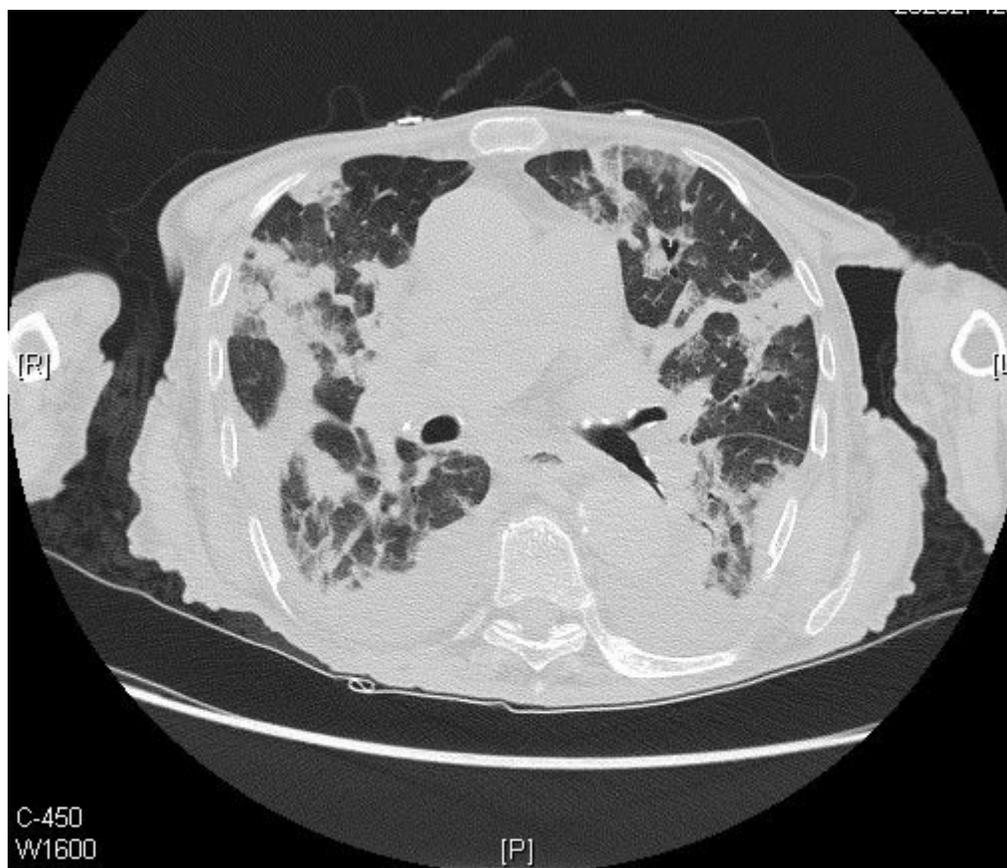


Figure 1

Large areas of parenchymal consolidation with air bronchogram in the context, with similar distribution, were also present with abundant bilateral pleural effusion

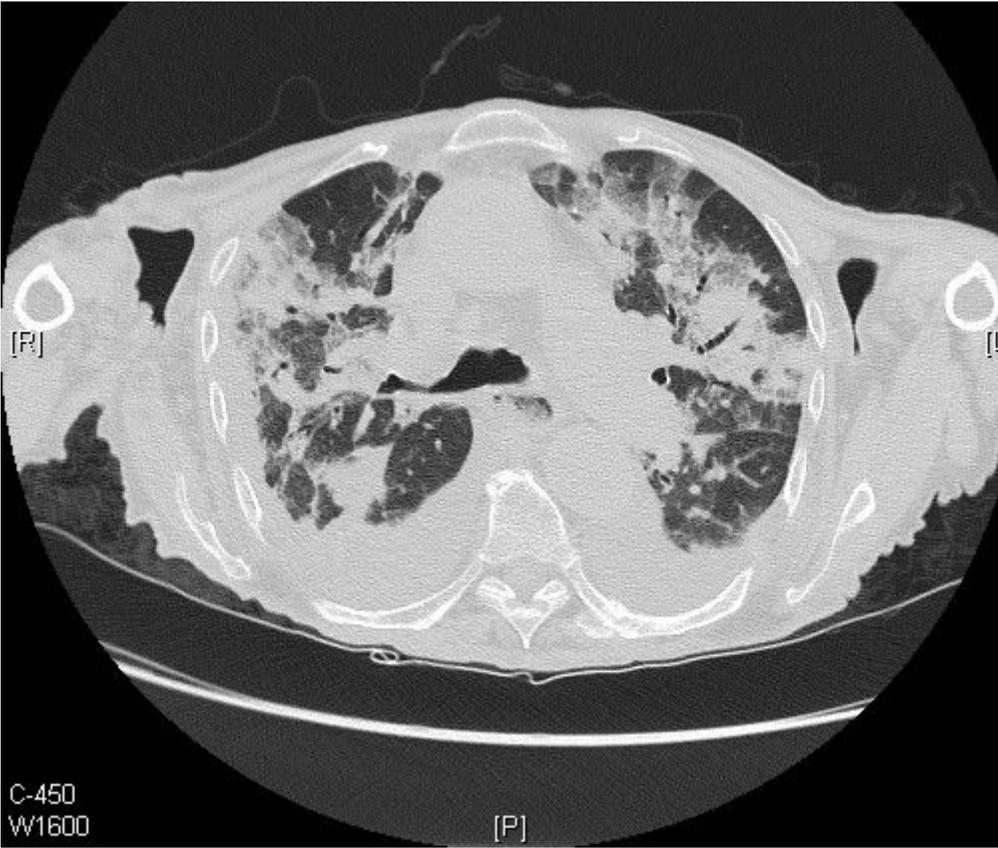


Figure 2

Large areas of parenchymal consolidation with air bronchogram in the context, with similar distribution, were also present with abundant bilateral pleural effusion

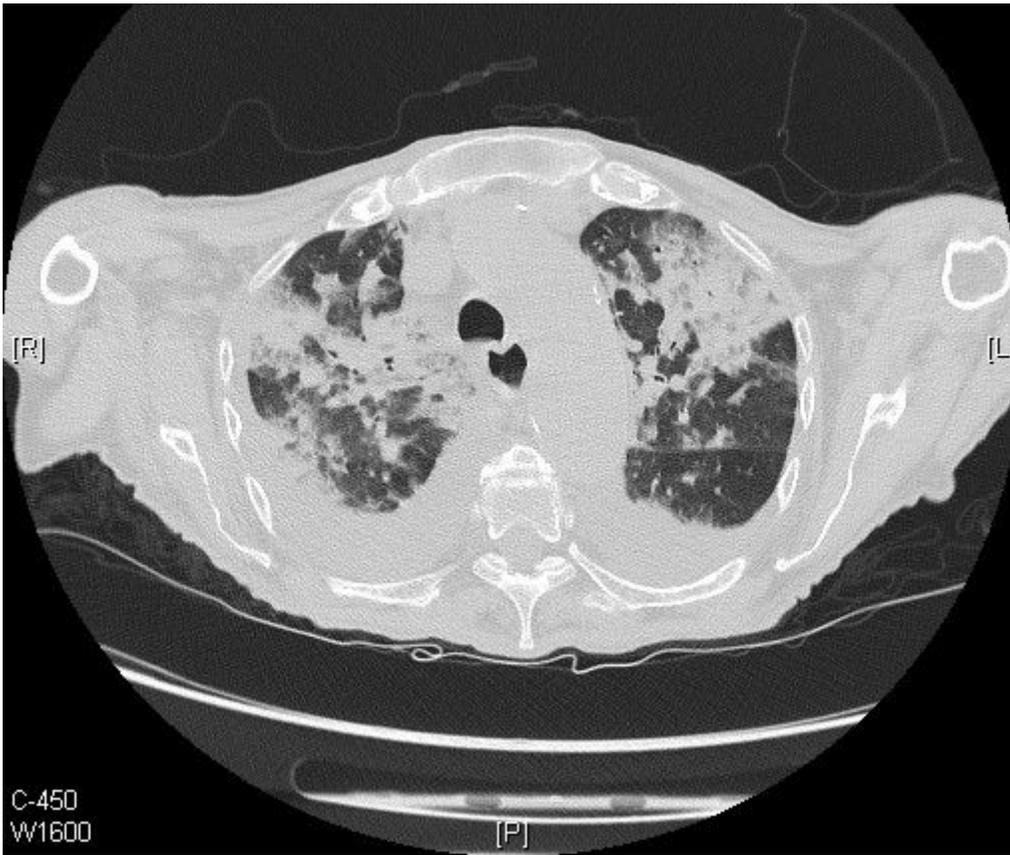


Figure 3

Large areas of parenchymal consolidation with air bronchogram in the context, with similar distribution, were also present with abundant bilateral pleural effusion



Figure 4

chest HRTC observed important reduction of ground glass and consolidation areas with onset of reticular pattern and initial fibrosis

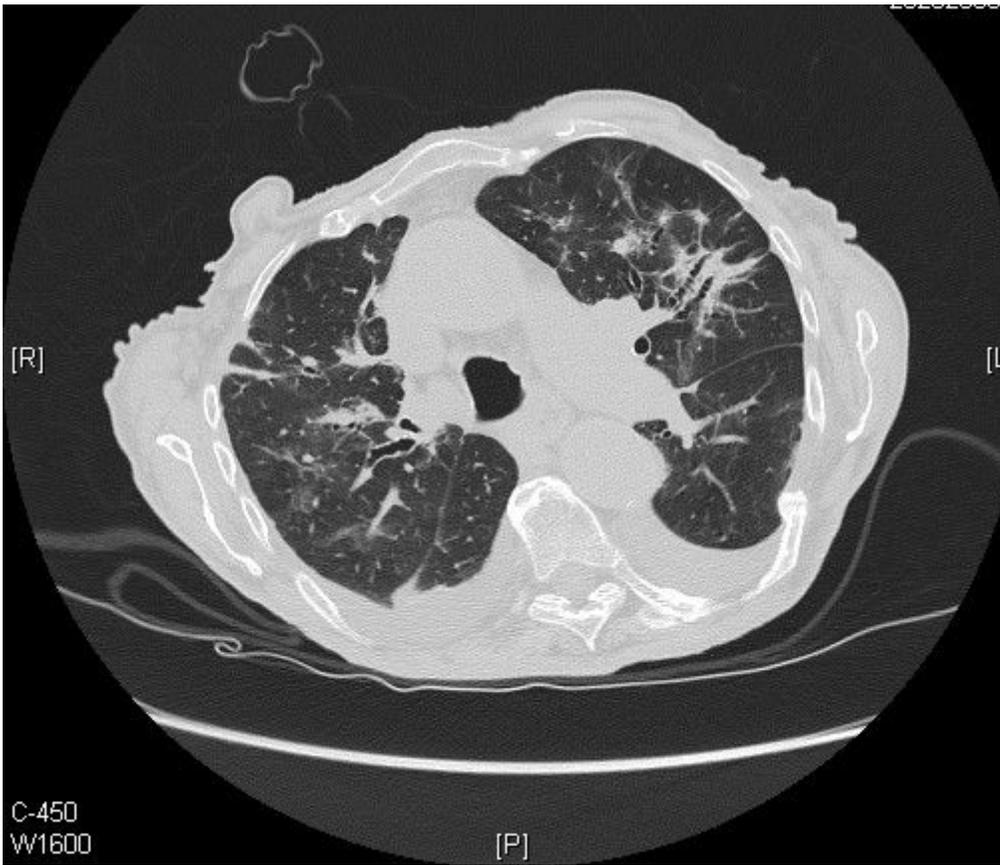


Figure 5

chest HRTC observed important reduction of ground glass and consolidation areas with onset of reticular pattern and initial fibrosis

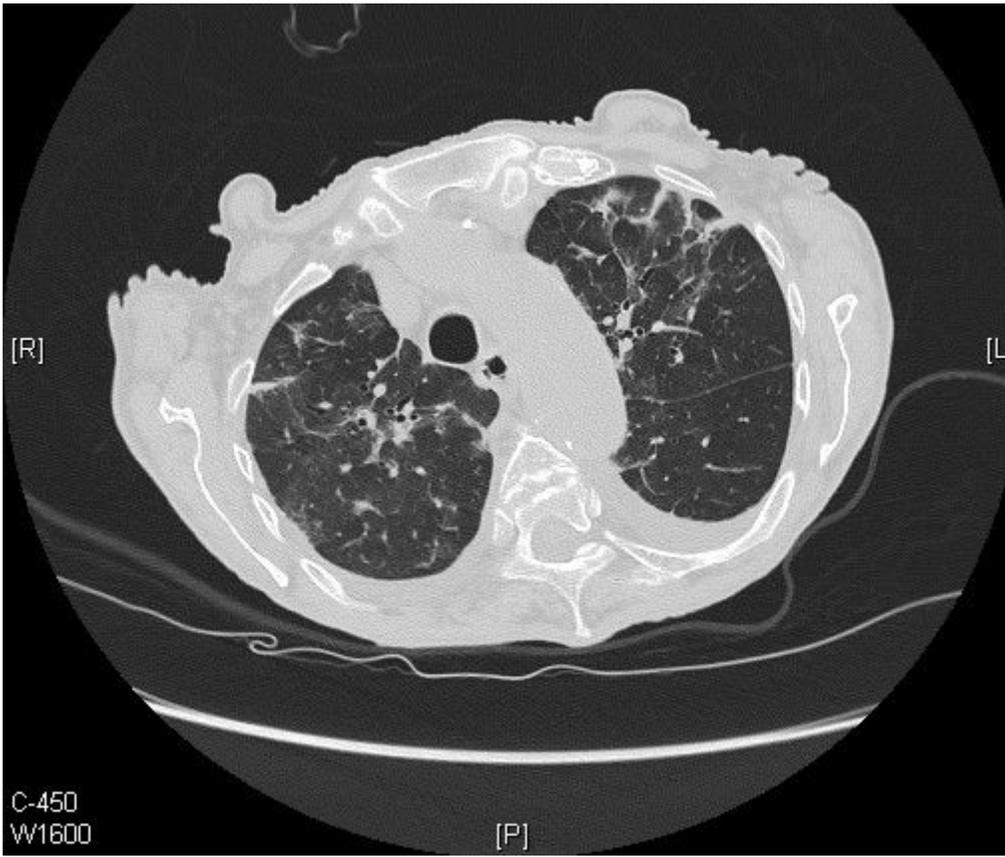


Figure 6

chest HRTC observed important reduction of ground glass and consolidation areas with onset of reticular pattern and initial fibrosis