

Treatment of COVID-19 Patients at Intensive Care Unit of General Hospital of Prizren

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ABSTRACT

Introduction: Due to the COVID-19 pandemic, hospitals and especially the intensive care unit are and can be overloaded by the hypoxemic patients, and face many challenges.

Methods: There was used retrospective observational study in a Kosovo hospital, the review of characteristics, clinical course and outcomes of all consecutive patients who had respiratory failure. In addition to data collected in ICU of patients with worsening symptoms and COVID-19 confirmed, similar publications in medical journals with keywords, coronavirus, SARS-CoV2, intensive care and treatment have also been reviewed.

Results: During July, August and September, 797 confirmed patients with COVID-19 were admitted to the hospital, of which ninety-four patients (11.79%) were treated in the Central ICU of Prizren General Hospital. 59.58% were male, the youngest age was 34 years old, the oldest 84 and the average was 65.53 years old. Regarding the days of stay there were 0 up to 21 days of stay, the average was 5.06 days of stay. Out of 94 patients admitted 13 (13.83%) were discharged in improved condition at home, 19 (20.21%) were transferred out of ICU and 62 (65.96%) have died. The youngest of the dead was 46 years. while the oldest was 84 y, the average age of the dead was 68.06 years old.

Conclusion: It is needed to adapt management and safe treatment protocols as well as the demand for multidisciplinary treatment. Patients with COVID-19 who need to be transferred to the ICU are complex and have a high mortality rate.

Keywords: Coronavirus; SARS-CoV2; Intensive care unit; Treatment

INTRODUCTION

In December 2019, an outbreak of pneumonia-like illness caused by a novel coronavirus occurred in Wuhan, Hubei Province and spread throughout China to the rest of the world [1]. In February 2020, the World Health Organization (WHO) named the disease “coronavirus disease 2019” (COVID-19) [2] and the International Committee on Virus Taxonomy named the virus ‘severe acute respiratory syndrome coronavirus-2’ (SARSCoV-2) [3]. On 11 March 2020, WHO characterized SARS-CoV-2 as a pandemic situation [4]. Due to the COVID-19 pandemic,

hospitals and especially the intensive care unit are and can be overloaded by the hypoxemic patients, and face many challenges. The first case presented in Kosovo appeared in Viti on March 13, 2020 (Wikipedia). In the hospital of Prizren the first case was confirmed on April 28, 2020, while in intensive care they started to be treated in early July.

Most of the infected persons (80%) are mild. However, 6%-10% will worsen and require transfer to the ICU [5]. Patients with suspected clinically or confirmed COVID-19 with progressive worsening of ventilatory failure or development of multiorgan

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dysfunction should be referred to the ICU, preferably isolated in beds specifically dedicated to the treatment of this infection [6]. If cases that patients does not maintain SpO₂ above 90%, especially in a context of significant suffering and excessive inspiratory effort, CPAP or mechanical ventilation is indicated [7-9]. Prone ventilation is indicated in patients with a PO₂/FiO₂ ratio <150 who were unable to maintain the ventilation strategy with a tidal volume of 4-6 mL/Kg [10,11].

Hemodynamic instability is managed with crystalloid infusion, preferably using balanced solutions and vasopressors. The goal is to maintain an average blood pressure greater than 60 mmHg [12,13].

Hydroxychloroquine was the first drug proposed as an antiviral treatment due to its proven action in vitro against this virus class [14]. Rosenberg et al. studied the association of treatment with hydroxychloroquine or azithromycin and hospital mortality in patients with COVID-19 and did not find any association between them [15]. The association of hydroxychloroquine and azithromycin should be avoided due to the potential cardiovascular effects [16].

Steroids may be beneficial for a broad spectrum of critically ill patients, including those with cardiovascular, respiratory, and neurological conditions [17]. Since severe forms of COVID-19 have been linked to a cytokine storm, the use of corticosteroids has received special interest [18,19]. There is a wide divergence regarding corticosteroid use in patients with COVID-19 and its use should be evaluated on a case-by-case basis [20,21].

On patients with COVID-19 was seen a marked increase of D-dimer, meaning a coagulation disruption, which seems to be associated with increase rate of mortality. Heparin use was shown to decrease the coagulation disruption and so on mortality in this scenario [22,23].

Based on reviewing the literature in studies conducted in different countries, the major risk factor associated with death in patients with COVID-19 in intensive care unit is older age. The mortality from COVID-19 appears driven by the presence of severe ARDS, and it is approximately 50% (range 16% to 78%). In a single-center retrospective cohort of 52 critically ill Chinese patients with COVID-19, 62% had died after 28 days, with a median duration of only seven days from Intensive Care Unit (ICU) admission to death. In Chinese retrospective cohorts, death from ARDS was more likely to occur in those of older age i.e. ≥ 64 years [8,24-26]. Preliminary reports from Italy and the United States are reporting similar outcomes [26]. Patients with COVID-19 who need to be transferred to the ICU are complex and have a high mortality rate [27]. Among critically ill patients, fewer women were affected than men in China [24] and Italy [28] (33 and 18% respectively). In a study done in France [29] at an intensive care unit the average age of patients was 65 years, 73% were male and 84% of patients had at least one associated disease.

This article will discuss the treatment of patients with respiratory difficulties in Central Intensive Care Unit, ongoing available treatments and future perspectives of SARS-CoV-2 patients. By summarizing all information in one place, it is hoped that this article will be useful to others.

METHODS

Study design and participants—there was used retrospective observational study, the review of characteristics, clinical course and outcomes of all consecutive patients who had respiratory failure or were unable to maintain SpO₂>90%, despite receiving 10–15l/min of oxygen with a non-rebreather mask, were treated by Continuous Positive Airway Pressure (CPAP) unless the anaesthesiologist judged that immediate intubation was indicated. During the period of three month 1st July and 30th September of 2020 in Intensive Care Unit (ICU) there were a total of 94 patients treated with COVID-19. Sample size was equal to the number of patients treated during the study period. Values of cases are presented as numbers and percentages. In addition to data collected in intensive care unit of patients with worsening symptoms and COVID-19 confirmed, similar publications in medical journals with keywords, coronavirus, SARS-CoV2, intensive care and treatment have also been reviewed.

Ethics: The study was approved by the institutional ethics board under the number 7/126 to access all documents of patients treated in this period at ICU as well as data from the health information system.

RESULTS

During July, August and September, 797 confirmed patients with COVID-19 were admitted to the hospital, of which ninety-four patients (11.79%) with COVID-19 were treated in the Central Intensive Care Unit of Prizren General Hospital for the period July, August and September. Fifty-six patients (59.58%) were male while thirty-eight patients (40.42%) were female shown in Table 1. Regarding the age of the patients, it was different, the youngest age that was admitted to the Central Intensive Care was 34 years old, the oldest was 84 years old and the average was 65.53 years old. Regarding the days of stay of patients in Central Intensive Care, there were 0 days for transferred or serious patients who ended in death, up to 21 days of stay, the average was 5.06 days of stay.

Duration	Confirmed COVID-19 patients
July, August and September	797(11.79%)
Males	56(59.58%)
Females	38(40.42%)

Table 1: Statistics of COVID-19 were treated in the Central Intensive Care Unit of Prizren General Hospital.

The treatment of patients in this unit was done with CPAP, while the most severe patients were intubated. In this unit were admitted only patients who have had compromised respiration and poor health in general.

Depending on the symptomatic and laboratory clinical condition of the patients, they were treated with antibiotics, corticosteroids, bronchodilators, anticoagulants, diuretics, vitamins, etc. Anticoagulant therapy (heparine or fraxiparine)

was administered to all COVID-positive patients with increased D-dimer. C-reactive protein (CRP) levels were increased in most patients. Since only critically ill patients were admitted to this unit, all had a clinical diagnosis confirmed by x-ray and/or chest CT, bilateral pulmonary infiltrations. Other concomitant diseases had all patients such as diabetes, COPD, heart disease, etc., which have contributed to the worsening of health.

Given that patients admitted to central intensive care were in serious condition, out of 94 patients admitted 13 (13.83%) were discharged in improved condition at home, 19 (20.21%) were transferred out of Central Intensive Care and 62 (65.96%) have died. All of the dead patients also had concomitant diseases.

The youngest of the dead was 46 years old while the oldest was 84 years old, the average age of the dead was 68.06 years old.

Personal protective equipment has been provided continuously to the intensive care personnel and the oxygen supply has been continuous despite the difficulties that the whole country has had from time to time.

DISCUSSION

Based on the recommendations of the Ministry of Health and the National Institute of Public Health of Kosovo since the beginning of the pandemic, the cases worsened with COVID-19 that needed intensive care (CPAP or intubation) until the beginning of July were transferred to the University Clinical Center of Kosovo in Pristina. From the beginning of July, these cases worsened with the need for mechanical ventilation, breathing and intensive follow-up were treated in the Central Intensive Care of the General Hospital of Prizren. The influx of these patients has been large, because in most cases all Intensive Care beds have been filled. Despite the difficulties that the country had for providing oxygen, in Prizren Hospital this was very well managed and patients have not suffered for oxygen.

From all cases (July, August and September) admitted to the hospital, 11.79% were treated in the ICU. This compared to the literature is almost similar because according to Mendes et al. [5]. 6-10% will require transfer to the ICU. From 94 patients treated in intensive care 59.58% were male while 40.42% were female. According to research done in China and Italy [24,28] among critical patients there were fewer women than men affected. The youngest patient admitted to ICU was 34 years old, the oldest 84 years old and the average was 65.53 years old. The age data compared to the literature used are similar to the study from France [29] where the average age was 65 years.

Regarding the days of stay of patients in Central Intensive Care, there were 0 days for transferred or severe patients who ended in death up to 21 days of stay, the average was 5.06 days of stay. From the reviewed literature this data are similar because in some studies the average was 4 days stay while in some others 5 days stay.

The treatment of patients in this unit was done with CPAP, while the most severe patients were intubated. In this unit were admitted only patients who have had compromised respiration and poor health in general. Depending on the symptomatic and laboratory clinical condition of the patients, they were treated

with antibiotics, corticosteroids, bronchodilators, anticoagulants, diuretics, vitamins, etc. These data are consistent with the literature review, where according to Gattinoni et al. and Phua et al. [8,9] if the patient does not maintain SpO₂ above 90%, especially in a context of significant suffering and excessive inspiratory effort, invasive mechanical ventilation is indicated. Also according to the literature review [12-21] it is emphasized that the treatment of cases is done individually taking into account the health condition, laboratory and imaging tests and evaluation on a case-by-case basis.

Given that patients admitted to central intensive care were in serious condition, 13.83% were discharged in improved condition at home, 20.21% were transferred out of Central Intensive Care and 65.96% died [29]. All the dead patients also had concomitant diseases while the average age of the dead was 68.06 years. Similar studies have reported similar mortality rates in the ICU in revised studies in China, Italy, and the United States, most commonly in patients older than 64 years. The mortality rate of patients with COVID-19 in the ICU is also within the limits of comparative studies where it was on average 50% of ICU patients admitted who had ended in death. In the ICU of China this rate has changed between 16 to 78% while in our country it was 65.96%.

The role of protective measures in general but specifically in intensive care due to procedures such as intubation and others is very important and the safety protocol must be constantly adjusted and updated to include new information provided by the world scientific community.

CONCLUSION

Considering the challenges posed worldwide about the management of COVID-19 patients and the crisis it has caused in public health, the great need to adapt management and safe treatment protocols as well as the demand for multidisciplinary treatment are very clear. Based on the practices and cases observed in the Central Intensive Care of this secondary institution, the research team proposes a new model focused on multidisciplinary cooperation, improvements to the rapid referral or consultation cycle and individual case evaluations treating them depending on the symptomatic picture and other diagnostic procedures on real-time to prevent worsening of cases leading to intubation or even death of patients. Patients with COVID-19 who need to be transferred to the ICU are complex and have a high mortality rate.

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Pathological type, differentiation degree and clinical stage were collected as specific as possible. And the ovarian cancer staging was complied with surgical and pathological staging system of ovarian malignant tumor (FIGO, 2014). All the Pathological diagnosis report was given by the Pathology department, medical testing center, Chongqing Medical University.

REFERENCES

- Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet* 2020;395:470-473.
- World Health Organization. Novel coronavirus (2019-nCoV) situation report 22, Geneva: WHO. 2020.
- Gorbalenya AE, Baker SC, Baric RS, De Groot RJ, Drosten C, Gulyaeva AA, et al. Coronaviridae Study group of the international committee on taxonomy of viruses. The species severe acute respiratory syndrome-related coronavirus: Classifying 2019-nCoV and naming it SARS-CoV-2. *Nat Micro*. 2020;5:536-544.
- World Health Organization. Coronavirus disease 2019 (COVID-19) situation report 51, Geneva: WHO. 2020.
- Mendes JJ, Silva MJ, Miguel LS, Gonçalves MA, Oliveira MJ, Oliveira CL, et al. Sociedade portuguesa de cuidados intensivos. Guidelines for stress ulcer prophylaxis in the intensive care unit. *Rev Bras ter Intensiva*. 2019;31(1):5-14.
- Bouadma L, Lescure IX, Lucet JC, Yazdanpanah Y, Timsit Jf. Severe SARS-CoV-2 infections: Practical considerations and management strategy for intensivists. *Intensive Care Med*. 2020;46(4):579-582.
- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. China novel coronavirus investigating and research team. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727-733.
- Gattinoni L, Chiumello d, Rossi S. COVID-19 pneumonia: ARdS or not? *Crit Care*. 2020;24(1):154.
- Phua J, Weng L, Ling L, Egi M, Lim CM, divatia Jv, et al. Intensive care management of coronavirus disease 2019 (COVID-19): Challenges and recommendations. *Lancet Respir Med*. 2020;8(5):506-517.
- Guérin C, Reignier J, Richard JC, Beuret P, Gacouin A, Boulain T, et al. PRoSEvA study group. Prone positioning in severe acute respiratory distress syndrome. *N Engl J Med*. 2013;368(23):2159-2168.
- Gattinoni L, Taccone P, Carlesso E, Marini JJ. Prone position in acute respiratory distress syndrome. Rationale, indications, and limits. *Am J Respir Crit Care Med*. 2013;188(11):1286-1293.
- Phua J, Weng L, Ling L, Egi M, Lim CM, Divatia JV, et al. Intensive care management of coronavirus disease 2019 (COVID-19): Challenges and recommendations. *Lancet Respir Med*. 2020;8(5):506-517.
- Poston JT, Patel BK, Davis AM. Management of critically ill adults with COVID-19. *JAMA*. 2020.
- Liu J, Cao R, Xu M, Wang X, Zhang H, Hu H, et al. Hydroxychloroquine, a less toxic derivative of chloroquine, is effective in inhibiting SARS-CoV-2 infection in vitro. *Cell discov*. 2020;6:16.
- Rosenberg ES, Dufort EM, Udo T, Wilberschied LA, Kumar J, Tesoriero J, et al. Association of treatment with hydroxychloroquine or azithromycin with in-hospital mortality in patients with COVID-19 in New York State. *JAMA*. 2020;e208630.
- Mercurio NJ, Yen CF, Shim DJ, Maher TR, McCoy CM, Zimetbaum PJ, et al. Risk of Qt interval prolongation associated with use of hydroxychloroquine with or without concomitant azithromycin among hospitalized patients testing positive for coronavirus disease 2019 (COVID-19). *JAMA Cardiol*. 2020;201834.
- Young A, Marsh S. Steroid use in critical care. *BJA Education*. 2018;18:129-134.
- Tay MZ, Poh CM, Rénia L, MacAry PA, Ng LFP. The trinity of COVID-19: Immunity, inflammation and intervention. *Nat Rev Immunol*. 2020;20(6):363-374.
- Henderson LA, Canna SW, Schulert GS, Volpi S, Lee PY, Kernan KF, et al. On the alert for cytokine storm: Immunopathology in COVID-19. *Arthritis Rheumatol*. 2020;10.
- Russell B, Moss C, George G, Santaolalla A, Cope A, Papa S, et al. Associations between immune-suppressive and stimulating drugs and novel COVID-19: A systematic review of current evidence. *Ecancer Med Sci*. 2020;14:1022.
- Villar J, Confalonieri M, Pastores SM, Meduri Gu. Rationale for prolonged corticosteroid treatment in the acute respiratory distress syndrome caused by coronavirus disease 2019. *Crit Care Explor*. 2020;2(4):e0111.
- Tang N, Li d, Wang X, Sun Z. Abnormal coagulation parameters are associated with poor prognosis in patients with novel coronavirus pneumonia. *J Thromb Haemost*. 2020;18(4):844-847.
- Tang N, Bai H, Chen X, Gong J, Li d, Sun Z. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. *J thromb Haemost*. 2020;18(5):1094-1099.
- Yang X, Yu Y, Xu J, Shu H, Xia J, Liu H, et al. Clinical course and outcomes of critically ill patients with SARS-Cov-2 pneumonia in Wuhan, China: A single-centered, retrospective, observational study. *Lancet Respir Med*. 2020;8(5):475-481.
- Wang d, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA*. 2020;323(11):1061-1069.
- Wu C, Chen X, Cai Y, Xia J, Zhou X, Xu S, et al. Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China. *JAMA Intern Med*. 2020;e200994.
- Loss SH, Nunes DL, Franzosi OS, Teixeira C. A pragmatic approach and treatment of coronavirus disease 2019 (COVID-19) in intensive care unit. *Rev Assoc Med Bras*. 2020;66(8):1157-1163.
- Grasselli G, Zangrillo A, Zanella A, Antonelli M, Cabrini L, Castelli A, et al. Baseline characteristics and outcomes of 1591 patients infected with sars-cov-2 admitted to icus of the lombardy region, Italy. *JAMA*. 2020.
- Alviset S, Riller Q, Aboab J, Dilworth K, Billy P-A, Lombardi Y, et al. Continuous Positive Airway Pressure (CPAP) face-mask ventilation is an easy and cheap option to manage a massive influx of patients presenting acute respiratory failure during the SARS-CoV-2 outbreak: A retrospective cohort study. *PLoS ONE*. 2020;15(10):e0240645.