Clinical Features and Efficacy of Antiviral Drug, Arbidol in 220 Nonemergency COVID-19 Patients from East-West-Lake Shelter Hospital in Wuhan: A Retrospective Case Series

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Short report

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Abstract

Objective: We aimed to describe the features of 220 nonemergency (mild or common type) COVID-19 patients from a shelter hospital, as well as evaluate the efficiency of antiviral drug, Arbidol in their disease progressions.

Methods: Basic clinical characteristics were described and the efficacy of Arbidol was evaluated based on gender, age, maximum body temperature of the patients.

Results: Basically, males had a higher risk of fever and more onset symptoms than females. Arbidol could accelerate fever recovery and viral shedding in respiratory specimens, particularly in males. Arbidol also contributed to shorter hospital stay without obvious adverse reactions.

Conclusions: In the retrospective COVID-19 cohort, gender was one of the important factors affecting patient’s conditions. Arbidol showed several beneficial effects in these patients, especially in males. This study brought more researches enlightenment in understanding the emerging infectious disease.

Introduction

Since December 2019, an outbreak of unexplained epidemic pneumonia occurred in Wuhan, Hubei Province, China and has soon spread to the whole country. As of 6 May 2020, it spread to other 215 countries and a total of 3,721,393 globally laboratory-confirmed cases have been reported. On 11 February 2020, the novel epidemic disease was formally named as coronavirus disease 2019 (COVID-19) and its causative virus as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. In China, the number of COVID-19 infections has exceeded that of SARS population in 2002, indicating the more infectious feature of SARS-CoV-2. In order to prevent the rapid spread of COVID-19, the Chinese government established 16 shelter hospitals for nonemergency patients (mild and common type). Within 35 days, Chinese doctors in these hospitals cured more than 10,000 patients with a zero death. However, we haven’t fully understood the clinical characteristics, disease evolution and therapeutic regime of COVID-19 patients in the special hospitals. Herein, we described the features of 220 relatively mild COVID-19 patients from a shelter hospital, as well as evaluated the therapeutic efficiency of an antiviral drug, Arbidol.

Methods

Our retrospective cohort from the East-West-Lake shelter hospital was composed of 220 laboratory-confirmed COVID-19 patients from 12 January 2020 to 2 March 2020. Approval for the retrospective analysis was obtained from the Ethics Commission of Shanghai East Hospital, China. The privacy rights of human subjects were protected all long. The clinical features of different therapeutic groups were exhibited in Table 1. Doses of antiviral drugs were as follows: Arbidol, 200 mg, 3 times a day for 4–8 days; Oseltamivir, 150 mg, 2 times a day for 4–8 days; Ribavirin, 500 mg, 2 times a day for 4–8 days;
Ganciclovir, 500 mg, 2 times a day for 4–8 days. Statistical analysis was performed using SPSS 17.0. Appropriate statistical methods were applied according to different data types.

**Results**

Firstly, we described general characteristics of the retrospective cohort (Tables 1 and 2). They were mild type (1 case) or common type (219 cases) COVID-19 patients according to the updated guidance [2]. Among them, male patients had a higher risk of fever than females (odds ratio (OR) = 2.47, 95% confidence interval (CI):1.25–4.89, p = 0.01). They also tended to get more onset symptoms (≥ 3) than women (OR = 1.88, 95% CI:1.08–3.27, p = 0.03). (Table S1)

Afterwards, we found that fever resolved more slowly in patients without Arbidol administration (hazard ratio (HR) = 0.69, 95% CI: 0.48, 0.99, p = 0.02). In comparison with other antiviral drugs (91.2% Oseltamivir), we also discovered significant improvement in Arbidol group (HR = 0.58, 95% CI:0.37–0.92, p = 0.02). Besides, in males and patients with lower-grade fever (≤ 38.5°C), Arbidol showed superior efficacy in fever recovery (HR = 0.59, 95% CI:0.37–0.95, p = 0.03; HR = 0.57, 95% CI:0.34–0.95, p = 0.03). (Figs. 1 and 2)

Subsequently, we observed that negative-converting rate of nucleic acid within 14 days in non-Arbidol group was lower than that of Arbidol group (OR = 0.47, 95% CI:0.24–0.91, p = 0.028). The effect of Arbidol was more remarkable when compared to patients without any antiviral drugs (OR = 0.23, 95% CI:0.10–0.57, p = 0.002). At the last assay, a total number of 14 patients still got non-negative results. In patients without Arbidol application, we saw higher non-negative rate compared with others (OR = 3.13, 95% CI:1.00-9.83, p = 0.049). Consistent with the above data, Arbidol showed obvious efficacy on viral clearance in males (OR = 0.27, 95% CI:0.11–0.66, p = 0.005 for negative-conversion within 2 weeks; OR = 8.40, 95% CI:1.70-41.42, p = 0.006 for not negative rate at last assay). In particular, we found that patients with not negative results in non Arbidol group were all males, which was improved noticeably in Arbidol group. (Tables 3 and 4)

The medium hospital day in patients without antiviral drugs and treated with Arbidol was 19 and 15.5, respectively (p = 0.02). Considering the influence factors, we further demonstrated that Arbidol might contribute to the reduced hospitalization times in younger patients (≤ 50 year). During our observation period, no obvious adverse reaction was noted in Arbidol treated patients. One case from Arbidol group presented with allergic skin rash due to Moxifloxacin and the medication had to be dis-continued. (Table 5)

**Conclusion**

In the retrospective COVID-19 cohort of 220 nonemergency patients form one shelter hospital, we analyzed and concluded that male patients had a higher risk of fever and more onset symptoms than females. Besides, Arbidol showed beneficial effects on fever recovery, viral clearance and shorter hospital
stay in these patients, especially in males. Double-blinded randomized clinical trials to determine the most effective treatments for COVID-19 are still needed. Finally, we hope that human beings can soon overcome difficulties together in the “war” against COVID-19.

Abbreviations

COVID-19
coronavirus disease 2019
SARS-CoV-2
severe acute respiratory syndrome coronavirus 2
OR
odds ratio
CI
95% confidence interval
HR
hazard ratio

Declarations

Ethics approval and consent to participate

The study was approved by Shanghai East Ethics Committee. Written informed consent was waived by the Ethics Committee due to the retrospective nature of this study and rapid emergence of this infectious disease.

Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare no competing interests.

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**Authors' contributions**

JH conceived, designed the study. WG, SC and KW analyzed the data and wrote the paper. RC, QG, JL, XW, YH, QY, SW, FW and LJ contributed to data acquisition and analysis. QL interpreted the data and put expert insights in this study.

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**Consent to publication**

All co-authors have approved the manuscript and agreed with the publication. This manuscript did not contain any individual person's data in any form.

**References**


**Tables**

Due to technical limitations, the tables are provided in the Supplementary Files section.

**Figures**
Figure 1

Time to fever recovery compared between distinct group based therapeutic strategies. HR (95%CI): hazard ratio (95% confidence interval).
Figure 2

Time to fever recovery compared between distinct group based on gender, age and maximum body temperature. HR (95%CI): hazard ratio (95% confidence interval).

Supplementary Files

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