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CASE REPORTS

Treatment of COVID-19 Complications at Home Conditions

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Abstract

This paper reports the clinical characteristics, diagnosis, and treatment of myself after being infected with Covid-19. After comprehensive treatment including nasal cannula oxygen therapy, antiviral and anti-infection therapies, liquid volume management, glucocorticoids, analgesia and sedation, blood tests control, anticoagulation, and thrombus prevention, and electrolyte balance maintenance, after 24 days finally my health situation was good. The purpose of this case report is to provide a reference for the clinical diagnosis and treatment of myself, in-home condition in this critical situation.

Keywords: COVID-19, clinical characteristics, clinical diagnosis, treatment, Favipiravir, Methylprednisolone

Introduction

In COVID-19 deep airway and alveolar destruction occurs due to inflammatory reaction resulting into severe pneumonia. In COVID-19, lung injury is not only due to viral damage to the tissues, but it is also due to the immune response that leads to activation of inflammatory cells and release of cytokines. In COVID-19, acute respiratory distress syndrome ARDS is produced due to mucinous or cellular fibro myxoid exudates, desquamation of pneumocytes and alveolar damage and hyaline membrane development. Within 5-7 days the disease becomes more aggressive due to pneumonia and respiratory failure. It is important to start the prompt and strong treatment for suppression of inflammatory response and cytokine storm.

Infection with COVID-19 can be classified into three stages of increasing severity [1]

Stage I: The early infection or viral response phase during which symptoms of upper respiratory tract infection dominate.

Stage II: The pulmonary phase when the patients develop full-blown pneumonia with all its associated symptoms.

Stage III: The hyper inflammation phase when patients develop acute respiratory distress syndrome (ARDS), sepsis, and kidney and other organ failures. (Fig.1) [2]

Case Report

Patient (myself) 45-years old, weight: 82 kg, Sex: Male, Blood group: A +, without concomitant diseases except dyslipidaemia. Cured 5 years ago for hypertension with Ramipril 2.5 mg x 1 / day. Hypertension subsequently dominated by physical activity and diet. Currently without medical therapy.

Infected with Co-Vid 19 at the end of October 2020. The first symptoms appeared on 31.10.2020 with fever up to 37.5 ° C, conjunctivitis, general weakness, sweating, back muscle pain.

On the third day the PCR test was performed which resulted positive for CO-VID-19.

On the same day I started the therapy with: Aspirin 100 mg / d, Enoxaparin 4000 UI x 2 (s/c) and antiviral therapy with Favipiravir: the first day 1600 mg x 2 and for 5 other days 600 mg x 2. Max temp 37.8 ° C. On the 5th day I also did a lung CT (Fig 2.)

On day 5 I had pain localized in the right zygomatic area and I suspected recurrence of right maxillary sinusitis. After we saw in CT- scanner the pulmonary opacities described above and with the suspicion of right maxillary sinusitis recurrence, I decided to start Dexamethasone 4 mg x 2 times a day and antibiotic therapy Ceftriaxone 1 g x 2 a

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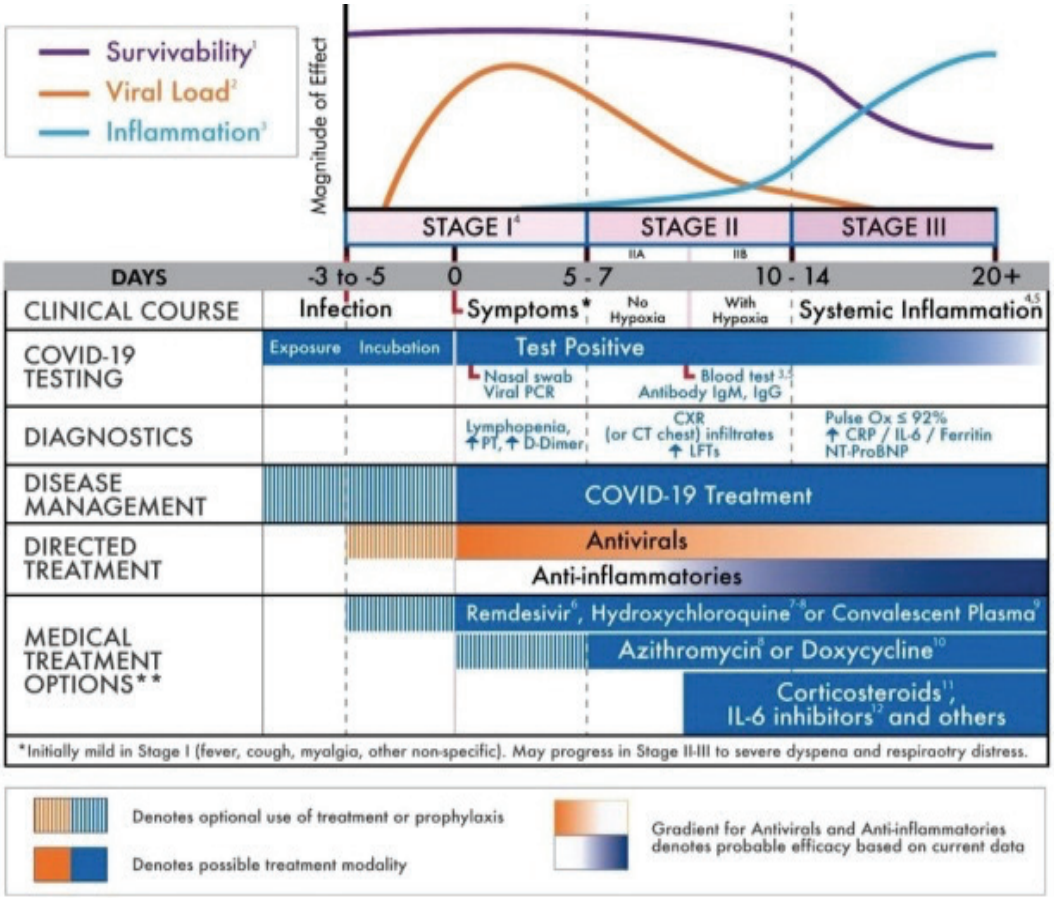


Figure.1 COVID-19 Clinical Stages and Management Strategy [2] (Reference 1-12)

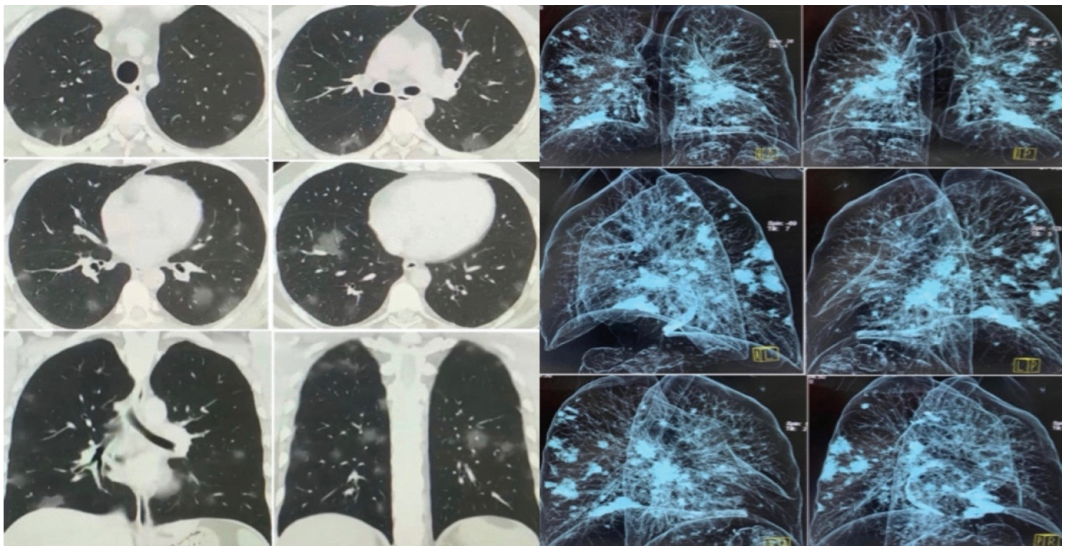


Figure 2. CT scanner 5th day, ground glass opacities with peripheral and bilateral distribution are observed, with the presence of dilated vessels inside the opacities

Pulmonary lobes	Involvment in %	Points
Right upperlobe	5-25%	2
Right middle lobe	5-25%	2
Right lower lobe	25-50%	3
Left upper lobe	5-25%	2
Left lower lobe	25-50%	3
CTSS (total)	**12 from 25 (moderated)48%**	

day + Levofloxacin 500 mg x 1/ day.

Day 7-8 max temp 37.2. I was relieved from the pain and discomfort from sinusitis.

Day 8 the situation started to get worse.

The temperature reached 38.5° C with shivering, O_2 saturation 92%, I noted a slight feeling of dyspnoea, HR started to increase up to 110 b / min.

Thinking that the situation from Covid19 was getting worse or maybe the fear of the beginning of a bacterial pneumonia, in consultation with my colleagues, I decided to start Methylprednisolone and Tazocine.

On day 9 another CT was realized (Fig.3).

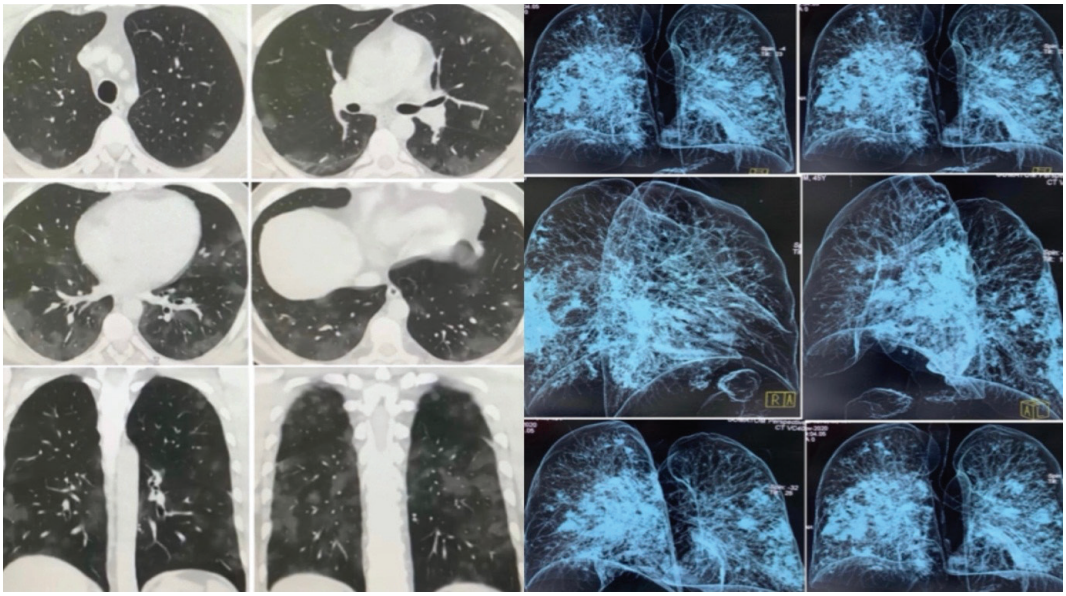
for Covid19 were at the highest levels. On day 12 the situation began to improve, Sat O_2 93%. The temperature started to drop to 37-37.5 ° C. HR ~ 110-125 /min at minimum efficiencies, especially during and after shower.

After the 16th day, the temperature was always below 37 ° C. What worried me was the tachycardia after small physical efforts.

To rule out any possible cardiac problems I did an echocardiography, where we did not detect any cardiac problem. Cardiac function was normal.

But dyspnoea during stair rising and at minimal efforts was present.

*Figure 3. CT scanner 9th day***,** there is a reduction in the density of opacities, with the spread of the affected area but without the appearance of new focuses, with a tendency for confluence (crazy-paving). A small focus of alveolar consolidation at the right pulmonary base is suspected.



Pulmonary lobes	Involvmentin %	Points
Right upper lobe	25-50%	2
Right middle lobe	5-25%	2
Right lower lobe	25-50%	3
Left upper lobe	25-50%	3
Left lower lobe	25-50%	3
CTSS (total)	**14 from25 (moderated)56%**	

Blood tests were repeated with alteration of erythro-sedimentation, neutrophils, and PCR was seen as in the table below. PCT procalcitonin resulted 1.9 ng/ml, a questionable result.

I decided that Levofloxacin should also be taken I/V.

During 9th-11th day, the condition continued to be the same, temp: 38.5°C; Sat O_2 90-91%; on the 10th day it was necessary to use 2-3 l of nasal O_2 and stay upside down in bed.

During these days I also did pulmonary gymnastics, balloon bloating and ball aspiration, to prevent alveolar atelectasis.

On the 11th day, I repeat the blood tests again. Markers

On the 17-th day, I did the PCR Covid19 test again, and the result was negative, I repeated the blood tests that were improving, I repeated the PCT, which resulted 0.13 ng / ml.

After the 18th day, as an anticoagulant, I started Xarelto (Rivaroxaban) 15 mg replacing Enoxaparin and Aspirin.

The clinical situation, laboratory data and complete treatment for both weeks will be summarized in the table below. (Tab 1)

57 days after the beginning of Covid-19, I made a control MRI of the lungs where you can observe some fibrotic bands in the posterior segments of the inferior lobes of both lungs. (Fig.4)

	Clinical outcomes			Blood results									Medical treatments					
Days	Temperature	Sat O2 %	HR/min in effort	WBC 10^3/µl	Neutrophils %	Lymphocytes %	PCR mg/l	Fibrinogen mg/dl	Ferritinemia ng/ml	D-Dimer ng/ml	RBC Sedimentation	Favipiravirl mg	Dexamethasone mg	Medrol mg	Ceftriaxone 2g/d iv	Tazocinl 4.5g *3/d iv	Levofloxacin 500mg/d iv	Clindamycin 600mg/ po
1	37.5	98	105															
2	37.6	97	104															
3	37.8	98	102	4.78	75	15	11.2	368	380	100	3	3200						
4	37.3	98	101									1200						
5	37.8	96	110									1200	8		+		+	
6	37.4	96	108									1200	8		+		+	
7	37.5	95	110	7.73	84.8	9.1	26.3					1200	8		+		+	
8	38.5	92	118										8	125	+	+	+	
9	38.7	92	121	13.60	90	4.3	84							250		+	+	
10	38.5	91	120											250		+	+	
11	37.4	93	122	15.33	90.1	3.6	126		1500	435	56			250		+	+	
12	37.5	93	124											125		+	+	
13	37.2	95	128											125		+		
14	36.8	96	125											80		+		
15	37.4	96	123											80				+
16	37.2	97	125											40				+
17	36.8	98	125	14.46	79	13	32	461	1147	777	25			8				+
18	36.4	98	120											8				+
19	36.5	98	117											8				+
20	36.6	98	115											4				
21	36.4	98	112											4				
22	36.3	98	115				5,6		936	225				4				
23	36.2	98	114											4				
24	36.3	98	112											4				

Table 1- Clinical outcomes

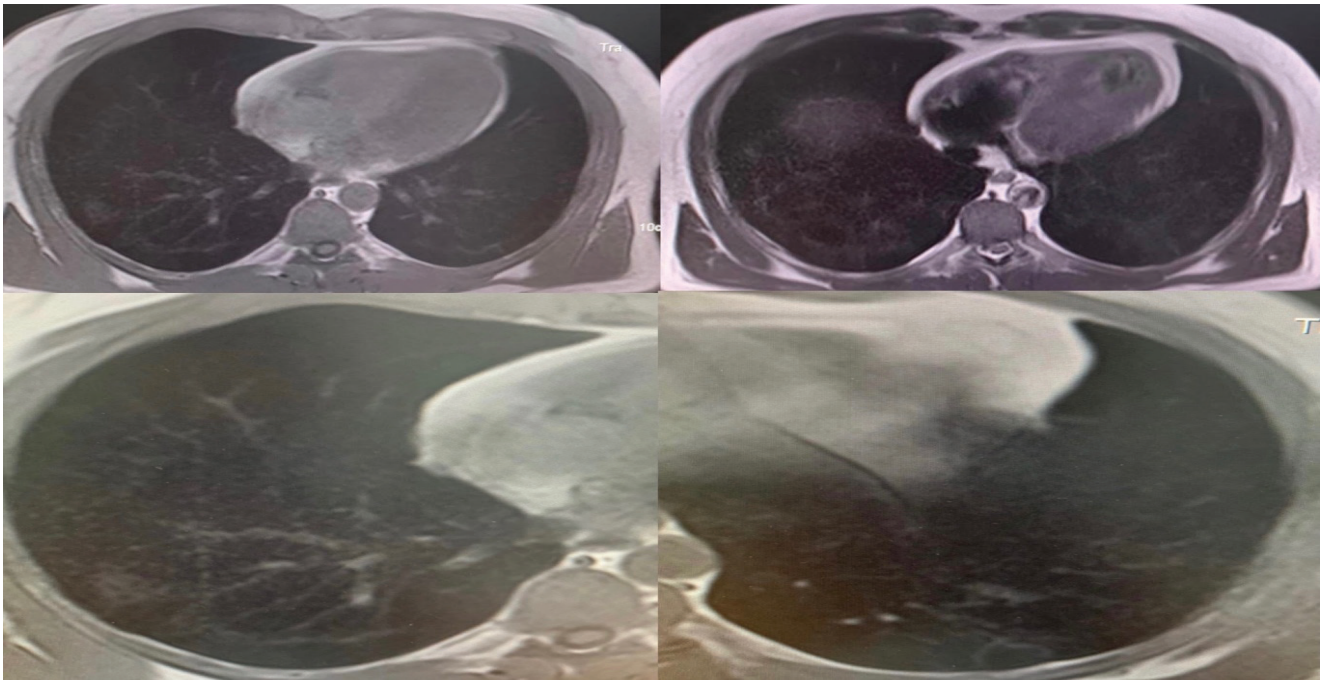


Figure 4. Control MRI after 57 days

Discussion

There is much discussion about the use of antivirals in patients infected with the corona virus. Favipiravir *(T-705; 6-fluoro-3-hydroxy-2-pyrazinecarboxamide)* is an anti-viral agent that selectively and potently inhibits the ribonucleic acid (RNA)-dependent RNA polymerase of RNA viruses [3]. In Japan, it is approved for use with novel influenza virus and is thought to be an effective drug for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Coronavirus disease 2019 (Covid-19) presents a complex pathology including inflammation, endothelial damage, thrombus formation, and acute respiratory failure [4, 5, 6].

This syndrome requires complex treatment to reduce viral genome amounts, anti-inflammatory drugs, and anticoagulation.

The decision to start Favipiravir was based on the use of Favipiravir in some infected colleagues a few months ago, with moderate pulmonary involvement. These patients did well, had no aggravation of the pulmonary situation and were treated at home, although they had moderate forms of pulmonary involvement.

There are many studies that support the use of Favipiravir for the first 10 days.

One of the studies is by a Japanese team, authored by Hitoshi Yamamura *(Posted 25 Jun, 2020)* Effect of Favipiravir and an anti-inflammatory strategy for Covid-19.

This study has aimed to evaluate the effect of cocktail (Favipiravir, steroid and heparin) therapy for severe Covid-19.

The treatment protocol of this study was as follows: oral Favipiravir (3600 mg on day 1, 1600 mg from day 2 to day 14), methylprednisolone (1000 mg for 3 days), and low molecular weight (2000 IU every 12 h) or unfractionated heparin (10,000–12,000 IU/day).

We decided to use methylprednisolone based on our experience with two patients who underwent heart surgery with valvular problems and CABG which were infected with coronavirus. Starting methylprednisolone at a dose of 250 mg /d significantly improved the pulmonary radiological repertoire and significantly affected the good performance of these two patients by extubation after 7 days.

The results are seen even in many studies but the most prominent with the authors: Maryam Edalatifard, Maryam Akhtari published in the European Respiratory Journal on: Intravenous methylprednisolone pulse as a treatment for hospitalized severe Covid-19 patients: results from a randomized controlled clinical trial

In this study, we assessed the intravenous methylprednisolone effect on the treatment of patients with severe Covid-19 patients. Clinical data showed that methylprednisolone administration at the beginning of the early pulmonary phase of illness improved remarkably pulmonary involvement, oxygen saturation, dyspnoea, HR, RR, temperature and inflammatory markers such as CRP and IL-6 serum level in patients, suggesting that methylprednisolone could be an efficient therapeutic agent for hospitalized severe Covid-19 patients at pulmonary phase [7].

Methylprednisolone administration was begun on the 8th day, when the Favipiravir administration stopped.

Conclusion

It should be noted that the situation I passed through was very difficult, viral pneumonia and bacterial overgrowth were important and the pulmonary situation could worsen. I think that aggressive treatment with the antiviral (Favipiravir) methylprednisolone, strong I/V antibiotics, and pulmonary gymnastics prevented this situation from getting worse.

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