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A Case Report of Successful COVID-19 Management Encompassing Underlying Diseases in Older Ages

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ABBREVIATIONS

2019-nCoV: 2019 novel coronavirus; Kg: Kilogram; PR: Pulse rate; RR: Respiratory rate; mmHg: millimeter of mercury; ECG: Electrocardiography; FBS: Fasting Blood Sugar; AST: Aspartate Aminotransferase; ALT: Alanine Aminotransferase; PT: Prothrombin Time; PTT: Partial Thromboplastin Time; LDH: Lactate Dehydrogenase; IU/L: Intra Unit per liter; BP: Blood Pressure; CT: computed tomography; N/S: Normal saline; WBC: White Blood Cell; RBC: Red Blood Cell; ADA: Adenosine de aminase

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ABSTRACT

Background: The total mortality rate of COVID-19 is estimated almost at 2 % based on a wide range of publications. To avoid negative global impact of this new emergency, the entailment of control measures for prevention is highly recommended. Unfortunately, Iran has been the manifestation of attention as one of the countries is struggling with this pandemic. Here we intend to report a unique case of 2019-nCoV infected patient with underlying diseases and one of the rare pulmonary manifestations of 2019-nCoV infection (pleural effusion) who has recovered and discharged.

Case presentation: The current case report from Iran showed a positive COVID-19 case accompanied by pleural effusion and severe pneumonia and even underlying diseases. She received twelve days of treatment and recovered with good oxygen saturation and without associated factors including fever and cough. In this report, presentations, diagnoses and management of novel 2019 coronavirus patient has been described in details.

Conclusions: The pleural effusion in 2019-nCoV is not a dominant feature and can be considered as one of the diagnostic features in the disease. Even with underlying diseases, 2019-nCoV symptoms are not supposed to be severed.

BACKGROUND

Since the end of December 2019, Wuhan City, has discovered multiple cases of novel coronavirus pneumonia, caused by a new beta coronavirus infection named 2019 novel coronavirus (2019-nCoV) [1]. 2019-nCoV is a new coronavirus strain which have never been found in human populations before [2]. The emergence of 2019-nCoV and its rapid national and international spread pose a global health emergency [3]. Previous studies have showed clinical characteristics of patients with 2019-nCoV and the evidence of person-to-person transmission [4]. There have been reported around 938205 cases, 47781 deaths, and 190943 recovered among 172 countries until date (02/04/2020) [5].

China could overcome transmission, by applying strict infection control measures, quarantine cases, update the treatment process and educate people [6]. Unfortunately, this pandemic entered in Iran and until 02/04/2020 around 47593 cases and 3036 deaths have been reported [5].

Here we intend to describe a 61 years old woman with nasopharynx and oropharynx swabs tested 2019-nCoV positive using qRT-PCR. This case showed pleural effusion unlike most of other 2019-nCoV infection patients while also is suffering from underlying diseases.

CASE PRESENTATION

In 8 March 2020; a 61 years old woman, citizen of Tehran city, who is married, 60 Kg weight, temperature at admission 38° C, RR 18 per min, PR 82 per min and blood pressure 130/80 mmHg. The main complaint at admission was coughing and fever. She has a history of diabetes, hypothyroidism, osteoarthritis and hypertension and went under angiography with implanted stent in her heart. It worth to mention that she is not allergic to any drugs nor food. Echocardiography and ECG had no pathological evidence.

On the first day of admission, she had discomfort in chest wall and she mentioned she had white sputum since 10 days ago. She was suspicious of COVID-19. Blood tests revealed: ESR 81 mm/h; CRP 3+; urea 39 mg/dl; FBS 221 mg/dl; AST 45 mg/dl; ALT 19 mg/dl; PT 12.5 sec; PTT 39 sec; LDH 432 IU/L; BP 130/80 mmHg; temperature 37.4° C. She vomited after having dinner on 19.55 pm. She took 150 cc N/S; diphenhydramine and ondansetron. In summary, she had nausea, sputum, fever, the symptoms had been strengthening in 10 recent days. The CT imaging (Figure 1) showed pleural effusion with grand glass involvement.

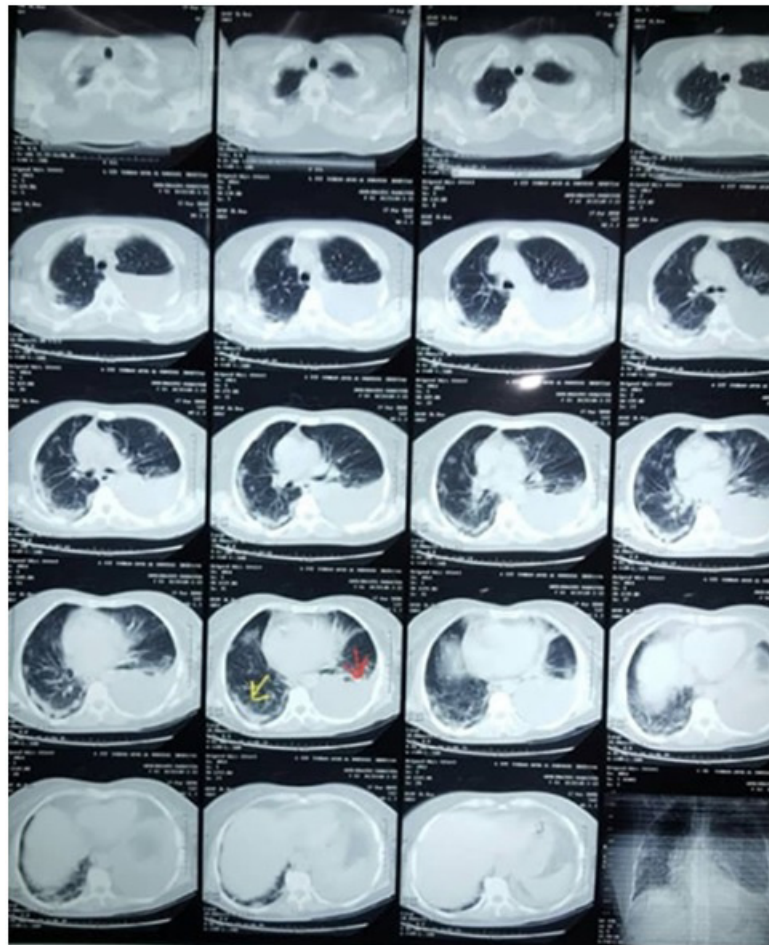


Figure 1. The CT image. Red arrow: Pleural effusion; Yellow arrow: peripheral ground-glass /consolidation opacity

Blood tests on 9 March revealed, calcium 8 mg/dl; phosphorus 3.5 mg/dl; WBC $3.6 \times 10^3/\mu\text{l}$; RBC $4.17 \times 10^6/\mu\text{l}$; Lymphocyte 22.4%; Neutrophil 64.3%; vitamin D3 32 mg/dl; LDH 432 IU/L. Additionally, blood culture was done on next day and the results showed no growth after 48 hours.

In 11 March, blood tests revealed FBS 161 mg/dl; LDH 427 IU/L. The assessment of pleural fluid revealed: 5.4 protein in fluid; 4.8 Albumin; glucose 143; PH 8, and cell count revealed 900 RBC and 1700 WBC, 1.5 % neutrophil and 85 % lymphocytes, furthermore, mesothelial cells have been seen. Pleural direct smear results showed no bacteria. Pleural fluid C & S showed no growth after

72 hours. 30 cc serous fluid with clear yellowish appearance has been taped from left pleural space under the guide of sonography.

In 16 March, 100 cc fluid has been seen in left pleural space and 40 cc of clear yellowish appearance fluid has been taped under the guide of sonography. The microbiology test results of assessment of pleural fluid revealed no acid-fast bacilli per 100 fields and WBC 4-5. ADA 19 U/L.

The FBS assessment during our treatment procedure (Table 1) and the clinical symptom report during our treatment procedure (Table 2) are shown in tables 1 and 2.

Table 1: The FBS assessment during our treatment procedure.

Date	FBS (mg/dl)
8-Mar	200
9-Mar	186
10-Mar	162
11-Mar	186
12-Mar	150
13-Mar	136
14-Mar	150
15-Mar	137
16-Mar	146
17-Mar	138
18-Mar	112

Table 2: The clinical symptom report during our treatment procedure

Date	Temperature (°C)	Puls (per min)	Breath (per min)	BP	O ₂ sat (%)	Time
				(mmHg)		(24 hr)
8-Mar	38	82	18	130/100		1.3
8-Mar	38.5	80	19	120/80		15
8-Mar	37.5	85	18	120/80		2
9-Mar	37.8	88	19	110/80		6
9-Mar	37.6	84	19	110/60		18
9-Mar	38	98	18	110/40		24
10-Mar	38.8	100	20	120/40	80%	6
10-Mar	38	98	20	110/20	92%	18
10-Mar	37.3	95	18	120/80	94%	24
11-Mar	37.5	94	18	100/60	92%	6
11-Mar	37.7	96	18	100/70	90%	16
11-Mar	37.5	90	18	100/60	91%	18
11-Mar	37.4	98	19	110/60	92%	22
12-Mar	37.5	90	20	100/60	90%	6
12-Mar	37.6	104	21	110/70	92%	18
12-Mar	37.5	81	18	120/80	94%	20
13-Mar	37	99	20	90/50	88%	6
13-Mar	37.5	90	18	110/80	90%	12
13-Mar	37	96	18	120/70	91%	18
13-Mar	37	80	18	130/70	90%	24
14-Mar	37.3	82	18	100/70	90%	6
14-Mar	37.3	81	18	110/70	96%	18
15-Mar	37.5	108	19	140/80	89%	6
15-Mar	37.7	120	18	110/80	97%	18
15-Mar	37.5	100	18	150/90	97%	24
16-Mar	37	98	18	140/80	91%	6
16-Mar	37	95	18	-	95%	18
16-Mar	37	86	18	130/70	90%	24
17-Mar	37	104	18	130/80	91%	6
17-Mar	36.5	90	20	140/70	90%	18
17-Mar	36.5	85	20	140/80	93%	24
18-Mar	36.8	85	18	140/80	93%	6
18-Mar	37	90	18	140/80	94%	12

The results of pleural fluid tests in comparison to serum LDH and serum protein amounts, showed that the pleural fluid nature was exudative with lymphocyte preference, this result rules out the possibility of appearance of pleural effusion due to other heart problems. The tapped pleural fluid had no empyema properties, therefore there was no need for fluid discharge by chest tube.

PCR test for corona COVID-19 came positive

The duration of drug admission is twelve days, and her fever fade away on the day 4. The treatment she received includes oseltamivir (75 mg) every 12 hours for 5 days from the first day of admission; Hydroxychloroquine (200 mg) every 12 hours for 5 days from the first day of admission; Ceftriaxone (1 g) every 12 hours and Clindamycin (600 mg) every 6 hours for the duration of one week from the first day of admission (for pleural effusion); and Oxygen therapy with mask. Symptomatic treatments included antipyretic (48 hours) and antiemetic (48 hours). Clindamycin has been stopped from the seventh day due to the appearance of diarrhea.

Kaletra (Lopinavir 200mg / Ritonavir 50mg: 2 times a day) 400/100 was used for the duration of 5 days every 12 hours from the first day of admission.

It should be mentioned that her previous drugs for diabetes, hypertension and heart problems continued as before. She received metformin and zip met for diabetes and metoral, losartan and atorvastatin for cardiovascular disease. After endocrinology consultation, diabetes medicine was changed to melijent.

Fortunately, in spite of multiple underlying diseases and the first report of pleural effusion in our entire patients, she had good appetite without fever in 11th day of admission. Finally, she discharged on 19 March with good general condition and O₂sat of 95%. The patient was advised to quarantine herself at home for two weeks.

DISCUSSION AND CONCLUSION

WHO has shifted its attention to wide range outbreak of 2019-nCoV as an international pandemic concern [6]. Furthermore, epidemiological data for situational awareness in order to take an intervention strategy undeniably is crucial [7]. There have been several studies concerning vertical transmission potential of 2019-nCoV [8]; therefore, it seems that isolation is proper choice [9]. Our patient never been in Wuhan, China.

The severity of viral pneumonia in older ages susceptible people with underlying disease have been reported high [10]. Older ages and underlying diseases are risk factors for severe illness and death. Cardiovascular disease 10.5%, diabetes 7.3%, and for chronic respiratory disease, hypertension, and cancer approximately 6% each. Underlying diseases including hypertension, heart disease, prior stroke, chronic lung disease diabetes, and chronic kidney disease are associated with more severe illness and worse outcomes [11]. However, the patient we reported in this article presented an

inconsistent situation. We speculate the reasons for the recovery of our patient; the combination of drugs and the treatment plan was effective, the interactions of drugs checked and some medicines replaced successfully.

We indicate an interesting case report study from Iran, who was managed successfully against all the underlying diseases she had. According to the clinical manifestations, healing was unpredictable due to the underlying diseases. Previous studies showed that the presence of pleural effusion in patients infected with MERS-CoV or avian influenza H5N1 is a poor prognostic indicator [12]. Unlike the previous studies, our patient healed from 2019-nCoV.

In summary, our patient showed common pulmonary manifestations of 2019-nCoV (ground glass and consolidation infiltration), as well as non-common pleural effusion pulmonary manifestation. Due to the characteristics of the pleural fluid and its exudation, the incidence of pleural effusion as a result of cardiac causes is ruled out.

Compared to RT-PCR, chest CT imaging may be a more reliable, practical, and rapid method to diagnose and assess 2019-nCoV, especially in epidemic area [13]. However, our current limitation in 2019-nCoV management is the inability to test patients more than one time for each patient. Our patient discharged based on clinical manifestations and O₂sat percentage, with home-based quarantine recommendation for 2 weeks. She must follow up to determine when CT will return normal.

The pleural effusion in 2019-nCoV is not a dominant feature and can be considered as one of the diagnostic features in the disease. Clinical data on 2019-nCoV infection are increasing constantly, therefore, it is important to keep all the specimens for in-depth study and continuous follow-up observation of future generations.

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