

FIRST ENCOUNTER WITH COVID-19

Dr Chen Tongyuan, Dr Angelia Chua

ABSTRACT

This is a case report of an adult patient with severe community-acquired pneumonia secondary to Coronavirus Disease 2019 (COVID-19) infection seen in a local primary care facility. The paper reflects on the challenges faced and offers suggestions to aid future encounters.

Keywords

Coronavirus Disease 2019, COVID-19, Primary Care, Pneumonia, Adult

SFP2020; 46(4): 80-82

CASE PRESENTATION

A 36-year-old man, Chinese National work pass holder, was seen in the polyclinic in early February 2020. He presented with a temperature of 39.9°C upon triage and was attended to in the respiratory infection cluster clinics.

He reported a five days history of persistent fever, cough and sore throat. He had consultations thrice in a private clinic since the first day of symptoms and had completed a course on antibiotics in addition to the usual medications for his acute symptoms. He had started to experience slight breathlessness after his last clinic review five hours ago. He had no cardiac, gastrointestinal, urinary or skin symptoms. He was very worried if he had Coronavirus Disease 2019 (COVID-19) and came to the polyclinic for a COVID-19 test if available.

He had no significant past medical history and was an ex-smoker. He shared a rented flat with his flatmates. His residence was not situated within a dengue hotspot. He worked as a deliveryman and had no known contact with positive COVID-19 cases.

On examination, the patient was anxious and was hyperventilating (respiratory rate of 32 breaths/minute). He was able to speak in short sentences. His other vital signs were

deranged – heart rate 140 beats per minute, blood pressure 108/70mmHg, oxygen saturation (SpO₂) 86% on room air. Heart sounds were normal. There was reduced air entry in the right upper zone. The trachea was central. The throat was injected with no tonsillar enlargement or exudates. There were no cervical lymph nodes or palpable goitre. There was no meningism or rash. Calves were supple, and no pedal oedema was detected.

Diagnosis

Severe Community-Acquired Pneumonia, to exclude COVID-19 infection.

In the absence of travel or contact history, the patient did not fulfil the Ministry of Health Suspect Case Definition active at that time.¹

MANAGEMENT OF THE CASE

Immediate resuscitation was done in the treatment room. Six litres of supplemental oxygen was administered via a face mask, which helped to improve his SpO₂ to 94%. An intravenous cannula was inserted and normal saline was infused rapidly.

Electrocardiogram done showed sinus tachycardia of 147 beats per minute. There was no suggestion of right heart strain, S1Q3T3 pattern, ST elevation or heart block to suggest pulmonary embolism or cardiac infection.

The patient was conveyed via ambulance to the nearest hospital. The clinic was notified the next day that the patient was intubated and admitted into the intensive care unit. He was diagnosed to have COVID-19 infection. The patient required about one week of ICU care and was subsequently discharged well in early March 2020 after an 18 days inpatient stay.

LITERATURE REVIEW

The patient presented with symptoms of fever, cough and breathlessness similar to the first six COVID-19 positive patients requiring supplemental oxygen described in the early Singapore data.² Unlike these earlier cases, this patient was much younger (36 years old vs mean age of 56 years old) and had no comorbidities (compared to 67 percent of the cases).

The American Association of Family Physicians (AAFP)³ and American College of Chest Physician⁴ supported the use of vital signs such as temperature, heart rate, respiratory rate in the diagnosis of pneumonia in outpatient care. A 2019 meta-analysis⁵ of 13 publications also showed that presence of respiratory rate ≥ 20 min/min (positive likelihood ratio, LR+ 3.47), temperature $\geq 38^{\circ}\text{C}$ (LR+ 3.21), pulse rate >100 min/min (LR+ 2.79) aid in the diagnosis for pneumonia. Comparatively, symptoms do not contribute well to diagnosing pneumonia with low specificity and sensitivity values, and have LR+

CHEN TONGYUAN

Year 2 Family Medicine Resident,
National Healthcare Group (NHG) Polyclinics

CHUA HWEE LING ANGELIA

Consultant Family Physician,
National Healthcare Group (NHG) Polyclinics

ranging from 1.27 for sputum and dyspnea to 1.41 for fever.

For diagnosis and prognosis tools specifically for COVID-19 infections, a meta-analysis⁶ published in BMJ has urged caution before adopting them in clinical practice. Thirty-one tools described in 27 published and pre-print studies reported good to excellent performance estimates but were found to have a high level of bias when reviewed in four domains (participants, predictors, outcome and analysis). For example, selection bias was detected as two groups of patients were excluded viz. those who had not recovered by the end of the study period, or have rapidly recovered and lost to follow up, affecting the tools' performance and applicability. The paper acknowledged the impetus for these tools, but serves to remind us to be watchful for limitations in the influx of new information daily.

LEARNING POINTS

1. Staying vigilant

This patient was atypical in his risk factors and severity, particularly when community spread was rare. As the disease can progress rapidly, heightened observance allows identification of new cases, triaging patients to receive timely treatment and for healthcare workers to adopt appropriate infection control measures.

Being in my first pandemic, this case has also reinforced the notion of primary care being an essential custodian for public health. The exemplary case of three General Practitioners sounding the alarm bells to the Zika Outbreak in Aljunied back in 2016⁷ echoes that our efforts need to continue beyond this current pandemic, and being ever watchful for the next.

2. Improving the capture rate of pneumonia

First impressions of this patient were misleading – observing him walk briskly into the room and being able to speak well in short sentences. A quick general inspection, however, alerted that patient was persistently tachypnoeic and disproportionately tachycardic (Liebermeister Rule describes that an increase of 1°C body temperature typically raises heart rate by about eight beats per minute⁸). His poor oxygen saturation concurred with his severe condition, and patient was promptly transferred to the treatment room where resuscitation equipment was available. Following this case, pulse oximetry (Oxygen saturation, SpO₂ and pulse rate) was included to augment our clinic's triaging for high-risk patients with a respiratory infection. During the consultation, assessing for high respiratory rate in patients with Acute Respiratory Illness (ARI) symptoms would also help in the diagnosis of pneumonia.

3. Mental Health

With the psychological stress generated from combating the pandemic, WHO has highlighted the importance of mental health and welfare of healthcare workers.⁹ Despite having seen the patient in Personal Protective Equipment (PPE), there was great trepidation and poor sleep during the overnight wait for this patient's COVID-19 swab result, and over the two weeks for fear of contracting the disease. The debrief encounter done with clinic head on the day of the

patient's diagnosis, and the support from colleagues checking in regularly definitely helped to ensure I was coping well both mentally and physically.

CLINICAL PRACTICE POINTERS

1. A high index of suspicion

As the situation rumbles on, we need to look for anomalies in the presentation in patients, be mindful of possible cognitive pitfalls (e.g. severe illnesses being less common in the young and premorbid healthy patients) and carefully evaluate medical information available.

2. Sharpening clinical acumen

Utilizing pulse oximetry for heart rate and SpO₂, and assessing for tachypnoea may assist in the diagnosis of pneumonia among patients with acute respiratory symptoms.

3. Staff welfare

The COVID-19 pandemic has placed a strain on our healthcare system. Ensuring a caring and supportive working environment around us, and looking out for every member of the team (from frontline staff who had attended to suspected cases to operations and support staff ensuring our processes are running smoothly and our workplaces are sterilized) would truly be important for us to pull through this trying time together.

REFERENCES

1. Ministry of Health. Revision of Suspect Case Definition For 2019 Novel Coronavirus (2019-nCoV), MH 34:24/8 [internet]. Singapore: Ministry of Health; 2020 [cited: 2020 May 16] Available from: https://www.primarycarepages.sg/Documents/News/2020/MOH%20Cir%20No%2019A_2020_25Jan20_Update%20on%20situation%20and%20suspect%20case%20definition_Drs.pdf
2. Young BE, Ong SWX, Kalimuddin S, et al. Epidemiologic Features and Clinical Course of Patients Infected With SARS-CoV-2 in Singapore [published online ahead of print, 2020 Mar 3] [published correction appears in JAMA. doi: 10.1001/jama.2020.4372]. JAMA. 2020;323(15):1488-94. doi:10.1001/jama.2020.3204
3. Ebell MH. Predicting Pneumonia in Adults with Respiratory Illness. Am Fam Physician. 2007 Aug 15;76(4):560-2.
4. Hil AT, Gold PM, El Solh AA, et al. Adult Outpatients with Acute Cough Due to Suspected Pneumonia or Influenza: CHEST Guideline and Expert Panel Report. Chest. 2019;155(1):155-67. doi:10.1016/j.chest.2018.09.016
5. Htun TP, Sun Y, Chua HL, Pang J. Clinical features for diagnosis of pneumonia among adults in primary care setting: A systematic and meta-review. Scientific Reports. 2019;9(1):7600. Published 2019 May 20. Doi: 10.1038/s41598-019-44145-y
6. Wynants L, Calster BV, Bonten MM, Collins GS, Debray TP, Vos MD, et al. Systematic review and critical appraisal of prediction models for diagnosis and prognosis of COVID-19 infection. BMJ. 2020Apr7;369. doi: 10.1136/bmj.m1328
7. The Straits Times. Rise in Zika cases: How doctors at Sims Drive clinic pieced puzzle together [internet]. Singapore: Singapore Press Holdings; 2016 [cited 2020 May 16]. Available from: <https://www.straitstimes.com/singapore/health/how-doctors-at-sims-drive-clinic-pieced-puzzle-together>
8. Seneta E, Seif FJ, Liebermeister H, Dietz K. Carl Liebermeister (1833–1901): A Pioneer of the Investigation and Treatment of Fever and the Developer of a Statistical Test. Journal of Medical Biography. 2004;12(4):215–21. doi:10.1177/096777200401200411
9. World Health Organisation. Mental health and psychosocial considerations during the COVID-19 outbreak [internet]. World Health Organisation; 2020 [cited 2020 May 16]. Available from: https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf?sfvrsn=6d3578af_2