CASE REPORT

Community-acquired Covid-19 Cluster among Non-Clinical Staff in a Teaching Hospital, Malaysia

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ABSTRACT

A novel coronavirus, COVID-19 is responsible for the current outbreak of pneumonia. As of 16 September 2021, a total of 2,049,750 COVID-19 cases were recorded in Malaysia. In this study, we aimed to describe a cluster of COVID-19 cases among non-clinical staff in a teaching hospital in Kuala Lumpur Malaysia. We obtained epidemiological and clinical data from patients with confirmed COVID-19, via phone interviews and patient medical records. We performed chronological mapping of the cases to identify the possible period, mode of transmission, and cluster pattern. Three laboratory-confirmed COVID-19 cases were identified from the teaching hospital cluster. These three cases were linked epidemiologically to the religious gathering cluster in Malaysia. Seventy-four close contacts consisting of teaching hospital staff were quarantined. The median incubation period was four days (IQR 1-7). The need for intensified surveillance and a high level of alertness is vital to minimise the risk of widespread transmission in Malaysia.

INTRODUCTION

The world was alerted of a cluster of atypical viral pneumonia cases occurring in Wuhan, Hubei Province in China, towards the end of 2019. Subsequently, cases began to emerge at a remarkable pace in China, and outside China, and on 30th January 2020, the World Health Organization declared a public health emergency of international concern (PHEIC) as other countries began to report cases.[1] In Malaysia, the first three COVID -19 cases (on 25th January 2020) were tourists from Wuhan, who travelled from Singapore to Johor Bahru, a Malaysian state bordering Singapore. This first wave consisted of 22 cases that were related to the history of travel from Wuhan. Subsequently, the second cluster consisted of people attending a religious gathering in Sri Petaling from 27th February to 1st March 2020.[2] The congregation was attended by 19,032 people, and this included 1,500 foreigners. From this cluster, cases started to increase at a remarkable speed. As of 16th April 2020, the total cumulative cases were 5182 cases and 84 deaths. The total number of patients who had recovered was 2,766 people. The Malaysian government imposed the Movement Control Order (MCO) on 18th March 2020, and the country was under this order till the end of April 2020.[3] In the city of Kuala Lumpur, Malaysia, a new cluster of COVID-19 cases was detected in a teaching hospital among non-clinical staff, which was identified in March 2020. Thus, the sole purpose of this report is to describe in detail the COVID-19 cases that occurred in the teaching hospital.

METHODOLOGY

Contact tracing in the epidemiological investigation was performed on every staff who was confirmed positive by PCR test and reported to the Crisis Preparedness and Response Center (CPRC) Hospital Canselor Tuanku Muhriz (HCTM). Chronology mapping was conducted among the patients to get detail of close contacts. All close contacts from line listing were followed up and clinical samples (nasopharyngeal aspirates or

nasopharyngeal swabs) for SARS-CoV-2 diagnostic testing were obtained, and they were given home surveillance order. The data collected from the epidemiological investigation was further analysed to identify any clusters that existed among the hospital staff. The case series among three non-clinical HCTM staff were determined based on the chronological mapping and epidemiological link of disease transmission. This research has obtained ethical approval from the Research Ethics Committee, The National University of Malaysia (email: sepukm@ukm.edu.my) with reference number UKM/ PPI/111/8/JEP-2020-420 (Date of Approval: 25 June 2020).

FINDINGS

The CPRC of HCTM alerted that three individuals with the same department acquired COVID-19 on 26th March 2020. These three people were later identified to be linked epidemiologically to two other affected individuals, relatives who were among religious gathering clusters which were the most prominent cluster in Malaysia.

Through detailed and history-taking, we managed to obtain all direct or prolonged close contacts among these three COVID-19 patients. A total number of 74 close contacts to these three cases were quarantined. From Case 1, 14 people were identified as close contacts, including Case 2. Out of these 14 people, six have symptoms, including Case 2, and two of them were admitted due to their comorbidity. However, only Case 2 was found to be positive. Another 48 people were identified as close contact for Case 2, including Case 3. Out of 48 people, three have symptoms excluding Case 3, but she was found to be positive. From Case 3, another 12 people were identified as close contact. Out of these 12 people, three have symptoms, two were admitted due to their condition, but all were found to be negative. Summary of the three cases related to the cluster as described in Table 1. The case summary includes the cases series description. The daily scenarios of each case are documented.

Table 1: Summary of cluster cases in the teaching hospital.

Case 1: NS, 23y/o, Malay, Female. No past medical history	
13/3/2020, staff's office at HCTM	NS started to have a fever. No other symptoms. Took Paracetamol medicine by herself.
16/3/2020, ED of HCTM	NS presented with a complaint of persistent fever for a week. She was treated as a Viral Upper Respiratory Tract Infection (URTI). She was given a Medical Certificate for three days by the Emergency Department (ED) of HCTM and advised to
17/3/2020, ED of HCTM	NS is staying with her parents and young brother. Both her parents presented at ED of HCTM with a complaint of fever and cough for three days. They were treated as Person Under Investigation (PUI) in view of their contact with her relatives who were among whom went to a religious gathering on 12/3/2020. Both her parents were sent back home with medicine and asked to be self-quarantined.
18/3/2020, HKL	NS has a persistent fever with a temperature of 38.2 ºC associated with vomiting and diarrhea at home. In view of her parents that her relatives were admitted to Hospital Sg. Buloh due to COVID-19 positive, she went to Hospital Kuala Lumpur (HKL) for further assessment. She was then treated as PUI. Her 1st swab was taken, and she was discharged with medicine and home quarantine for 14 days.
19/3/2020, HKL	The 1st swab of NS parents was found to be COVID-19 positive. Both her parents were admitted to HKL.
20/3/2020, HKL	CPRC of HCTM was informed by NS that her 1st swab done in HKL was positive for COVID-19. She was admitted to HKL. Due to dehydration, she was given IVD. NS's younger brother who stays together is well and asymptomatic. A swab from him was also taken, and he was put under a home quarantine order too.
24/3/2020, HKL	NS still having on and off fever. Her oxygen saturation was noted to be low, and she was put on a nasal prong. NS's father's condition was found to be worsening, he was transferred to ICU, HKL on 25/3/2020.
28/3/2020, HKL	NS's brother was noted to have COVID-19 positive and was admitted to HKL.
31/3/2020, HKL	NS's father passed away.
1/4/2020, at home	NS, mother, and her brother's second swab were negative, and they were discharged with another 14 days home quarantine.

Case 2: AN, 23y/o, Malay, Female. No past medical history	
13/3/2020, staff's office at HCTM	AN was in contact with Case 1 (NS) who worked side by side with her and ate lunch together.
16/3/2020, staff's office at HCTM	AN started to have a headache with no other symptoms. Only took a rest. AN still goes to work daily until 20/3/2020 except 19/3/2020. She took leave to go back to her hometown.
20/3/2020, staff's office at HCTM	CPRC of HCTM received a notification that NS was positive COVID-19. A few staff related to NS were identified including AN and were asked to home quarantine. All staff related to NS were referred to Cheras District Health Office for further management.
22/3/2020, Cheras District Health Office	Together with all other staff, AN first swab was taken at Cheras District Health Office. They received a 14 days home quarantine order.
23 - 26/3/2020, at home	AN started to develop a headache, sore throat, cough, myalgia, arthralgia, loss of appetite, and fever. However, she did not seek any treatment from anywhere. She only took analgesics and antipyretics.
26/3/2020, at HCTM	Second swab Day 13 for AN was taken at HCTM. The swab was found to be COVID-19 positive. Other swabs taken on that day were negative. She was then informed and arranged for admission at the teaching hospital.

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Case 3: SS, 33 y/o, Female. Underlying comorbid: Hypertension on Amlodipine 5mg daily.	
19/3/2020, staff's office at HCTM	SS went to HCTM for her new placement at a different unit.
20-24/3/2020, at home	Due to the Movement Control Order (MCO), SS work from home.
25/3/2020, staff's office at HCTM	SS came to work to settle a few documents.
26/3/2020, at home	SS was informed by the CPRC of HCTM that she was among the contacts for AN who was found to be positive for
27/3/2020, at home	Together with all other staff, SS's first swab was taken at Cheras District Health Office. They received a 14 days home quarantine order. SS stays with her sister, who is a staff nurse at HCTM. SS does practice self-quarantine at home where she does most of her daily activities in her room only including eating.
2/4/2020, at HCTM	Second swab Day 13 for SS was taken at HCTM.
3/4/2020, at home	SS second swab was found to be COVID-19 positive. Her other friends' swabs taken on that day were negative. She was also told by the DHO Officer that they had just been informed that her first swab was also positive. She was then informed and arranged for admission at HCTM. SS is

Figure 1 explained the epidemiological link of the three cases in the cluster. Case 1 started to have a fever one day after her parents received a visit from their relatives. Case 2 started to have a headache four days after the last meeting with Case 1. Case 3 is asymptomatic but found to be positive seven days after the last meeting with Case 2. The median incubation period of SARS-CoV-2 was four days (IQR: 1-7 days). The serial interval between the transmission pairs ranged between 1 day to 7 days.

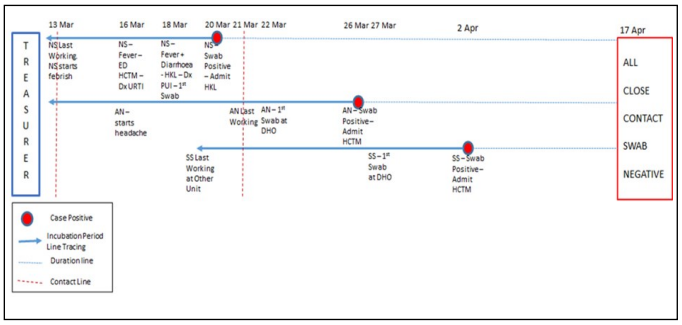

Figure 1: Epidemiological link of the cluster.

LESSONS LEARNT

We reported three cases of community-acquired COVID-19 showing one cluster of local transmission in HCTM. This community-acquired COVID-19 was linked to the religious gathering held on 27th February-1st March 2020. This gathering was attended by 19,032 people. Out of this, 15,970 were screened, and 1,465 were positive.[4] The Ministry of Health Malaysia, Director-General also mentioned that 711 cases had infected their family members.[5]

The Ministry of Health has detected five "generations" of COVID-19 linked to this religious gathering.[5] From our analysis of the three case studies in HCTM, Case 1 is the third "generation" which is then transmitted to Case 2. Subsequently, Case 2 passed on the virus to Case 3 in close proximity in the same department. The CPRC team of HCTM which operated 24 hours, seven days a week, managed to successfully contain the cluster from becoming more widespread among the workers and the community. Enforcement and strict isolation to all close contacts, which involved home monitoring for early symptoms were implemented on all contacts of the three cases. We followed them up with daily WhatsApp messages to enquire about their status as part of our strict surveillance system. We have obtained excellent cooperation from all the CPRC staff of HCTM that were involved.

From this case study, we can see that SARS-CoV-2 is transmissible within the community. We observed similar reporting from a Singapore study.[6] Both Malaysia and Singapore received a high volume of tourists/travelers from China every year, before the enforcement of lockdown in Wuhan and all of China, and before the implementation of travel restrictions between countries. Malaysia has implemented travel restrictions for travelers from China since 9th February 2020.

CONCLUSION

In conclusion, enhanced surveillance, detailed and concerted effort are essential to minimise the risk of widespread transmission in the country. Public health measures are extremely important to perform active case findings among close contacts with these cases. Therefore, the future outbreak of highly contagious disease can be prevented.

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AUTHOR STATEMENTS

The authors declare no competing interests.

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