EPIDEMIOLOGICAL CHARACTERISTICS OF THE FIRST CLUSTER OF COVID-19 IN MAGETAN DISTRICT – EAST JAVA, 2020

Frans Abidondifu¹, Fariani Syahrul², Agoes Yudi Purnomo³.

¹ FETP Student, Faculty of Public Health, Airlangga University
² Department of Epidemiology, Faculty of Public Health, Airlangga University
³ Magetan District Health Office.

Corresponding authors: Frans Abidondifu, email: abifrans.pb@gmail.com

ABSTRACT

Background: Coronavirus Disease 2019 (COVID-19) is a new type of disease that had never been identified in humans. The virus that causes COVID-19 is called Sars-cov-2. Magetan district Government first reported a confirmed COVID-19 case on March 19, 2020, and until 6th April 2020, there were cluster of infections with 9 COVID-19 confirmed cases. This study aims to describe the epidemiological characteristics of the COVID-19 cluster in Magetan District.

Method: This research is a descriptive study that was done by collecting COVID-19 information from the contact tracing data of the Magetan district health office from 19th March to 6th April 2020, including gender, age, onset data, symptoms, exposure history, and types of laboratory examinations, risk factors, and residence.

Results: COVID-19 data up to April 6, 2020 had one group of COVID-19 cluster from the Bogor cluster: 9 patient confirmed cases: 44.44% were aged 50-59 years, 66.67% were Females, 44.44% were housewife, CFR COVID-19 CFR was 11%, 66.67% are close contacts, nasopharyngeal swabs and 100% positive COVID-19 had oropharynx, 44.44% had sore throat and 33.33% had cough, average of 14 days as the incubation period, patients spread in 3 districts with 66.67% in Ngariboyo District.

Conclusion: COVID-19 Bogor cluster is the initial source of transmission in Magetan District. COVID-19 transmission in Magetan District is through close contact with the government must increase the testing capacity and centralized isolation for all suspects of COVID-19 cases. The government conducted a screening at the entrance of the area for the perpetrators of the trip and intensified contact tracing in the public health centre area. Involve all leaders across sectors and stakeholders in the community for information distribution. Encourage the movement of citizens concerned about COVID-19 prevention in their respective neighbourhoods.

Keywords: COVID-19, Cluster, Epidemiology, Magetan.
BACKGROUND

On January 30, 2020, the director general World Health Organization (WHO) declared the New Corona Virus Disease (COVID-19) outbreak as a public health emergency of international concern. A cluster of pneumonia cases of unknown origin in Wuhan, China raised concern among health officials in late December 2019. On December 31, an alert was issued by the Wuhan Municipal Health Commission, a rapid response team was dispatched to Wuhan by the China Center for Disease Control and Prevention (CDC China), and notification has been made to the World Health Organization (WHO) [1]. Chinese authorities confirmed that COVID-19 is spreading from person to person after identifying clusters of cases among families, as well as transmission from patients to health workers. Monitoring the rate at which new cases emerge, and when symptoms began for each case, will reveal how easily the virus passes between humans and whether the outbreak has the potential to persist [2].

There are at least two types of coronavirus that are known to cause diseases that can cause severe symptoms, such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Coronavirus Disease 2019 (COVID-19) is a new type of disease that has never been previously identified in humans. The virus that causes COVID-19 is called Sars-CoV-2. Coronavirus viruses are zoonotic (transmitted between animals and humans). Research states that SARS is transmitted from civet cats to humans and MERS from camels to humans. Meanwhile, the animal that is the source of transmission of COVID-19 is still unknown [3].

An unprecedented pneumonia outbreak of unknown etiology in Wuhan City, Hubei province in China emerged in December 2019. A new coronavirus was identified as the causative agent and was later called COVID-19 by the World Health Organization (WHO). Considered a relative of Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS), COVID-19 is caused by a betacoronavirus named SARS-CoV-2 which affects the lower respiratory tract and manifests as pneumonia in humans [4]. The patient’s clinical manifestations were consistent with viral pneumonia. Most of the patients had a severe and unproductive cough after disease onset, some had dyspnea, and nearly all had normal or decreased leukocyte counts and radiographic evidence of pneumonia [5].

Coronavirus disease (COVID-19) is an infectious disease caused by the newly discovered corona virus [6]. COVID-19 patients are a source of infection, and asymptomatic carriers are also transmitted to other healthy people. Everyone is generally susceptible to viruses which are mostly transmitted by droplet or contact, the route of transmission to be reached the easiest [7]. Currently, close contact recommendations focus on those who came into contact with cases after the onset of symptoms and 2 days before symptom development, which is in line with the national close contact guidelines for COVID-19 in China. More evidence base is needed to evaluate transmission during the incubation period and its importance and contribution to the COVID-19 epidemic [8].

Prevent infection and slow transmission of COVID-19, by doing the following: wash your hands regularly with soap and water, or clean with an alcohol-based hand rub. Maintain a distance of at least 1 meter between and people who are coughing or sneezing. Avoid touching your face, and cover your mouth and nose when coughing or sneezing. Stay home if you feel unwell and don't smoke and other activities that weaken the lungs. Practice maintaining your distance by avoiding unnecessary travel and staying away from large groups of people. Clean and sterilize frequently touched surfaces on a daily basis, including counter surfaces, telephones, light switches, door handles and knobs [6].

Based on the latest situation report in Indonesia as of April 6, 2020, the number of people examined was 13,186, of which 2,491 people were positive for COVID-19, 209 died (positive for COVID-19), and recovered (positive for COVID-19) as many as 192 people. There are 12 affected areas where local transmission has occurred, and the province of East Java is one of them. East Java local transmissions occur in Kediri District, Malang District, Magetan District, Sidoarjo District, and Surabaya City [9,10]. The District Health Office of Magetan reported confirmed cases of COVID-19 on March 19, 2020, with the number of initial confirmed cases as many as cases (case number 09) with symptoms of fever.
and sore throat. There were 4 index cases (national case serial number 25, 26, 64 and 68) who were residents of Magetan who participated in the Seminar in Bogor from 25 to 28 February 2020. The contact between the confirmation case serial number 68 and his close contact occurred in the sub-district Babat, serial number 68 was treated at the Sidoarjo Regional Hospital and died [11].

The number of cases of COVID-19 confirmation in Magetan District has increased in the vulnerable period of 3 weeks in Magetan District. This analytical descriptive study aims to quickly and accurately describe the epidemiological characteristics of the COVID-19 confirmed case cluster in Magetan District. The availability of fast and precise data enables the speed of response of COVID-19 case handlers. In addition, assisting health workers in describing cases based on epidemiological variables, facilitating the identification process of other cases in the community and contributing as a medium of information for cross-sectoral understanding of the COVID-19 problem.

METHOD
This research is a case report study using analytic observational research method. The combination of the two methods above aims to provide a quick overview of the results of field activities in the framework of policy making and as a media for public education information. This research was conducted at the Magetan District Health Office, East Java Province, since by analyzing secondary data from the results of the COVID-19 confirmation case contact tracing report from 19 March to 06 April 2020. Data collection was carried out from 1 to 6 April 2020. Data collected consisting of data on exposure history, symptoms, close contact, risk factors, onset data, laboratory data, and other supporting data.

CASE DEFINITIONS
Cluster is a group of people with the same health event. Confirmed cases are cases that were confirmed as members of the community who attended a seminar in Bogor and the RT-PCR results were positive for SARS-CoV-2. Close contact is a person or family member who meets or performs physical activity with a confirmed case (probable) within 1 meter and more than 15 minutes.

EXAMINATION
The diagnosis as a confirmation case in this cluster is determined based on the results of laboratory tests, namely the RT-PCR (reverse transcriptase polymerase chain reaction) examination to detect the presence of RNA. SARS-CoV-2. [11, 12].

RESULTS
Confirming case history.

February 25-28 2020:
As many as 4 residents of Magetan district participated in Seminar activities in Bogor, West Java, and became index cases number 25, 26, 64, and 68. Case 68 was a case without symptoms and died on March 27, 2020.

March 6, 2020:
Case 64 had previously undergone treatment at a hospital in Central Java, and was visited by his family who later became close contacts with cases number 09, 42, 43, 45, 46 and 47. Case number 64 died and his case was recorded in Java province Middle. Close contact tracing of 4 index cases by the Surveillance Team found 18 close contacts with the following details; numbers 25 and 26 were 5 close contacts, number 64 had 6 close contacts, and numbers 68 had 7 close contacts.

March 27 and 28, 2020:
Case 68 died and the results of the RT-PCR examination came out.

Laboratory examination
Throat swab and nose swab specimens were collected for 3 index cases and 18 close contacts for diagnosis. The laboratory examination results on 21 specimens showed 9 confirmed (positive specimens SARS CoV-2). The confirmed cases consisted of 3 index cases number 25, 26 and 68 and 6 close contacts from case number 64.
Table 1. Characteristics of the COVID-19 cluster according to age, sex, symptoms, occupation, risk factors, type of specimen, laboratory examination results, incubation period, location of transmission and case fatality rate.

| Characteristics          | Amount (N) | Proportion (%) |
|--------------------------|------------|----------------|
| **Age**                  |            |                |
| 0 - 5                    | 0          | 0              |
| 6 - 19                   | 1          | 11.11          |
| 20 - 29                  | 2          | 22.22          |
| 30 - 39                  | 0          | 0              |
| 40 - 49                  | 2          | 22.22          |
| 50 - 59                  | 4          | 44.44          |
| ≥ 60                     | 0          | 0              |
| Age, y, median (SD)      | 39.7 yr    |                |
| **Gender**               |            |                |
| Male                     | 3          | 33.33          |
| Women                    | 6          | 66.67          |
| **Symptoms**             |            |                |
| Fever ≥38 ° C            | 2          | 22.22          |
| History of fever         | 2          | 22.22          |
| Cough                    | 3          | 33.33          |
| Flu                      | 2          | 22.22          |
| Sore throat              | 4          | 44.44          |
| Hard to breathe          | 1          | 11.11          |
| Headache                 | 1          | 11.11          |
| Nausea                   | 1          | 11.11          |
| Tired                    | 1          | 11.11          |
| Diarrhea                 | 1          | 11.11          |
| No symptoms              | 1          | 11.11          |
| **Profession**           |            |                |
| Traders                  | 2          | 22.22          |
| Housewife                | 4          | 44.44          |
| Student                  | 2          | 22.22          |
| Farmer                   | 1          | 11.11          |
| **Risk Factors**         |            |                |
| Travelers                | 3          | 33.33          |
| Close contact            | 6          | 66.67          |
| **Types of laboratory examination specimens** | | |
| Nasopharyngeal Swab      | 21         | 100            |
| Oropharyngeal Swab       | 21         | 100            |
| **Laboratory Confirmation** | | |
| Positive                 | 9          | 42.86          |
| Negative                 | 12         | 57.14          |
| **Incubation period**    |            |                |
| Average time             | 14         | day            |
| **Location of transmission** | | |
| Ngariiboyo               | 6          | 66.67          |
| Magetan                  | 2          | 22.22          |
| West                     | 1          | 11.11          |
| **Fatality rate for COVID-19 CFR** | 1 | 11.11 |

Confirmed cases aged 50-59 years constitute the largest proportion (44.44%). Of the 9 confirmed cases, more women (66.67%) than men. And work as housewives (44.44%). The most common symptoms were sore throat (44.44%), and cough (33.33%). The risk factors for the COVID-19 cluster came from cases who travelled to attend seminars in Bogor,
Central Java (33.33%) and close contacts (66.67%). Diagnosis was made by taking nasal swab specimens (100%) and throat swabs (100%), and performing RT-PCR examinations with positive SARS CoV-2 results (100%). Incubation period of 14 days. Figure 1 shows the first symptom of morbidity reported on March 10, 2020 and the peak of the confirmed COVID-19 cluster cases on March 20, 2020. The longest time was 23 days and the shortest time was 10 days (Median 2). Areas with reported confirmed cases were spread across 3 sub-districts, with the highest cases in Ngariboyo sub-district (66.67%), followed by Magetan sub-district (22.22%) and West sub-districts (11.11%) (figure 2). Death rate in confirmed cases of COVID-19 (11.11%) (table).

DISCUSSION

Our results indicate that the transmission began when 4 residents of Magetan district returned from traveling to attend Seminar activities in Bogor City and was followed by close contact transmission. The spread of COVID-19 between border areas is because early detection and management of suspected cases are not carried out at the point of entry. And to prevent further spread of confirmed cases it is necessary to carry out strict travel restrictions and centralized quarantine [13, 14, 9, 15]. Most confirmed cases are in the 50-59 years age group and the least is in the 6-9 years age group. The 50-59-year-old group is a high-risk group who are very susceptible to infection. The mean age of confirmed cases was 39.7 years, which indicates that cases are a productive age group that has a high level of mobility and age grouping is used as a risk identification strategy for disease severity. Age cannot be attributed singly as a risk factor because it must interact with other risk factors, such as work, lifestyle (smoking, hand washing habits) and others. Age grouping is carried out to formulate prevention strategies and priorities for age groups at risk [16, 17].

More cases of confirmed female sex (66.67%) than men and working as housewives (44.44%). If we look closely, this is in accordance with the activities of cases in the home environment so that it has the risk of being a close contact [16, 17].

In general, in this cluster of cases of confirmation of COVID-19, patients experienced symptoms of sore throat (44.44%), cough, fever and also several other minor symptoms (table). In this cluster there was one (1) asymptomatic or asymptomatic confirmatory case (case 68). The asymptomatic confirmation case (case 68) has the potential to cause the patient to not realize that he is sick so that he does not come to a health care facility such as a public health centre or Hospital for examination or treatment. Asymptomatic conditions will also worsen the patient's prognosis and are a potential source of infection [18, 19, 20, 13, 14].

In addition to the close contact factor as an initial diagnosis of confirmed cases in this cluster, laboratory examinations were also carried out using throat swab specimens and nasal swabs in all 21 (100%) cases consisting of 3 index cases and 18 close contacts. Laboratory tests using the RT-PCR method with positive results confirmed SARS CoV-2 (100%) [23].
Epidemic curves depict the shortest time to first appear symptoms of COVID-19 on March 10 and the longest on March 23, 2020 (Median 2). The increase in cases occurred on March 20 as many as 4 cases. Based on the onset data, the estimated cases of exposure to COVID-19 using the shortest incubation period in the cluster are counted down based on the minimum incubation period of disease, which is 14 days, so it is confirmed that cases of exposure to COVID-19 on February 25, 2020 or on the first day of opening the Seminar in Bogor . This estimate is in accordance with the schedule or time of the seminar [17,18,19].

Confirmation cases of COVID-19 in Magetan District with the most cases in this cluster are consecutively in Ngariboyo (66.67%), Magetan (22.22%) and West (11.11%) Districts. The confirmation case in Ngariboyo District came from close contact with case 64, where all cases were family members where the level of closeness and sense of security was the cause, causing transmission [14].

The mortality that occurred in this confirmation case cluster (11.11%) shows a high number compared to the number of existing cases and is relatively small. The high CFR in this cluster illustrates the quality of case handling such as delays in intervention, care and treatment of cases resulting in death. This high CFR illustrates the readiness of the Regional Government and the Community in Magetan District in an effort to deal with the COVID-19 pandemic in their region that has not been maximized in the early stages of the outbreak [24,28].

CONCLUSION

Data for COVID-19 until April 6, 2020, there is one group of COVID-19 clusters in Magetan District from the Bogor cluster and transmission occurs through close contact with confirmed cases totalling 9 cases. The government carries out screening at the regional entrance for travellers and intensifies contact tracing in the public health centre area. The government is required to increase the centralized testing and isolation capacity for all suspected COVID-19. Involving all leaders across sectors and stakeholders in society for information distribution. Encouraging the movement of citizens to care about the prevention of COVID-19 in their respective communities.

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