CLINICAL MANIFESTATIONS AND OUTCOMES OF COVID-19 IN THE ELDERLY GROUP: OBSERVATIVE COHORT STUDY

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Indonesia has the 4th largest number of elderly population in the world. Recent studies, had shown that elderly population was associated by higher risk for developing severe infection and worse outcome compared to general population. While growing number of evidence support those finding, few local study had shown similar result. This study was aimed to describe clinical manifestation and outcome of COVID-19 in elderly population. This Observational Cohort studies was conducted on subject admitted on Gelora Joko Samudro observation hut, Gresik for COVID-19 with mild or no symptoms (based on clinical symptom classification of COVID-19 infection of Indonesian Ministry for Health, 5th Revision July 2020) and age over 60 years old. Subjects aged 20-59 were enrolled as paired control group. From total 1238 patient, there are 24 (1.94%) subjects aged more than 60. Majority of the subject were male (75%), with average age 64.7±4.78 years old. Compared to the control group, elderly had lower incidence of symptomatic infection (HR 0.4 CI95% 0.16-0.77), lower incidence of negative conversion (HR 0.1 CI95% 0.03-0.30), longer duration of viral shedding (MD 3.8 CI95% 1.73-5.77) and longer day of inpatient (MD 4.1 CI95% 2.56-5.61). In conclusion, elderly population had lower incidence of symptomatic infection but had worse clinical outcome in negative conversion, duration of viral shedding and day of hospitalization.

Keywords: Elderly; COVID-19; Clinical Manifestation; Clinical Outcome.

INTRODUCTION

Indonesia has the 4th largest elderly population in the world, with 26.82 million people, 9.92% of the total population (He et al., 2016). This number is estimated to continue to grow until it reaches one-fifth of the total population in 2045 (Badan Pusat Statistik, 2020). In the era of the COVID-19 pandemic, the elderly are one of the groups with a high risk (UNFPA, 2020). Based on existing studies, the elderly group has a higher risk of infection, more severe clinical manifestations and worse outcome than the general population (Chehrehgosha, 2020; Ma et al., 2021; Pedreañez et al., 2021). The reason
behind this is still the subject of ongoing studies (B. Liu et al., 2021). Several existing studies link this with several possible causes, including: pro-inflammatory conditions in elderly patients, alterations in the transcription of several genes associated with the immune response, immune-senescence and cellular aging and the presence of co-morbidities (Lara et al., 2020; J. Liu et al., 2020; Meftahi et al., 2020; Perrotta et al., 2020).

Clinically the elderly group is associated with worse clinical findings such as: more extensive radiological features, multilobular lesions, bilateral lung parenchymal involvement, and sometimes less specific laboratory findings (Neumann-Podczaska et al., 2020; Perrotta et al., 2020; Ventura et al., 2021; Zhu et al., 2020).

This is also a factor that affects the high rates of intensive care and mortality in the elderly group. In absolute terms, the prevalence rate in the elderly group is quite small compared to other age groups, but relatively in the elderly group itself the mortality rate from COVID-19 is the largest compared to the mortality rate in other age groups (CDC COVID-19 Response Team, 2020).

An early understanding of the differences in clinical manifestations and outcomes in elderly patients will provide an overview, anticipatory opportunities and better treatment in the elderly group. This study aims to determine the clinical manifestations and outcomes of COVID-19 in the elderly group.

**RESEARCH METHOD**

This study was a cohort study of COVID-19 patients without symptoms/mild symptoms based on the criteria for the classification of the degree of COVID-19 infection by the Ministry of Health of the Republic of Indonesia, aged ≥60 years who were being treated at the Gelora Joko Samudro Observation Hut, Gresik Public Health Office, East Java Province from August 2020-August 2021.

The control group was taken at random, consisting of adult patients with an age range of 20-59 years and paired based on the similarity of sex to the subject group. The data used in this study was secondary data from medical records. The variables studied in this study were symptoms, negative conversion rate, duration of viral shedding and length of hospitalization.

The symptom variable used in this study refers to the criteria for symptoms of COVID-19 infection based on the COVID-19 Prevention and Control Handbook, which categorizes COVID-19 infection based on 5 symptoms, namely: asymptomatic, mild,
moderate, severe and critical (Kementerian Kesehatan RI, 2020).

The negative conversion rate variable used in this study refers to the evaluation of the results of the swab examination using the PCR (Polymerase Chain Reaction) test which was carried out after undergoing treatment. The subjects are said to have had a conversion if the result of the swab examination which was initially positive at the initial diagnostic examination and then on the evaluation examination after treatment got a negative result. Subjects are called not experiencing conversion if the results of the examination still show positive results.

The variable of decay duration used in this study was the number of days the subjects showed positive PCR (Polymerase Chain Reaction) results. It is carried out by calculating the duration of the subjects diagnosed to have a positive PCR (Polymerase Chain Reaction) result to experiencing conversion or being declared clinically cured based on the COVID-19 Prevention and Control Handbook (Kementerian Kesehatan RI, 2020).

The variable of inpatient used in this study was the length of days the subject was hospitalized, by calculating the duration between the first day of hospitalization to the day the subject was discharged. In this study, the data entry and tabulation process were carried out using Microsoft Excel 2016 and data analysis was carried out using SPSS 21 (Statistical Package For The Social Sciences 21).

**RESULT**

From a total of 1238 patients, 24 (1.97%) were elderly subjects. The majority were male (75%). The mean age of the study subjects was 64.7±4.78.

From the results of this study, there were significant differences in clinical manifestations between the elderly group and the control group (p 0.019) as listed in table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control Group</th>
<th>Elderly Group</th>
<th>HR (CI95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic infection</td>
<td>5 (20.80%)</td>
<td>14 (58.30%)</td>
<td>0.40 (0.16-0.77)</td>
</tr>
<tr>
<td>Mild Symptomatic infection</td>
<td>19 (79.20%)</td>
<td>10 (31.70%)</td>
<td></td>
</tr>
</tbody>
</table>

This study also found a significant difference in the negative conversion rate (p<0.0001) between the elderly group and the control group as listed in table 2.
Table 2. Negative conversion rates between the elderly and control groups

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Control Group</th>
<th>Elderly Group</th>
<th>HR (CI95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Conversion</td>
<td>3 (12.50%)</td>
<td>17 (71.00%)</td>
<td>0.10 (0.03-0.30)</td>
</tr>
<tr>
<td>Conversion</td>
<td>21 (87.50%)</td>
<td>7 (29.00%)</td>
<td></td>
</tr>
</tbody>
</table>

There were significant differences in the duration of viral shedding and length of hospitalization between the elderly group and the control group as listed in Table 3.

Table 3. Differences in the mean duration of viral shedding and length of inpatient in the elderly and control groups

<table>
<thead>
<tr>
<th>Variabel</th>
<th>Control Group</th>
<th>Elderly Group</th>
<th>Average Difference (CI95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of viral shedding</td>
<td>6.30</td>
<td>10.00</td>
<td>3.80 (1.37-5.77)</td>
</tr>
<tr>
<td>Length of inpatient</td>
<td>6.60</td>
<td>10.70</td>
<td>4.10 (2.56-5.61)</td>
</tr>
</tbody>
</table>

DISCUSSION

In this study, the incidence of symptomatic infection in the elderly group was lower than the control group. This finding is in line with several other studies which state that the majority of the elderly group generally experience asymptomatic infections or with atypical symptoms (Godaert et al., 2020).

In line with the findings mentioned in previous studies, there was also a worse clinical outcome in negative conversion rate, duration of viral shedding, and length of inpatient in the elderly group compared to the control group (Smorenberg et al., 2021; Zhang et al., 2021). Theoretically, these findings as mentioned in previous studies can be caused by disregulation of the immune system and the immune response (Abouhashem et al., 2020; Nehme et al., 2020).

However, there are several other factors that may indirectly influence the results. One of them is co-morbidity. This study found a significant difference in terms of comorbidity between the control group and the elderly group. The elderly group had higher comorbidities than the control group. In general, the incidence of comorbidities increases with age (Li et al., 2020). This can be a confounding variable because co-morbidity itself is consistently associated with a worse outcome of COVID-19 infection (Banerjee, 2020).

In addition, the limitations of this study are the number and characteristics of the subjects. Subjects used in this study were subjects with mild or
asymptomatic symptoms. Further studies are needed with a larger number of subjects including the elderly group with moderate and severe symptoms to get better results in the future.

CONCLUSION

The elderly group had lower symptomatic manifestations of COVID-19 infection but had a lower negative conversion rate and the duration of viral shedding and a longer length of hospitalization compared to the control group.

REFERENCES


