Outbreak Investigation: First 10 COVID – 19 Infection Related Deaths in Hodeidah, Yemen

ABSTRACT

Background: A lot of coronavirus disease 2019 (COVID-19) related deaths were reported in Yemen more than other countries raising the question about what risk factors contributing to this excess death? Hodeidah governorate at Western part of Yemen exposed to COVID-19 pandemic like other governorates in Yemen, adding to the current chronic problems. No study till now documented the COVID pandemic process in Hodeidah especially deaths

Objective: The aim of this short report is to explore more data about the first 10 COVID-19 related deaths in Hodeidah . Yemen.

Methods: A retrospective review of records of patients who died after were admitted in the Center of Tropical Medicine and Infectious Diseases (CTMID), AL-Thawrah Public Hospital Authority, Hodeidah, Yemen from 5th to 27th May 2020.

Results: During the study period, a total of 27 confirmed COVID-19 patients. The first 10 patients died giving case fatality rate (CFR) to 37.07 %. The age ranging was from 20-65 years with the median age of 42.5 years 6 deaths (60%) were at age over 50 Years while males are more exposed to deaths (80%) and deaths are more in residents of urban (80%) than rural areas (20%). Co-infections with other communicable diseases were reported in 3 died patients (30 %) ; tuberculosis, dengue and hepatitis B .While half of 6 died patients (60%) had non-communicable diseases namely, diabetes mellitus, heart disease, hypertension , chronic asthma, and chronic renal failure uncontrol. 1 death (10 %) of medication error in private sector (non – isolation center facilities)

Conclusion: Old age and co-morbidity with non-communicable diseases mainly diabetes mellitus , hypertension, and heart diseases may be contributing factors to excess deaths among COVID-19 patients. Co-infections with other viral infections like dengue is of high concern in Hodeidah, Yemen .

Keywords: COVID-19, Mortality , Hodeidah, Yemen

1. INTRODUCTION

COVID-19 is a respiratory disease that is caused by novel single-stranded positive sense RNA virus (nCoV-19) that was firstly isolated in December 2019 when emerged in Wuhan, China.[1,2] the resulting diseases so called COVID 19 which then emerged worldwide and

caused mortality globally at the rate of 3.7% till the 12th of March 2020 when declared by WHO as a pandemic[3].

The emergence of COVID-19 expanded to 216 country causing 356,254 deaths and 5,657,529 confirmed cases all over the world till May 29, 2020.[4] However, chronic pulmonary diseases and lower respiratory infections are two of the top ten global causes of death.[5].Disease severity is ranging from mild non-fatal respiratory illness to more serious complications that may lead to death while associated with chronic diseases or other communicable diseases.[6,7]

Mainly the more susceptible patients for mortality were those who experienced COVID-19 and a co-morbidity, with hypertension being the most common co-morbid followed by diabetes and coronary heart disease and older aged patients.[8-12] Clinical features of COVID-19 include Lower respiratory tract infection related symptoms mainly fever, dry cough and dyspnea as reported in the initial case series from Wuhan, China. In addition, headache, dizziness, weakness, vomiting and diarrhea were also observed. [13-15] In Yemen the first case was registered in April 10,2020 in Hadramout then emerged to other parts of the country. A lot of deaths were reported in Yemen more than other countries raising the question about what risk factors contributing to this excess death?

Hodeidah governorate at Western part of Yemen exposed to COVID-19 pandemic like other governorates in Yemen, adding to the current chronic problems. Hodeidah is facing complex spectrum of determinants of health; including poverty, illiteracy, food insecurity, malnutrition and multiple epidemics as well as humanitarian crises resulting from the ongoing armed conflicts since 2015. No study till now documented the COVID-19 pandemic process in Al-Houdiedah especially deaths The aim of this short report is to explore more data about the first ten COVID related deaths in Hodeidah in May 2020.

2. MATERIALS AND METHODS

A retrospective review of records of patients who died after were in the Center of Tropical Medicine and Infectious Diseases (CTMID), AL-Thawra Public Hospital Authority, Hodeidah, Yemen from 5th to 27th May 2020. This study was conducted in the first 10 death patients where the COVID-19 was the major cause of mortality. Independent variable studied were age, sex, co-morbidity. Data after being collected from were checked for completeness, entered into excel format then analyzed using tables and graphs, median, range, frequency and percentages are the main descriptive tools.

3. RESULTS

3.1. Socio-demographic factors

During the study period, a total of 27 confirmed COVID-19 patients were admitted to in Center of Tropical Medicine and Infectious Diseases (CTMID), AL-Thawrah Public Hospital Authority, Hodeidah, Yemen, out of them 10 patients died giving case fatality rate (CFR) to 37.07 %. All cases had Acute Respiratory Distress Syndrome (ARDS) for a period of week to two weeks before hospitalization. All the 10 deaths were confirmed having COVID-19 infection by using Real Time – Polymerase Chain Reaction (RT-PCR) technique. The general characteristics of patients were shown in Table 1. Their age ranging was from 20-65 years with the median age of 42.5 years. 6 deaths (60%) were at age over 50 years while males are more exposed to deaths (80%) and deaths are more in residents of urban 80% than rural areas 20% (Table 1). Clinically; the ideal clinical findings were present such as dry cough and difficulty in breathing and fever.

Table 1**:** General socio-demographic data of COVID-19 death patients in Hodeidah , Yemen (N = 10)

Variables	Number(n)	Ratio (%)
Gender		
Male	8	80
Female	2	20
Age		
<15	0	0
15-29	3	30
30 -49	1	30
50-59	3	30
60+	3	30
Residency		
Urban	8	80
Rural	2	20

3.2. Effect of Co-morbidity and Co-infection on COVID 19 Mortality

Mortality rate was high in patients that experienced COVID-19 in comorbidity with other infections as 3 (30%), mainly 1(10%) with tuberculosis, 1(10%) with dengue and 1 (10%) with hepatitis virus C ; moreover, 6 (60%) of comorbidity with non-communicable diseases namely 2 cases (10%) of diabetic and chronic asthma, 1 case (10 %) of diabetic and hypertension , 1 case (10%) of diabetic and heart disease , 1 case (10 %) heart diseases, hyperlipidemia, hypertension, , 1 (10%) of chronic renal failure uncontrol. Finally, 1 case (10%) of medication error of private sector (non – isolation center facilities) (Figure 1)

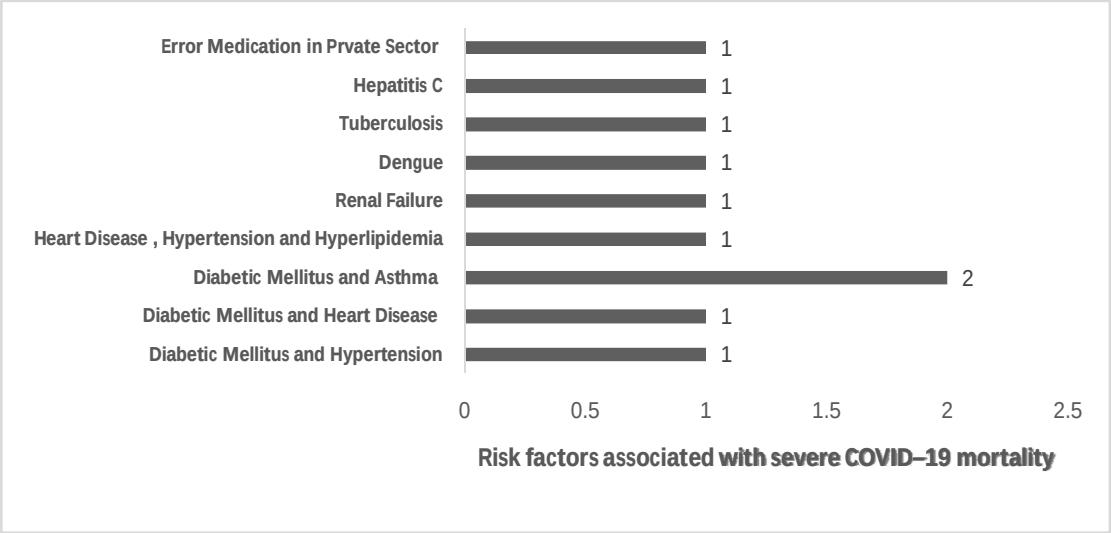

Figure 1: Risk factors associated with severe COVID–19 mortality (N : 10)

4. DISCUSSION

Since COVID-19 pandemic accelerates, governments are warning people at high risk to be particularly stringent in observing social distancing measures because if they become ill they are more likely to need critical care including ventilation, and to die.[20] However, in this study, patients access late to hospital with a serious critical condition. Males were more susceptible to develop death severity and this is inconsistence with other studies in China and Italy [16-18]and it may due to sex-based immunological or gendered differences, such as patterns and prevalence of smoking.[19-22] Elderly patients are at greater risk developing COVID-19 certainly upper that 60 years old, this was according to their underlying health condition with immune response. Infection Co-morbidities with COVID-19 increase the risk of mortality five times in older subjects.[20,21]Most commonly reported co-morbidities with COVID-19 and poses a life threat are diabetes, hypertension, cardiovascular disease and chronic obstructive pulmonary disease, this was similar to what was found in this study due to underlying immunodeficiency, which may made those patients more susceptible to COVID-19 complications and fatality [23-25,12].Futhermore, this study able to identify of co-infection between COVID-19 and dengue , the importance of this result is of high concern especially the study setting (Hodeidah) is a known place for dengue endemicity in Yemen

5. CONCLUSION

Old age and co-morbidity with non-communicable diseases mainly hypertension, diabetes mellitus and heart diseases may be contributing factors to excess deaths among COVID 19 patients. Co-infections with other viral infections like dengue is of high concern in Hodeidah, Yemen .

ETHICAL APPROVAL

The studies involving human participants were reviewed and approved by Ethics Committee of CTMID, Al-Thawara Public Hospital Authority, Hodeidah , Yemen and Tropical Medicine Center, Hodeidah University, P.O. Box 3114, Hodeidah, Yemen

CONSENT

Written informed consent for participation (family's death cases) was required for this study

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