Coronavirus Disease 2019 – Dengue Fever Coinfection : A Case Report

Abstract

A lot of coronavirus disease 2019 (COVID-19) related deaths were reported in Yemen 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 ~~diseases~~diseases' problems and endemic of vector – borne diseases namely malaria and dengue. The aim of this case report is to explore more data about COVID-19 – dengue fever coinfection related deaths in Hodeidah,~~.~~ Yemen,~~.~~ w~~W~~ith both infections ~~as~~ cause~~sof~~ high mortality rates. The case reported here shows a 25 -year-old male, cough, hypoxia, fever, difficult in breathing, 38 °C and bleeding from nose as major of symptoms with oxygen saturation (O_2) of 70 %, respiratory rate (RR) of 30 ipm, blood pressure of 120~~/~~ 80 mmHg, and heart rate (HR) of 120 bpm~~"~~. The patient was diagnosed with bilateral ground glasses opacity basedX~~x~~ ~~—~~ray with leukocytosis, lymphopenia, neutrophilia, and thrombocytopenia. The level blood sugar was normal , increase in liver enzyme was observed. Mild increase in serum creatinine with CRP was high reactivity with positive COVID-19 and hemorrhagic dengue fever. The patient ~~was died~~ passed awaywithin two hours in triage. In conclusion , the co-infections with other infection like dengue is of high concern and this is the first reported case of COVID-19 and dengue coinfection presented as stroke and highlights the complex context of diagnostic and therapeutic management in tropical settings such as Hodeidah, Yemen.

Keywords : COVID – 19 , Dengue , Hodeidah ,Yemen

Introduction

Coronavirus disease 2019 (COVID-19) is a respiratory disease caused by a single-stranded positive sense RNA virus that was first isolated in December 2019 after it

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Comment [NRBN1]: The authors did not justify on how frequent the two infections occurred concurrently and thus, failed to justify why this study is important. The authors need to address how frequent the co-infections of dengue with COVID-19 based on previous literature.

emerged in Wuhan, China [1,2]. In Yemen, the first case was registered on April 10, 2020 in Hadhramout [3], with further cases later identified in other parts of the country as the disease spread. Hodeidah governorate lies in the western part of Yemen, and has been similarly exposed to the COVID-19 pandemic to other governorates in Yemen, adding to the ongoing chronic challenges in the region. Hodeidah is facing a complex spectrum of determinants of health, including poverty, illiteracy, food insecurity, malnutrition and multiple epidemics as well as humanitarian crises resulting from the armed war that has been ongoing since 2015. At the time of writing, no research has been conducted ~~to document~~ documenting the COVID-19 pandemic in Hodeidah, especially related to morbidity and mortality. Several other notable disease outbreaks included malaria, dengue fever [4 -6], chikungunya [7], west – Nile virus [8], cholera [9], diphtheria [10 -11] and measles [12 -13] were reported in Hodeidah, Yemen. 49 /505 cases (severe and critical) were confirmed based on RT – PCR [14,15]. Al Kamarany et al reported 68.05 % of Hodeidah people exposure to COVID-19 infectionbased on immunological method [16]. Previous study reported a high prevalence of malaria – dengue coinfecion in Hodeidah, Yemen as the first time (37 %). These are due to a high density of vectors in this region and endemic areas for malaria and dengue [4]. Therefore, the aim of this case report is to explore more data about COVID-19 – dengue fever coinfection related death in Hodeidah. Yemen.

Case Presentation

The patient was ~~received~~ admittedand assessed clinically in triage unit of COVID – 19,isolation department, Center of Tropical Medicine and Infectious Diseases (CTMID), AL-Thawrah Public Hospital Authority, Hodeidah, Yemen. A 25 -year-old male, cough , hypoxia , fever , difficult in breathing , 38 °C and bleeding from nose as major of symptoms with oxygen saturation (O_2) of 70 %, respiratory rate (RR) of 30 ipm, blood pressure of 120/ 80 mmHg, and heart rate (HR) of 120 bpm" .Chest – radiography , complete blood count , C – reactive protein (CRP) , nasopharyngeal swab and dengue assay were carried out . The patient was diagnosed with bilateral ground glasses opacity with leukocytosis (26000 c~~C~~ell/mm^2) , lymphopenia (6 %) , neutrophilia (90 %) , thrombocytopenia (141 x 10^3 /L) , and a hemogram noted hematocrit 47%. The level blood sugar was normal (131 mg/dl) , increase in liver enzymes (51 IU of GPT and 157 IU of GOT) was observed. Mild increase in serum

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creatinine (1.6 mg/dl). On the other mean , increase the neutrophil \-/lymphocyte ratio (15 %) with CRP was high reactivity with positive COVID -19 and hemorrhagic dengue fever . The patient was died within two hours in triage. In conclusion , the co-infections with other infection malaria and viral infections like dengue is of high concern and this is the first reported case of COVID -19 and dengue coinfection presented as stroke and highlights the complex context of diagnostic and therapeutic management in tropical settings such as Hodeidah, Yemen.

Comment [NRBN2]: Please mention the type of test conducted to test for COVID-19.

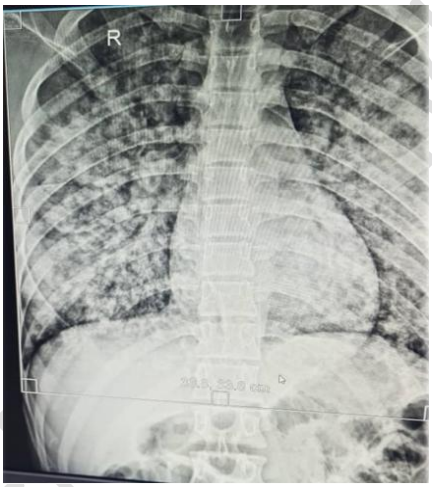

Figure 1. Chest X-ray shows peripheral and lower opacities of both lungs "Bilateral asymmetric - no pleural effusion with about more than 50 % of the lungs are involved.

Table 1. Results of haematological parameters

Parameters	Values	Normal values (17,18)
RBC ($\times 10^9$/L)	5.5	3500-5000
Hb (g/dl)	16.5	12-15
PCV (%)	45.3	35-45
WBC ($\times 10^9$/l)	26200	3.5±7.5
Neutrophil (%)	90	40-75
Lymphocyte (%)	6	20-45
Monocyte (%)	2	2-10
Eosinophil (%)	2	1-6
Basophil (%)	0	0-1
Platelets ($\times 10^3$/ul)	161	150-450

Table 2. Results of biochemical parameters

Parameters	Values	Normal values
Random Blood Sugar mg/dl	131	140-180
ALT IU/L	51	17-63
AST IU/L	157	0-37
Serum creatinine mg/dl	1.6	0.1 -1.2
Blood urea mg/dl	43	5-20
Na+ mmol/L	143	135-146
K+ mmol/L	5.0	3.5-5
CRP	43	Up to 6

Discussion

The study focused on epidemiological and clinical features of COVID -19 – dengue fever coinfection in Hodeidaadh, Yemen (while the COVID-19 pandemic takes the world by storm, dengue-endemic regions risk developing a co-epidemic in COVID-19/dengue coinfection). Several cases were emerged in different countries. In Philippines reported a 38-year-old male patient with high-grade fever, with complaints of nausea, joint, and muscle aches, all characteristic symptoms of COVID-19 and dengue but was not severe, although the tests confirmed the infections to be "moderate to severe" and showed steady and rapid recovery (19). Previous studies in Latin America reported that coinfection with SARS-CoV-2 and dengue virus is associated with worse outcomes with significant morbidity and mortality. The similar clinical and laboratory features of each infection are a challenge in accurately diagnosing and treating cases. Establishing an early diagnosis could be the answer to reducing the estimated significant burden of these conditions (20) . Two cases were reported in Maldives , Case 1 was a 39-year old Asian male, presented on day 6 of dengue infection with warning signs. Case 2 was a 38-year old Asian male, was admitted on day 5 of illness with symptoms of acute respiratory infection . Evaluation of progressive leukopenia and thrombocytopenia showed positive dengue serology (21).Study identified two pregnancies with dengue and COVID-19 co-infection; one ended with premature rupture of membrane and intrauterine growth restriction fetus, while the other one ended with maternal mortality and intrauterine fetal death. COVID-19 and dengue co-infection had worse outcomes regarding mortality rates, ICU admission, and prolonged hospital stay. Thus, wise-decision management approaches should be adequately offered to these patients to enhance their outcomes. Establishing an early diagnosis might be the answer to reducing the estimated significant burden of these conditions(22).COVID-19 and dengue co-infection was

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associated with severe disease and fatal outcomes. The correct diagnosis and treatment of co-infection poses a substantial challenge due to the overlapping clinical and laboratory parameters. Therefore, confirmative diagnostic tests are necessary for accurate and timely diagnosis and patient management(23). Finally , Old age and co-morbidity with non-communicable diseases may be contributing factorsto excess deaths among SARS-CoV-2 patients. Co-infections with other infections like dengue is of high concern in Hodeidah, Yemen (24,25).

Conclusion

The co-infections with other infection like dengue is of high concern and this is the first reported case of COVID -19 and dengue coinfection presented as stroke and highlights the complex context of diagnostic and therapeutic management in tropical settings such as Hodeidah, Yemen and may be contributing factor to excess deaths.

CONSENT

As per international standards or university standards, Participants' written consent has been collected and preserved in Medical File. The raw data are secured in CTMES – HU and CTMID, Hodeidah, Yemen.

ETHICAL APPROVAL

The studies involving human participants were reviewed and approved by the Ethics Committee of CTMES – HU, Hodeidah, Yemen.

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