Makerere University releases results Characteristics and outcomes of index patients diagnosed and treated for COVID-19 in Uganda

It is important that we build on the successes of the initial group of COVID-19 patients in Uganda to inform clinical care decisions for the other patients diagnosed

On Tuesday May 26, 2020, Makerere University (Mak) Management converged to share findings from the study whose aim of was "to detail characteristics and treatment outcomes of the Coronavirus (COVID 19) pandemic patients in Uganda". Coronavirus being a novel and rapidly changing pandemic, it was essential that early lessons are obtained and synthesised. These lessons directly feed into the clinical care guidelines and eventually contribute to the country's interventions. With funding from the Government of Uganda through the Makerere University Research and Innovations Fund (Mak-RIF), this study was successfully executed. The multidisciplinary research team was coordinated through the Makerere University Lung Institute (MLI) <u>http://mli.mak.ac.ug/</u>. This study was led by Dr. Bruce Kirenga, Director MLI, and Prof. William Bazeyo, Acting Deputy Vice Chancellor (Finance and Administration)-Mak as Principal Investigators. Other investigators were from Entebbe Regional Referral Hospital, Johns Hopkins University, Baltimore, USA, Uganda Peoples Defence Forces, The AIDS Support Organisation (TASO), Mulago National Referral Hospital, the College of health Sciences and Ministry of Health, Uganda.

This study was conducted on the first group of COVID-19 patients (56) at Mulago National Referral hospital and Entebbe Regional Referral hospitals. Patient enrolment has continued but below we exultantly share preliminary findings.

• Age: the average age of the patients in Uganda was 33 years which is far lower than has is reported elsewhere. In Wuhan China, for example, the average age is 59 while in the New York USA it is as higher (63 years). Older the patient have higher risk of severe forms of disease and ultimately the poorer treatment outcomes.

• **Patient Presentation:** Among symptomatic COVID-19 patients, the most common symptoms were fever (21.4%), cough (19.6%), runny nose (16.1%), headache (12.5%), muscle aches (7.1%) and fatigue (7.1%). However, more than half of the patients did not have any of these symptoms at diagnosis. These patients were largely travellers returning from abroad or contacts of the confirmed/symptomatic patients above. Unlike our patients, 80% of hospitalised patients in the western world were symptomatic.

• Laboratory and imaging tests: Coronavirus has been reported to affect almost all body tissues. To understand the extent of damage, our research team performed a wide range of tests including complete blood count, kidney function tests, troponin, lactate dehydrogenase which identifies for signs of damage to a wide range of body tissues, and C reactive protein-CRP. We found that 10.6% of the patients had low white blood cells, 26.3% had low platelets, and 12.8% had evidence of liver damage, while the kidneys had no evidence of damage. 12.2% had evidence of systemic inflammation and 43% had evidence of nonspecific tissue damage. The electrical heart activity was also checked with the electrocardiograph (ECG). All patients had normal ECG with the exception of one who had a very slow heart (bradycardia). We checked lung damage with Chest X-rays (CXR) and computed Tomography scans (CT). Three patients had significant lung damage on CT and CXR; while one of them had low oxygen saturation.

• **Comorbidity**: About 25% of the initial patients (56) reported having other medical conditions in addition to COVID-19. Most of the conditions reported were the non-communicable diseases such as hypertension and diabetes which accounted for 11%. High blood pressure (higher than 140/90mmHg) was the most common comorbid disease recorded in up to 28% of the patients.

• **Disease severity:** At admission, only 2 patients met the classification of severe disease (patients with severe respiratory symptoms requiring oxygen therapy) while the rest had mild disease. Temperature and oxygen saturation were monitored three times a day. All the patients recovered without the need for admission to Intensive care unit (ICU) or ventilation. This is contrary to what has been observed elsewhere, where 5% of COVD-19 patients required ICU care.

• **Treatment:** To-date, there is no known cure for COVID-19. The current treatments are meant to alleviate symptoms while waiting for the body to mount an immune response to fight off the infection. The patients were able to recover on supportive care through managing the symptoms, treatment with antibiotics for those who had evidence of bacterial infection, hydroxychloroquine and vitamin C. In instances where the patients had comorbid conditions, proper management of these conditions was part of the treatment.

Conclusion: The initial group of COVID-19 patients diagnosed in the country presented with mild disease and exhibited a clinical course of disease that is quite different from what has been observed elsewhere. Imaging and laboratory tests are critical in management of this disease. Prompt identification of patients and initiation of treatment could help to prevent the development of severe forms of the disease. Frequent monitoring of the oxygen saturation is also critical for rapid patient identification and treatment. In light of the increasing number of cases in the country, these findings help in informing the national preparedness plan for COVID-19 (capacity building of health workers in clinical care for COVID-19, the required logistics, continuous research).

Recommendations

1. Expand testing for COVID-19 in view of the finding that almost half of those confirmed did not have the classical symptoms for COVID 19. Add rhinorrhoea to symptoms for case screening.

2. Efforts should be taken to make clinical, laboratory and imaging tests available at all COVID-19 treatment centres to support proper grading of disease severity. At a minimum, pulse oximetry should be routine in management of COVID patients.

3. Capacity to diagnose and treat non communicable comorbid conditions should be built across the country as part of COVID 19 response. Equipment for proper diagnosis of these diseases should be secured, installed and effectively used.

4. Strengthen monitoring, evaluation and learning as part COVID-19 care. This will allow continued learning of COVID-19 in general and the effectiveness of the different treatments of the disease.

5. Research should be supported including biomedical sciences research. This will allow growth of locally generated evidence to support the country's COVID 19 response.

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