Update: August 29- September 1, 2020

UPDATE ON GLOBAL DEVELOPMENTS ON COVID-19

THE KNOWLEDGE SYNTHESIS TEAM
CDT-AFRICA, ADDIS ABABA UNIVERSITY
www.cdt-africa.org

Summary

- Patients with liver transplant are not at increased risk of death from SARS-CoV-2 infection.
- Experience from the Singapore response team indicated mapping of high risk COVID-19 countries and close follow-up on travellers from these countries may be advantageous in decreasing the border transmission of the virus. Warranting of travellers and issuing of QR code (when symptomatic) were also the major control measures undertaken.
- A health worker study from Palestine reported high level of stress. Major reasons for this were fear of transmitting the disease to their family members and not having training on the outbreak.

Recommendations

- Mapping high risk countries and tracking travellers from these countries seems an important but can prove complex.

Update on pathogenesis

- A multi-centre cohort study was done with the aim of assessing outcomes following SARS-CoV-2 infection in liver transplant recipients. The study was conducted between March 25 and June 26, 2020 and a total of 151 adult liver transplant recipients from 18 countries and 627 patients who had not undergone liver transplantation were included. Data were collected through two collaborating online registries: the COVID-Hep registry, coordinated by the University of Oxford and the SECURE-Cirrhosis registry, coordinated by University of North Carolina. The major findings of the study include;
    - There is no significant difference in proportion of hospitalization between liver transplant cohort 124 [82%] and the comparison cohort 474 [76%], p=0·106
    - Higher proportion of patients in the liver transplant cohort were admitted in the ICU 43 [28%] and also required invasive ventilation 30 [20%] compared to the control groups [ICU admission 52 (8%) and invasive ventilation 32 (5%), p<0·0001].
    - 28 (19%) patients in the liver transplant cohort and 167 (27%) in the comparison cohort died during the follow up period.
- The study concluded that liver transplantation did not significantly increase the risk of death in patients with SARS-CoV-2 infection (absolute risk difference 1·4% 95% CI –7·7 to 10·4) [Webb, G. J.,2020].

Update on Diagnosis

- A study was conducted to compare SARS-CoV-2 RNA copies found in saliva specimen and nasopharyngeal (NP) swab on a total of 70 inpatients with COVID-19, confirmed with a positive NP swab specimen at hospital admission. During their hospitalization, saliva specimens collected by the patients themselves and NP swabs collected from the patients at the same time point by health care workers (HCWs) were tested. The results showed more SARS-CoV-2 RNA copies in the saliva specimens than in the NP swab specimens. In addition, a higher percentage of saliva samples than NP swab samples were positive up to 10 days after the COVID-19 diagnosis. At 1 to 5 days after diagnosis, 81% of the saliva samples were positive, as compared with 71% of the NP swab specimens. The authors noted these findings suggest that saliva specimens and NP swab specimens have at least similar sensitivity in the detection of SARS-CoV-2 during the course of hospitalization. Because the results from NP swab specimens may vary with repeated sampling in individual patients, viral detection in matched samples over time was also evaluated. The level of SARS-CoV-2 RNA decreased after symptom onset in both specimens. In three cases, a negative NP swab specimen was followed by a positive swab at the next collection of a specimen; this happened only once with the saliva specimens. During the clinical course, less variation was observed in levels of SARS-CoV-2 RNA in the saliva specimens than in the NP swab specimens. A total of 495 asymptomatic HCWs were also screened for COVID-19 by using RT-qPCR to test both saliva and NP samples. SARS-CoV-2 RNA was detected in saliva specimens obtained from 13 persons who did not report any symptoms at or before the time of sample collection, which was later confirmed with additional NP samples. Of these 13 HCWs, 9 had collected matched NP swab specimens by themselves on the same day, and 7 of these specimens tested negative. In specimens collected from inpatients by HCWs, greater variation was found in human RNase P cycle threshold (Ct) values in NP swab specimens than in saliva. When HCWs collected their own specimens, greater variation in RNase P Ct values was found in NP swab specimens than in saliva specimens. It was highlighted collection of saliva samples by patients themselves negates the need for direct interaction between HCWs and patients. It was noted collection of saliva samples by patients themselves also reduces demands for supplies of swabs and PPE. The authors highlighted their findings provide support for the potential of

saliva specimens in the diagnosis of SARS-CoV-2 infection given the growing need for testing (Wyllie et al., 2020).

- Additional study was conducted on qualitative analysis of COVID-19 using droplet digital polymerase chain reaction (ddPCR). The study was done on a total of 117 samples from 30 patients with confirmed COVID-19 and 61 patients without COVID-19. RT-qPCR and ddPCR were used for qualitative and quantitative analyses of these samples to evaluate the diagnostic performance and applicability of the two methods. The positive detection rates of RT-qPCR and ddPCR were 93.3% and 100%, respectively. Among the 117 samples, 6 samples were tested single-gene positive by RT-qPCR but positive by ddPCR, and 3 samples were tested negative by RT-qPCR but positive by ddPCR. It was indicated that the viral load of samples with inconsistent results were relatively low. A severe patient was dynamically monitored and while all 6 samples from this patient were tested negative by RT-qPCR, 4 samples were tested positive by ddPCR with a low viral load. It was concluded that qualitative analysis of COVID-19 samples can meet the needs of clinical screening and diagnosis, while quantitative analysis provides more information to the research community. It was revealed that ddPCR showed higher sensitivity and lower limit of detection than RT-qPCR, and that it does not rely on the standard curve to quantify viral load (Dang et al., 2020).

Update on Public Health Control measure

- After the number of COVID-19 cases decreased in different countries, maintaining the low number of cases has become a new challenge. To prevent imported cases strict border control has been implemented. However, the economic implication of this approach is immense, and nations are trying to maintain a balance between preventing imported cases and reviving their economy.
- A case study in Singapore demonstrated less stringent but effective measures to prevent importing cases. The response team has mapped high risk COVID-19 countries and put-in place a close follow-up of travellers from these countries. Subsequently, the government set up a virtual system warranting travellers to declare any COVID-19 suggesting symptoms before travelling to Singapore. They made this a mandatory travel procedure, and those with symptoms will be issued QR code and they will be tracked and followed more closely as of their arrival.
- Travellers from low COVID-19 risk countries will receive health education and demonstrations at the terminal. After the health information dissemination and demonstrations, they will as

well be asked to disclose symptoms. Those with COVID-19 suggestive symptoms will be tested and subsequently sent to isolation.

- The case study involved a 21 years old student from Nottingham. He had a mere sore throat seven days back and had recovered by the time he arrived at Singapore. Nonetheless, he tested positive for COVID-19 after arrival. Though tested negative later, his parents whom he contacted for few hours with all the necessary precautions in place, also showed mild flue like symptoms. Based on the case study, authors advised on widening the spectrum of COVID-19 suggestive symptoms to increase the sensitivity of symptom-based screening procedures (Teo W-Y, 2020).

Psychosocial wellbeing updates

- A study from Palestine reported high level of stress (74% of the participants). The main cause of stress was fear of transmitting the disease to their family members, which was mentioned by 91.6% of those experiencing high level of stress. Not having training on the outbreak response was another reason for experiencing stress. Those experiencing high levels of stress consider taking sick leave as a coping mechanism (Maraqa et al., 2020).
- Successful control of the pandemic is highly dependent on the effectiveness and efficiency of health workers. Ensuring health workers physical and psychosocial wellbeing means minimum absenteeism and improved efficiency (Gavin et al., 2020). The nature of COVID-19 requires social isolation and affects the individuals support system psycho social wellbeing can equally be affected with the physical wellbeing.

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