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Ministry of Health

COVID19 in Sickle Cell Disease

Rapid Response Guidelines Version 1.1

April 12, 2020

1- Introduction:

The SARS-CoV-2 infection presents dangers to patients with haemoglobin disorders in particular Sickle Cell Disease (SCD). The virus affects primarily the respiratory system, from nasopharyngeal symptoms to severe pneumonia leading to ventilation and increased mortality.

The following symptoms may develop after exposure to COVID-19 infection:

- Cough
- Difficulty in breathing
- Fever

These symptoms may overlap with a serious complication and major cause of death in this hereditary blood disorder which is acute chest syndrome (ACS). ACS is most often triggered by a respiratory infection.

Furthermore, patients with SCD have weaker immunity for multiple reasons including autosplenectomy and hydroxyurea treatment which could cause further immunosuppression. The risk of acquiring COVID 19 infection would increase in SCD if they are older and have other co-morbid illnesses as diabetes or cancer. On the other hand, very few cases have been reported in children however, children with SCD are special population that are at increased risk due to their underlying illness.

So far very little clinical experience of infected patients with haemoglobin disorders has been recorded. Any statement on these subjects may be regarded as speculation; cautionary thoughts are however necessary, in view of the rapid spread of the virus and the possible factors which may render these patients fragile in front of this infection. MOH believes that health services should be alerted to these risks and affected patients warned so that extra precautionary measures can be taken.

2- Aim, scope and targeted population:

The rapid response guideline is proposed to:

i- Guide treaters at inherited blood disorder centers, Hematology units and clinics to protect the individual patient, medical and other personnel as well as other patients visiting the center, unit, clinic from possible coronavirus infection.

ii- Provide recommendations for Inherited Blood Disorders centers, Hematology units and clinics to guide treatment of Sickle Cell Disease during COVID19 pandemic.

3- Update and Review:

This rapid response guideline should be updated with new emerging data or within 3 months.

4- Instructions:

4.1 General instructions and outpatient management:

- If and when possible, convert all routine in-person appointments to virtual or telephonic appointments.
- Educate patients and parents over the telephone about COVID-19 signs and symptoms and the importance of physical distancing to limit chances of exposure and infection.
- Educate the patients and parents when to seek medical attention and how to seek care.
- Counsel patients and parents to continue to seek medical help for fever and other signs of infection and shortness of breath.
- Make sure patients have a thermometer and know how to use it and clean it after each use.
- Encourage patients to adopt healthy life style and hygiene including hand washing, social distancing, good nutrition, sleeping well and avoiding stress and anxiety.
- Make certain your patients have adequate supply of all prescribed medication at home (including analgesics) to manage both acute and chronic pain.
- Use your local pharmacies and MOH delivery services to deliver medications to patients.
- Counsel patients to adhere closely to use of hydroxyurea, folic acid, iron chelators and other chronic medications prescribed.
- Consider starting and/or optimizing existing therapies known to reduce sickle cell pain frequency as Hydroxyurea, as this is what most commonly bring children and adults in direct contact with emergency departments and hospitals. The goal is to reduce this contact, if possible, to limit exposure to COVID-19.

4.2 Pain (Vaso-occlusive crisis)

- Assign a point person (e.g. nurse) to answer inquires and direct to physicians as needed. Adopt hotline at your clinic/center to answer questions.
- Encourage patients without fever or signs of infection to increase hydration and manage pain at home with oral medications, reduce hospitalizations and visits to the emergency department.
- Call in or prescribe analgesic medications to the patient’s and ensure delivery by local pharmacy.
- Call patient frequently to assess response to home-based treatment and offer in-person evaluation if needed.

- Urge patients to continue strict adherence to medications that reduce acute sickle cell pain frequency (e.g. Hydroxyurea) to reduce presentations to emergency department.
- Use strict COVID19 precautions when assessing patients in day care if needed.

4.3 For patients with COVID-19 symptoms (fever, cough, or shortness of breath):

- Schedule patient for an outpatient visit immediately. Avoid the emergency department (ED), if possible. If the ED must be used, call ahead to facilitate care and isolation.
- Follow MOH guidelines for COVID19 testing.
- Follow standard of care for managing SCD and fever including:
    - Blood and other cultures as indicated.
    - Testing for typical viral infections.
    - Chest X ray for all SCD patients who have respiratory symptoms should be obtained.
    - Administration of empiric broad-spectrum antibiotics to cover encapsulated organisms and as indicated.
    - Assess for signs of acute chest syndrome (ACS).
    - Management of ACS in SCD Patients Infected with COVID-19 includes but not limited to:
        - a- Transfusion should be performed in patients with worsening anemia, evidence of hypoxia and chest x-ray changes.
        - b- Initiate simple transfusion if patient is symptomatic or there is significant anemia (hemoglobin < 9 g/dl or greater than a 2 g/dl fall in hemoglobin).
        - c- Initiate exchange transfusion for progression of hypoxia or clinical deterioration.
        - d- Broad spectrum antibiotics – include MRSA coverage, atypical micro-organism and pneumococcal infection.
        - e- Consult Paediatric or Adult Pulmonary as well as Haematology.
    - Many SCD patients are chronically prescribed **NSAIDs, angiotensin converting enzyme inhibitors, and angiotensin II receptor blockers**. There have been some emerging data on the use of these agents with COVID 19 infection.
    - For **NSAIDS**, there are recent claims, suggesting there is evidence to recommend that patients with suspected COVID-19 should avoid anti-inflammatory drugs. These drugs could be an aggravating factor for the infection, and there appears to be evidence that prolonged illness or complications of respiratory infections may be more common when anti-inflammatory drugs are used. **Prescribers should consider the most up to**

date evidence-based information on these drugs when treating symptoms of COVID-19, as referenced on MOH COVID-19 protocol and order sets.

- For **angiotensin converting enzyme inhibitors (ACEI), and angiotensin II receptor blockers,** it has been shown that the COVID-19 virus uses the SARS-CoV receptor angiotensin converting enzyme (ACE) 2 for entry into target cells. ACE2 levels can be increased by the use of renin-angiotensin-aldosterone inhibitors (including ACEIs and ARBs). Despite these observations, the impact of current use of ACEIs or ARBs on the course of COVID-19 infection has not been systematically investigated. The recommendation is to continue these therapies for hypertension, heart failure or ischemic heart disease as indicated.
- Given high mortality, be vigilant for signs of Fat Emboli Syndrome.
- If the patient is COVID-19 negative, if possible, give the patient an incentive spirometer to use at home.
- **Follow Saudi MOH Protocol for Patients Suspected or/Confirmed with COVID-19**.

4.4 Blood Transfusion:

- At this time there is no evidence that the corona virus may be transmitted through donated blood. However, certain precautions have to be taken during donation of blood. **(refer to MOH policy for blood donation during COVID 19 pandemic)**
- Monitor the availability of blood and blood products at your local blood banks closely as you may have to adjust your transfusion practices to maintain current individual patient treatment goals.
- Continue empowering blood donors in your local community and hospital to give blood provided that there is safe blood donation environment and served in small groups.
- Patients with SCD are at risk for alloimmunisation for this reason there is need to provide phenotypically matched red blood cells for the clinically significant minor blood groups such as e, C, E, and K , Duffy and MNS blood group.
- Consider transitioning to **Hydroxyurea** for patients eligible according to TWITCH criteria. (Ware et al Lancet 2016).
- Consider modification of transfusion strategy in order to conserve blood in the following:
  - Patients receiving chronic transfusion for recurrent acute chest syndrome: Individualize for maintenance of HbS < 30% vs < 50%, consider adding disease-modifying drug (Hydroxyurea).

- Patients on RBC exchange for end organ damage, priapism, or other non-neurologic indication: switch to simple transfusion or partial exchange for 3-6 months or until blood supply recovers.

5- Level of Evidence: Expert opinion

6- References:

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