



Changing in ACS management during COVID pandemic in Egypt and some different Arab countries.

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ABSTRACT:

COVID-19 is a global pandemic that spread rapidly around the world. It led to changes in management plans for different diseases due to the occupation of the health services and staff with the COVID battle, in addition to lockdown consequences. Cardiac emergency management, such as ST-segment elevation myocardial infarction, was affected at multiple levels by the COVID-19 pandemic, including a delay in patients' threshold to call emergency medical services, decreased availability of ambulances, increased waiting time in the emergency departments, and time delay in percutaneous coronary intervention due to the time consumed for personal protective measures. ESC released a guide based on the experiences of healthcare workers to help in decision-making in different cases. The guide recommended various diagnostic modalities to detect vulnerable patients, but all these modalities have different limitations. Egypt, Saudi Arabia, United Arab Emirates, Yemen, Bahrain, Kuwait, and Tunisia are different Arab countries with different populations and political and economic conditions. They responded to the global pandemic according to their different conditions guided by the global cumulative experiences.

Keywords: COVID-19, Acute coronary syndrome, Cardiac emergency

1. INTRODUCTION

COVID 19 is a global pandemic that affects all countries. It leads to changes in management plans for different diseases due to the occupation of the health services and staff with the COVID battle and due to lockdown consequences. Cardiac emergencies, such as ST-segment elevation myocardial infarction (STEMI), was affected at multiple levels by the COVID-19 pandemic, including a delay in patients' threshold to reach emergency medical services for fear of getting infected, decreased availability of ambulances as a great portion was

shifted to COVID emergencies, increased waiting time in the emergency departments, and time delay in percutaneous coronary intervention due to the time consumed for personal protective measures. In addition to the decrease in hospital admissions for acute coronary syndromes (ACS) in regions highly affected by COVID.⁽¹⁾ ESC released a guide based on the experiences of health care workers to help in decision-making in different cardiac diseases during the pandemic. COVID mainly affected the respiratory system, but it affects different body

systems of the patient. The cardiovascular system is affected in COVID patients during or after the infection. Patients showed different cardiovascular manifestations as arrhythmia, heart failure, and myocarditis.⁽²⁾ Also COVID causes deterioration in the condition of cardiac patients. As cardiac patients tend to have a bad prognosis in comparison to other non-cardiac COVID patients.⁽³⁾ The ESC guide recommended various diagnostic modalities to detect vulnerable patients, but all these modalities have different limitations. Leading to validate the protective measures to the medical staff and the procedures provided for patients. COVID catheterization rooms should be prepared for STEMI patients and very high-risk NSTEMI patients. Other NSTEMI patients should have a nasopharyngeal swab and be under observation. If the patient had two negative swabs, he would have coronary catheterization in catheterization rooms for negative patients. If the patient tested positive, all his maneuvers will be in catheterization rooms for positive patients.⁽²⁾

The Arab countries faced the pandemic as a part of the world. The health authorities in these countries responded according to the economic and political conditions of the country guided by WHO recommendations and expert's consensus.

Egypt

Egypt is one of the largest countries in

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the Arab world and the Middle East. Egypt faces different economic challenges. The Egyptian society of cardiology released a document to adjust the cardiology services given for patients.⁽⁴⁾ All protective measures should be insured for the medical staff and old age staff with multiple comorbidities should not be in teams with direct contact with COVID patients. COVID infection is suspected in all patients even without COVID manifestations. Each patient was examined for his cardiac condition as well as respiratory examination during his first medical contact with respect to the importance of the time factor. Conditions that may produce similar presentations should be ruled out before admission. Highly suspicious patients will be isolated and less suspicious patients will enter the CCU with close monitoring of their temperature, blood count, and chest imaging. High-risk ACS patients and patients contraindicated for fibrinolytic therapy will be subjected to invasive interventions. Minimization of invasive procedures and all the needed maneuvers should be done in the same place. Other patients will be sent to fibrinolytic and anticoagulation therapies with time frames and follow up according to guidelines. Hospital stay should be as short as possible to ensure beds availability and to decrease hospital exposure.⁽⁵⁾ Elective interventions should be postponed and usage of telemedicine to minimize none essential hospital exposure.⁽⁴⁾

Saudi Arabia

Saudi Arabia is the largest gulf country and had a powerful health system. The number of ACS patients was lower in the pandemic period in comparison to the period before the pandemic. Time delay in hospital presentation due to patient's hesitation for fear of getting infected by COVID.⁽⁶⁾ While the medical management durations and decision making did not differ from the pre-pandemic era.⁽⁶⁾ The Saudi ministry of health recommended several precautions in dealing with cardiac patients cases during the pandemic as compared to the pre-COVID 19 era. That demonstrated the safety precautions for the medical staff and catheterization labs, early suspension and isolation of COVID patients, it recommended that STEMI patients should be treated non-invasively and catheterization is preserved to high-risk patients or contraindicated for thrombolytic therapy. NSTEMI patients should be treated medically unless high-risk signs were detected. Hospital stay should be shortened as possible.⁽⁵⁾

UAE

One of the powerful health systems in the Arab area. The governmental and private hospitals have collaborated to deal with the COVID-19 situation. All major government hospitals have taken measures to evacuate wards, stop outpatient department services, and stop all electives and extended short stays in the emergency departments to accommodate mild and moderate cases as well as patients under investigation until the results are out. Interventional cardiologists should wear personal protection equipment (PPE) from the patient's arrival at the emergency room to the patient's discharge without causing significant time delay in patients management.

The Emirates Cardiac Society select twenty points following international guidelines, in which the primary percutaneous coronary intervention (PPCI) was recommended for all patients with ST-elevation myocardial infarction (STEMI) and non-STEMI (NSTEMI) patients with failure to respond to medical therapies. The interventional cardiologists were divided into teams with adjusted working hours to manage ACS patients. Most of the catheterization laboratories became nonfunctional, as elective procedures were stopped, high-efficiency particulate air filters were used. Most government hospitals were turned into COVID-19 hospitals. During the pandemic, COVID-19 positive tests were observed in 15% of the ACS patients. Who were young aged, with no comorbidities, but had a higher thrombosis burden. In private hospitals, NSTEMI patients were provided with routine cardiac care and most of them were non-COVID-19 patients. Around 50% of the COVID-19 patients admitted with myocardial infarction had Type 1 coronary lesions. Moreover, elective PCI procedures were continued and non-invasive procedures such as coronary computed tomography were preferred. A significant drop in ACS patients during the pandemic. NSTEMI cases were initially higher but then later decreased, similar to STEMI. Initially, there were a significant number of late presentations of STEMI cases. Also, consequences and complications were observed in June and July 2020. Although thrombolytic therapy is the choice for highly suspected or positive cases, still PPCI remains the first choice for all cases with proper PPE and sterilization measures. There was the adoption of telemedicine for chronic cardiac patients to manage their complains and to adjust their medication.⁽⁷⁾

Yemen

Yemen is a country at war since 2015, resulting in a shortage of intensive care units (ICU) for ACS patients. The WHO reports that during wartime the health system is overstretched and there is a critical shortage of beds and workforce. In the emergency room, there was no rapid test for COVID-19, and diagnosis was made based on clinical suspicion, blood test, and chest X-ray. In many situations, chest pain and shortness of breath of acute coronary syndrome (ACS) were interpreted as respiratory infection. Suspicion of COVID-19 cases was shifted to the two isolation hospitals but most of the patients preferred to go home at the peak of the pandemic. When there were no available ICU beds, patients died outside the hospitals. Patients with definite acute MI were delayed in the emergency room because of careful assessment for COVID-19, including a request for a negative test. Ruling out a negative PCR was available only in Sana'a city. Most of the hospitals refused to admit any suspected cases of COVID-19. The rate of admission of ACS to the cardiac ICUs was very low. Acute coronary syndrome patients with COVID-19 disease were isolated in a special room in the ICU and managed for both diseases. Some patients with ACS who were free of COVID-19 symptoms got infected with COVID-19 during their stay in the hospital. This can be explained by either they have been admitted during the COVID-19 incubation period or they got infected from their visiting relatives who did not follow the preventive measures for COVID-19. Patients who had been admitted with COVID-19

disease developed acute MI during their stay in the ICUs. Shortage of beds was at the peak of the pandemic, but later on, ICU beds were available and the hospital stay of ACS patients was adequate. Treating ST-elevation myocardial infarction patients who were eligible for primary percutaneous coronary intervention was very low because of the low admission of the ACS patients; in addition, most of the cardiologists stayed home, especially those who worked in the private hospitals.⁽⁸⁾

Bahrain

Small gulf country with a powerful health system. That responded by postponing the elective cardiac interventions, including coronary angiography and percutaneous coronary intervention for stable coronary artery disease. The number of STEMI patients decreased, and thrombolysis became the preferable line of therapy for ST-elevation Myocardial infarction (STEMI) unless contraindicated. Low GRACE score acute coronary syndromes (ACS) were treated with a conservative approach. If medical therapy failed, the patient was taken to the cardiac catheterization laboratory after examining his COVID status. Cardiac catheterization laboratories were separately labeled as COVID and Non-COVID labs with high-efficiency particulate air (HEPA) filters.⁽⁹⁾

Kuwait

One of the gulf countries that showed decreased admission rates of the acute coronary syndrome (ACS) by 30 % in the 3 months of April to June 2020 compared with the same months in 2019. Many CCU beds were given to COVID ICU resulting in a speedy discharge of patients with stable conditions.⁽¹⁰⁾

Jordan

Small Arab country. During the pandemic, the number of cardiology patients who visited the Cath-Lab during the lockdown period was approximately 1/3 the regular number of patients who used to visit before and after the lockdown period. list of recommendations was set by local medical teams based on the international guidelines to provide the ACS patients with the maximum benefits and the best possible practice without affecting their safety for the safety of the hospital staff during the use of the catheterization laboratory. Patients with acute cardiac problems were directed by official authorities and the local media, to visit the emergency department (ED), with the possible shortest stay without affecting their medical care to decrease their chance of getting hospital-acquired COVID-19 and to protect as possible their health care providers. Special considerations were applied to patients with cardiovascular diseases who develop COVID-19 as they have a higher risk of mortality. It was also emphasized that primary PCI was considered immediately, without waiting for the COVID-19-PCR test results and after considering all possible protective measures, in all ST-elevation myocardial infarction (STEMI) cases presenting to PCI center or STEMI patients referred from other primary hospitals with either contraindication thrombolysis or failed thrombolytic therapy for rescue PCI. All elective procedures should be postponed. For patients

with non-urgent chronic cardiovascular diseases who have questions about their medical conditions could reach their assigned physicians by telephone or WhatsApp. Those whose problems were not solved over the phone were advised to visit the ED for further evaluation.⁽¹¹⁾

Tunisia

Tunisia is a small country in North Africa. Between January and February 2020, the number of acute coronary syndrome cases tend to increase in comparison to the same period in 2019, in March and April 2020 the number of STEMI decreased as well as the number of NSTEMI in comparison with March and April 2019. In the first quarter of 2020, early STEMI presentation (≤ 2 h) was less often encountered in comparison with the first quarter of 2019. As the patients were worried about getting infected during the hospital stay. As well as the number of ACS patients requiring an invasive approach started to decrease in March 2020 due to the limitation of invasive procedures to high-risk conditions and preference of conservative management.⁽¹²⁾

In conclusion, The Arab counties face the same challenges that face the whole globe due to COVID 19 pandemic. The same changes in patients' numbers were observed. Health authorities in the Arab countries put their plans to face the pandemic according to their abilities and guided by the ESC guide in ACS management during the pandemic.

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