Special Correspondence

Impact of COVID-19 on cardiology services at AlShab Teaching Hospital

Ahmed A A Suliman[1,2] , Abdellateef M A Abdelrahem, RN[3]

1- Head of Department of Cardiology, AlShab Teaching Hospital

2- Associate Professor, Dept of Medicine, Faculty of Medicine, University of Khartoum

3- Al Shab Teaching Hospital cardiac catherization lab

Introduction

AlShab Teaching Hospital is a tertiary referral center for cardiology and cardiac surgery, located in the center of Khartoum. It also provides emergency room (ER) services to cardiac and pulmonary cases and receives patients from different states of the country (1). It also has a very active cardiac catherization laboratory (cath lab) performing coronary and valvular interventions as well as implanting cardiac devices.

The COVID-19 pandemic had major impact on medical services in the country, and hospitals had to cope with unprecedented challenges. The first COVID-19 case was confirmed in Sudan on the 13th of March, 2020. Partial lock down started on the 24th of March and total lock down was instituted on 18th of April. At AlShab Teaching hospital all outpatient clinic services were suspended on March 17th , 2020, while emergency services continued throughout the pandemic. In this short communication, we will discuss the impact of this pandemic on cardiac services in the hospital.

Work organization during the pandemic

There were many challenges facing the service initially especially transportation of staff , provision of personal protective equipment and a safe environment for staff and patient on top of a pre-existing shortage of internal medicine registrars that were sent for training by the Sudan Medical Specialization Board during that period. Providing support to health care staff and reducing physical and psychological burden during these difficult times was of paramount importance (3). To deal with these challenges , the following changes to the service and system of care were implemented:

- Patient triage and pathway designation. All patients who present to hospital would be triaged for possible COVID-19 . After triage there were three pathways; isolation ward for COVID-19, cardiac ER or respiratory ER.

- Medical registrars were asked only to cover the ER with no duties between weekly oncalls. This helped in reducing staff burnout, need for PPE, exposure to COVID-19 and transportation issues.

- Each cardiology unit would cover the cardiac catherization laboratory (cath lab) and follow-up inpatients for one day of the week.

Number of patients during the pandemic

AlShab Teaching hospital ER receives patients directly or referred from other hospitals within the capital or other states. Over the last six months of 2019, the average number of ER visits was 7488 visits per month.

Number of patients presenting to the ER dropped significantly during April and May of 2020, compared to similar period of 2019. Figure 1 shows total number of ER visits and acute myocardial infarction (AMI) cases for April and May of 2019 and 2020.

Total ER visits dropped by an average of 62% from April/May 2019 to same period 2020 while AMI cases dropped by 5% only. No statistics were available on how many of the AMI cases presented late. Decline in cardiac patients seeking acute care has been noticed in many countries worldwide (4)(5)

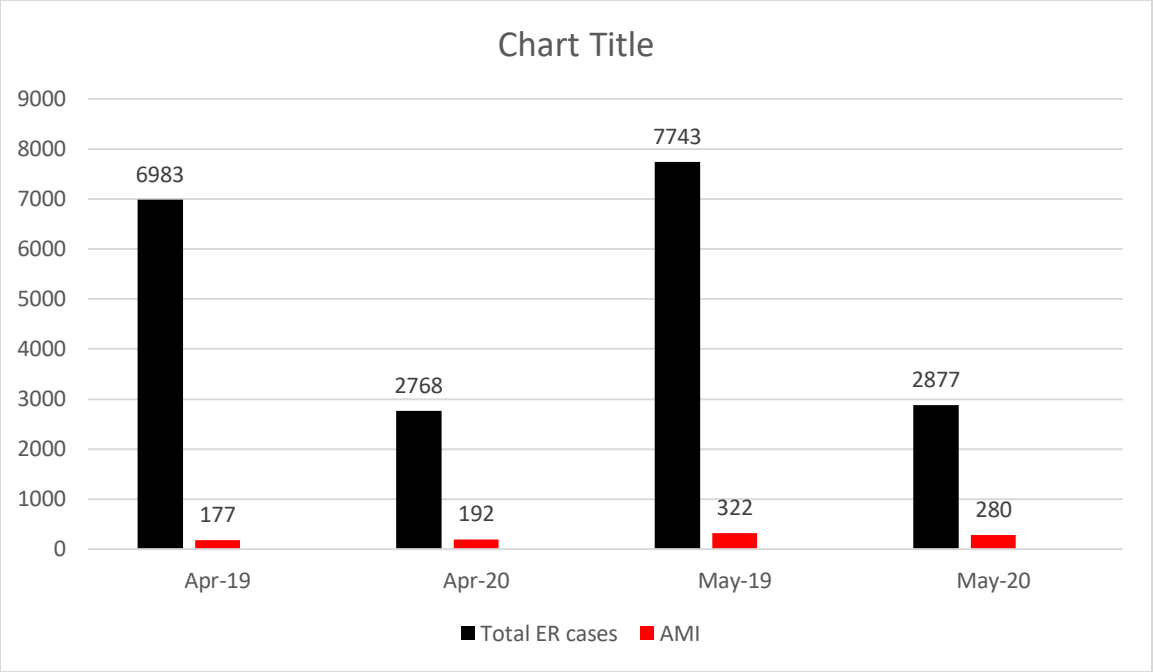

Figure 1shows total ER cases and AMI cases presenting to AlShab Teaching Hospital in April and May 2019 and 2020. ER=Emergency Room; MI=Acute Myocardial Infarction

Cath lab services

The cath lab at AlShab hospital is one of the active cath labs in the country. Figure 2 shows total number and procedure types performed in 2019.

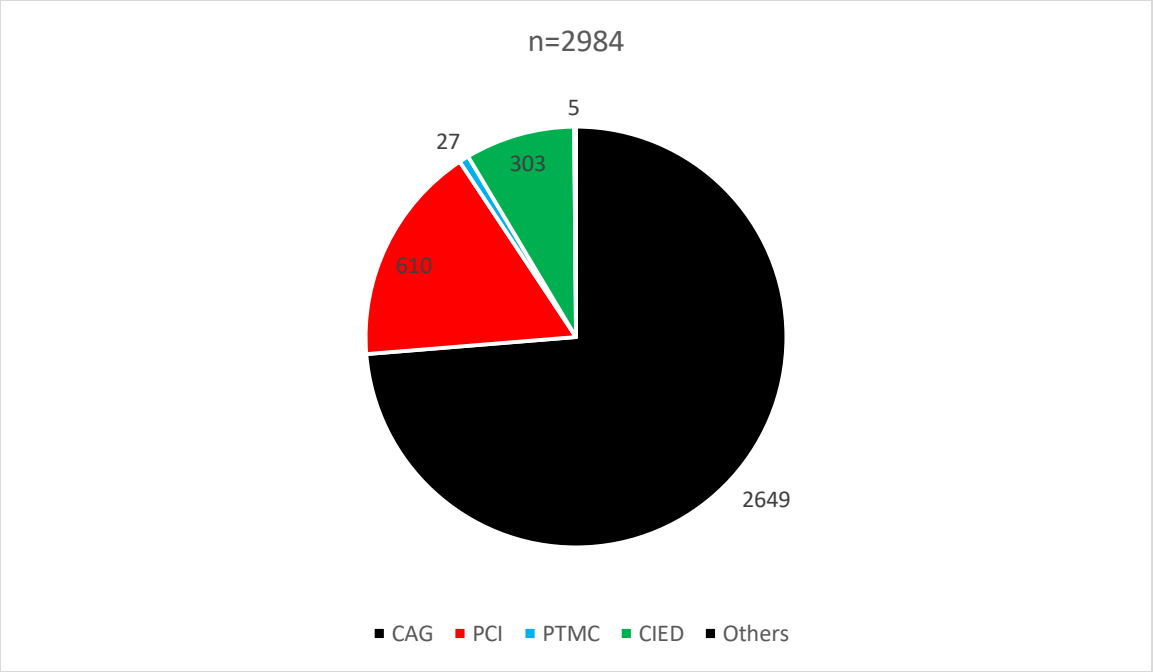

Figure 2shows number and types of procedures performed in the cath lab in 2019. CAG=coronary angiography; PCI=percutaneous coronary intervention; PTMC= percutaneous mitral valvotomy; CIED= Cardiovascular implantable electronic device

During the months of April and May 2020, only emergency cases were performed at the lab. A total of 160 cases were performed. Of these diagnostic coronary angiograms, PCI, PTMC and pacemakers were 66, 71, 1 and 22 respectively. This is compared to a total of 224 cases during the same period of 2019 with 108, 54, 4, and 58 were for CAG, PCI, PTMC and pacemakers respectively. Figure 3 shows types and number of procedures performed during April/May 2019 compared to April/May 2020. Though total number of procedures have dropped by 29%, number of coronary interventions and ratio of PCI/CAG has actually increased.

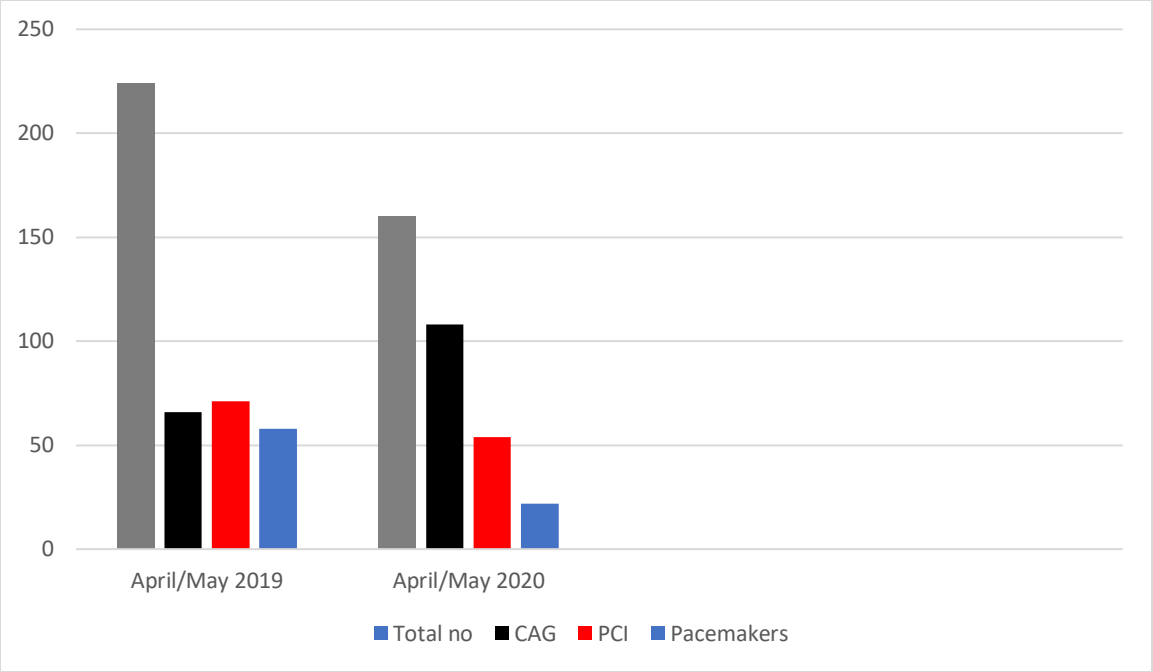

Figure 3 shows number of procedures and types performed in April/May 2019 and 2020. CAG= coronary angiography; PCI = percutaneous coronary intervention

Cardiac implantable electronic devices (CIED)implantation and follow-up

During 2019, 303 CIEDs were implanted at AlShab Teaching hospital. Figure 4 shows distribution of different types of CIEDs implanted. Permanent pacemakers made up 98% of CIEDs, with dual chamber devices, single lead VDD and single lead VVI devices constituting 33%, 18% and 47 % of total CIEDs respectively.

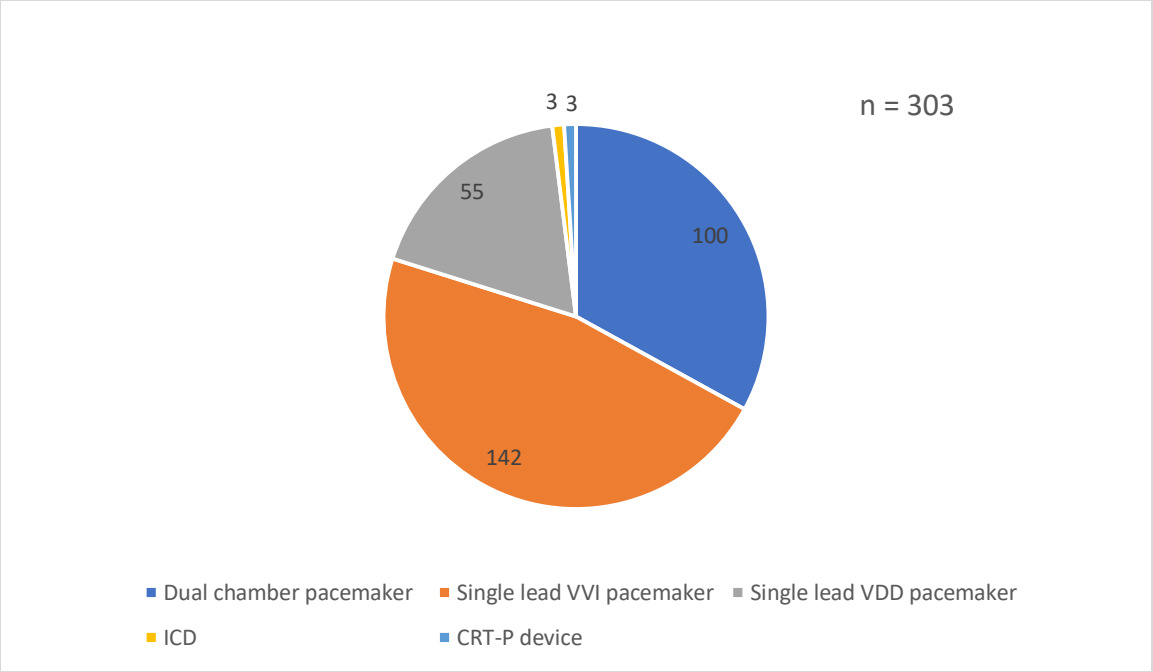

Figure 4 shows number and types of CIEDs implanted at AlShab Teaching Hospital in 2019

CIED= Cardiovascular Implantable Electronic Device; ICD= Implantable Cardiac Defibrillator; CRT-P= Cardiac Resynchronization Therapy-Pacemaker

Patients with CIEDs are followed at the pacemaker clinic. The pacemaker clinic has registered 511 visits over the six month prior to the COVID-19 lockdown (from October 2019- March 2020) with an average of 85 visits per month.

Initiation and operation of virtual pacemaker clinic

After all outpatient clinic activity was suspended including the pacemaker clinic, a WhatsApp based service was initiated on the 4th of April 2020 . WhatsApp messenger is a popular online application owned by Facebook, Inc. It has widespread use amongst mobile phone users in the country (6). All registered patients were contacted and a WhatsApp number was provided for queries . A WhatsApp group also was created and patients were invited to join; two hundred and forty five patients joined the group by end of May.

On average there were 12 queries per day. The main reasons for contacting the service number were divided into three groups:

1- Local implant site complaints : These included pruritis, redness, swelling , pain and discharge. Twenty two cases had to be asked to come to hospital, 10 of which were deemed serious and required intervention and these were abscesses, hematomas or wound infections. There were 2 cases of lead erosions. Figure 5 shows a picture device erosion sent by patient.

2- Generalized symptoms possibly related to PPM malfunction: These included syncope, dizziness or exertional shortness of breath. Patients were sometimes asked to obtain an electrocardiogram (ECG) to send as a picture. ECG was reviewed by a cardiologist.

3- Unrelated generalized symptoms and patients would be advised to check with nearest doctor.

Telemonitoring of patients is becoming increasingly important especially in time of crisis and for patients in remote areas(7)



Figure 5 shows picture of device erosion sent by patient

Patient satisfaction and main limitations

A survey was conducted on the WhatsApp group during the first week of June. Five choices were given; very good, good , average, bad and very bad. Patients were also asked to send their comments on the " things they did not like" about the service. Of the 245 group members, 117 responded and responses are summarized in Figure 4.

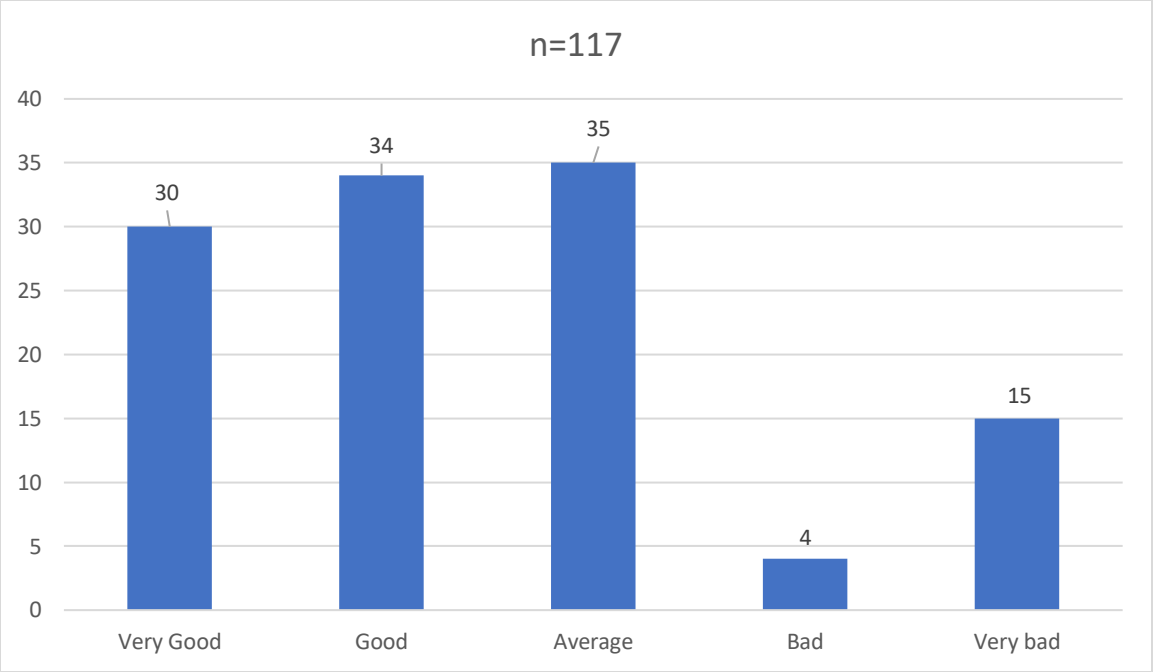

Figure 4 shows evaluation of the WhatsApp service by patients

The main comments received centered around difficulty passing through security checkpoints when called to hospital, high cost of travel from outside Khartoum especially early in the lockdown, difficulty obtaining ECG due to closure of many clinics and hospitals, and refusal of many local doctors and hospitals to treat patients with implanted pacemakers who had apparently non-cardiac complaints.

Conclusion

In conclusion, despite the many challenges posed by the COVID-19 pandemic , emergency cardiac services and emergency invasive cardiac procedures at Al Shab Teaching hospital continued throughout the pandemic. Telemedicine and telemonitoring of patients can be a useful tool for times of crisis and for remote patients. The importance of documenting such experiences is important to improve services and response to possible catastrophes in the future.

References

1- Suliman A. Pattern of heart disease at AlShab Teaching Hospital; a decade into the new millennium. Sudan Med J 2011 Aug;47(2):86-93

2-Suliman A. The evolution of cardiac catheterization in Sudan. Sudan Heart Journal 2013;Vol 1(1): 1-6

3 Adams JG , Walls RM. Supporting the health care workforce during the COVID-19 global epidemic. JAMA. 2020. [PMID: 32163102] doi:10.1001/jama.2020.3972

4- Pessoa-Amorim G et al. Admission of patients with STEMI since the outbreak of the COVID-19 pandemic: a survey by the European Society of Cardiology, European Heart Journal - Quality of Care and Clinical Outcomes, , qcaa046, https://doi.org/10.1093/ehjqcco/qcaa046

5- Decline in cardiac patients seeking urgent medical care during COVID-19 pandemic. Available online :https://www.victorchang.edu.au/news/cardiac-patients-decline-hospitalizations. Last accessed June 27Th, 2020.

6-https://medialandscapes.org/country/sudan/media/social-networks. Last accessed June 27th, 2020

7- Watson A, Wah R ,Thamman R. Telemedicine and e-Health. http://doi.org/10.1089/tmj.2020.0134 (ahead of print)

Acknowledgment

Al Shab Teaching hospital statistics and medical records department for providing the data