East African Scholars Journal of Medicine and Surgery
Abbreviated Key Title: EAS J Med Surg
ISSN: 2663-1857 (Print) & ISSN: 2663-7332 (Online)
Published By East African Scholars Publisher, Kenya

Volume-4 | Issue-11 | Dec-2022 | DOI: 10.36349/easjms.2022.v04i11.001

OPEN ACCESS

Case Report

Perioperative Nursing Care Standards in a SARS CoV-2 Infected Patient for Mandatory Coronary Artery Bypass Grafting

Amal Omar Ayoub[1*], Abdulomohsen Folos[2]

[1]Prince Mohammad Bin Nasser Hospital Jazan, Kingdom of Saudi Arabia
[2]Jazan Health Cluster, Kingdom of Saudi Arabia

Article History
Received: 14.10.2022
Accepted: 28.11.2022
Published: 06.12.2022

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: The coronavirus disease 2019 (COVID-19) pandemic, caused by severe acute respiratory corona virus-2 (SARS CoV-2) that started in late December 2019, lead to millions of infections and mortalities and disruption in routine clinical services, including surgical procedures. Such delay in routine; surgical procedures leads to a backlog of patients, including cardiac, planned for surgical interventions. The pandemic has presented healthcare workers with the unprecedented challenge of maintaining patient and personal safety dealing with patients, including surgical ones. The healthcare personnel in general and nurses caring confirmed SARS-CoV-2 infected patients in specific have a high risk of patients and self-safety concerns, especially under peri-operative care where aerosol-producing procedures are key components of care. Herein, we present the peri-operative nursing approach to a SARS CoV-2 infected patient, confirmed with reverse transcriptase-polymerase chain reaction (rt-PCR), and remained positive as repeated four times in nearly four weeks, who underwent an essential coronary artery bypass graft (CABG), with specific focus to standard recommendations and protocols. Adherence by nursing staff to these recommended peri-operative protocols will mandate; both patient and nursing safety.

Keywords: COVID-19, SARS CoV-2, Peri-operative nursing care, CABG, Protocols.

INTRODUCTION

The coronavirus disease 2019 (COVID-19); emerged in Wuhan, Hubei Province, in December 2019, that spread globally. The World Health Organization (WHO) named the virus "Novel Coronavirus 2019 (2019-nCoV)," January 12, 2020, later identified as severe acute respiratory syndrome coronavirus-2 (SARS CoV-2) [1, 2]. On March 11, 2020, the WHO declared it a global pandemic [3], which lead to millions of infections and mortalities globally and with-holding routine clinical care and planned surgical procedures while keeping emergency services in place with recommended protocols.

During the COVID-19 pandemic, a confirmed or suspected case of SARS-CoV-2 infection planned for emergency or elective surgery may pose risk to nursing staff dealing in peri-operative care.

In perioperative care, the SARS-CoV-2 virus may spread via droplets like expiration, coughing, sneezing, and through aerosols, generated during aerosol-generating procedures (AGPs) [4]. The incubation period of SARS CoV-2 is 2-14 days; commonly 5-6 days [5], however, rarely it reached 37 days [6] thus, increases the possibility of virus transmission in these patients.

The nursing staff must adhere to the recommended standards to prevent virus transmission from patient to patient and the healthcare worker. The application of these standards differs between healthcare facilities. Herein, we will address nursing care standards required and applicable for perioperative care of a surgical patient with SARS CoV-2 infection, while presenting a patient, planned for essential CABG procedure despite his rt-PCR positivity for SARS CoV-2 on repeated testes in intervals.

CASE PRESENTATION

A seventy-six years old Saudi male, with a known case of Type-2 diabetes (Type-2 DM) with polyneuropathy, nephropathy, hypertension, bronchial asthma, and old Myocardial Infarction was admitted from the cardiology OPD unit for elective but essential coronary artery bypass grafting (CABG) as a case of

***Corresponding Author:** Amal Omar Ayoub
Prince Mohammad Bin Nasser Hospital Jazan, Kingdom of Saudi Arabia

triple vessel disease. The patient's rt-PCR tests were repeated three times at intervals with positive results but no major COVID-19 symptoms, as out-patient, and for the fourth time upon admission. The patient was received by the chief nurse of the unit in an isolation room with recommended protocol [7] using personnel protective equipment (PPE) as a high-risk patient despite his period of infectivity being over. On arrival, vitals were recorded pre-operatively. Similarly, post-operative vitals were too within range (table-1) and were within normal range. The patient has been extensively evaluated prior to admission. Abdominal and Pelvic U/S: abdominal and pelvic U/S shows no other findings except gall bladder stones. CT Chest shows; bilateral apical scaring, and cystic bronchectic changes at the lingual and left lobe with compensated emphysematous changes seen in both upper lobes. Scattered ground glass patches of grade 1-2 calcification were seen. Doppler U/S (lower limbs): No evidence of intraluminal thrombosis (DVT-deep venous thrombosis) was seen in the lower limb's deep venous system with the normal caliber and thin compressible walls. Carotid US shows; 40% occlusion of the right carotid and 65% occlusion on the left side recorded. Echocardiography shows; normal LV internal dimension and good function of 55-60%, with relative hypokinesia in the inferior wall with mild mitral, tricuspid, and aortic regurge with calcification of the aortic valve. No pericardial effusion seen. Carotid U/S: 40% occlusion of the Rt. Carotid and 65 % occlusion on the Lt. side were seen. No major abnormality was detected in the patient's peri-operative blood profile including coagulation (table-2), hepatic (table-3), blood (table-4), and biochemistry (table-5). The patient's nasopharyngeal swab tests for SARS CoV-2 infection (rt-PCR) are shown in table-6.

Table-1: Patient's vitals in the peri-operative period

	Date	BP (mmHg)	HR (min)	R/R (min)	O_2 (%)
Pre-Op.	8/02/2022	150/57	92	21	100
	9/02/2022	150/58	79	20	98
Post Op.	17/02/2022	155/65	98	16	100
	20/02/2022	155/57	85	20	99
	21/02/2022	150/60	92	14	100

Table-2: Patient's coagulation profile in the peri-operative period

Date	PT (Range 11-16 sec.)	INR (Range 0.82-1.2 sec.)	aPTT (Range 26-40 sec.)
15/02/2022	15.5	1.22	36.6
16/02/2022	14.1	1.10	38.1
17/02/2022	14.8	1.16	38.3
20/02/2022	15.1	1.16	39.5
21/02/2022	14.9	1.18	39.1
PT-Prothrombin Time, aPTT-activated partial thromboplastin time, INR-International normalization ratio			

Table-3: Patient's liver profile in the peri-operative period

Date	Alanine Aminotransferase (12-78 IU/L)	Serum Albumin (35-52 g/L)	Aspartate Aminotransferase (15-37 IU/L)	Direct Bilirubin (1.71-3.4 umol/L)	Total Bilirubin (3-17 umol/L)	Total Protein (64-82 g/L)	Alkaline Phosphatase (46-116 IU/L)
15/02/2022	44	30.0	69	1.90	6.5	57.1	55
17/02/2022	43	29.8	48	1.93	6.7	57.4	57
20/02/2022	44	29.9	54	1.92	6.7	57.4	59
21/02/2022	45	29.8	54	1.92	6.6	58.1	58

Table-4: Blood profile of the patient

Date	WBCs (4.6-10.2 (10*3/uL)	Hematocrit 37.7-53.7 (%)	RBCs 4.04-6.13 (10*6/ul)	Platelets 150-450 (10*3/ul)	Hb. 12.2-18.2 (g/dL)	MCV 80-97 (fL)	MCH 27-31 (pg)	MCHC 32-36 (g/dL)
15/02/2022	11.39	30.4	3.59	282	10.1	84.1	28.1	33.4
17/02/2022	11.41	30.1	3.58	280	10.3	84.2	28.2	33.2
20/02/2022	11.40	30.2	3.59	281	10.1	84.1	28.1	33.4
21/02/2022	11.43	30.3	3.58	281	10.1	84.2	28.2	33.2
Hb-hemoglobin, RBC-red blood cells, WBC-white blood cells, MCV-mean corpuscular volume, MCH-mean corpuscular hemoglobin, MCHC-mean corpuscular hemoglobin concentration, pg-picogram.								

Table-5: Biochemistry profile of the patient during hospital stay

	15/2/2022	16/2/2022	20/2/2022	21/2/2022
Serum Na^+ (99-109mmol/L)	144	137	134	133
Serum K^+ (3.5-5.1mmol/L)	4.3	4.1	3.5	3.5
Glucose (3.5-6.05mmol/L)	17.0	16.9	17.2	17.2
Serum Chloride (99-109mmol/L)	93	96	95	94
Bicarbonates	23.4	23.1	23.1	23.3
Creatinine	2.2	2.1	2.8	2.6
Urea	3.7	3.8	3.8	4.0
PH	7.42	7.40	7.40	7.41
PCo_2	36.6	35.6	36.4	36.1
PO_2	137	135	138	138
FiO_2	30%	32%	32%	31%

Table-6: Nasopharyngeal Swab for SARS CoV-2

Test	Date	Result
rt-PCR	20/06/2021	Negative
rt-PCR	17/01/2022	Positive
rt-PCR	25/01/2022	Positive
rt-PCR	28/01/2022	Positive
rt-PCR	12/02/2022	Positive

The Next day the patient was on the OR list and was shifted by head burse following the Weqaya protocols [7] for elective surgery. In the same way, the patient was received by the OR team with a specific focus on Weqaya protocols such as wearing N95 masks as essential for all aerosol-generating procedures (AGPs) even if the patient(s) are asymptomatic and COVID-19 tests are negative [7]. The procedure time was kept as minimum as possible and let the patient recovered within the OR. Later the patient was shifted by the same nurse to the intensive care unit for twenty-four hours on a specific bed for COVID-19 patients. The patient was shifted with the same standard operating procedures (SOPs) as recommended and shifted to the isolation room in the unit where he was discharged on 3rd postoperative day. The peri-operative period was unremarkable.

DISCUSSION

The routine services across different domains of life have been affected by the COVID-19 pandemic. Similarly, non-emergency services are halted across clinical care facilities globally sparing emergency interventions alone. The halting of routine clinical services has twofold benefits, such as minimizing the risk of cross-infection of the healthcare workers (HCWs) and retaining the HCWs for caring for COVID-19 patients. However, that leads to a backlog of surgical cases to the extent that it will take months or even years to clear. As the evidence evolved, leading to the reinstating of elective but essential surgical interventions while adopting recommended protocols will not only help in backlog clearance but will help in the timely management of surgical patients specifically those in need of cardiac surgical care.

The American Society of Anesthesiologists [8] (ASA) recommends that elective surgeries can be postponed for almost seven weeks in un-vaccinated but infected patients of SARS CoV-2. However, the American College of Surgeons (ACS) [9] recommends that each healthcare system should thoroughly review their elective surgeries and plan accordingly, following standards and protocols to minimize their backlog. In this regard the Saudi Center for Disease Prevention and Control (Weqaya) [7] in compliance with the Center for Disease Control (CDC) and issued infection control precautions and recommendations for Elective Surgeries to be adopted by healthcare institutions for elective surgeries. In this regard, while adhering to the Weqaya recommendations the elective but essential surgical procedures such as CABG were reinstated in our cardiac center while presenting our case as one of the many, and no cross infections have been reported so far.

CONCLUSION

The nursing team dealing with confirmed or suspected cases of SARS CoV-2 infection, planned for essential cardiac artery bypass graft (CABG) procedure must ensure to adhere with the standard guidelines, crucial both for patient and staff safety. Any breach in the recommended guidelines while dealing with such patients may expose the healthcare workers such as nurses to potential risk of acquiring the infection.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ETHICAL APPROVAL

Ethical approve was granted by Jazan Health Ethics Committee with reference number (2281).

SOURCE OF FUNDING

There was no source of funding for this work.

CONSENT

An informed consent was taken from the patient for publication of the case and accompanying images.

AUTHORS CONTRIBUTION

1. AOA acquired the idea, prepared and approved the draft.
2. AMF reviewed the primary draft and approved the final.

Key-Nursing Care Message

Adherence to standard peri-operative surgical care protocols is vital both for patient and nurse safety.

REFERENCES

1. Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., ... & Tan, W. (2020). China Novel Coronavirus Investigating and Research Team. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*, *382*(8), 727-733.
2. Chan, J. F. W., Yuan, S., Kok, K. H., To, K. K. W., Chu, H., Yang, J., ... & Yuen, K. Y. (2020). A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The lancet*, *395*(10223), 514-523.
3. WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 -11 March 2020. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020.
4. Judson, S. D., & Munster, V. J. (2019). Nosocomial transmission of emerging viruses via aerosol-generating medical procedures. *Viruses*, 11(10), 940. 10.3390/v11100940. [PMC free article] [PubMed] [Cross Ref] [Google Scholar]
5. Wen, X., & Li, Y. (2020). Letter to the editor anesthesia procedure of emergency operation for patients with suspected or confirmed Covid-19. *Surgical Infections*, 21(3), 1–2. doi: 10.1089/sur.2020.040
6. Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., ... & Cao, B. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The lancet*, *395*(10229), 1054-1062. doi: 10.1016/S0140-6736(20)30566-3
7. https://covid19.cdc.gov.sa/wp-content/uploads/2020/07/EN_Infection-Control-Precautions-and-Recommendations-for-Elective-Surgeries.pdf Accessed on 11/11/2021
8. https://www.asahq.org/about-asa/newsroom/news-releases/2022/02/asa-and-apsf-jointstatement-on-elective-surgery-procedures-and-anesthesia-for-patients-after-covid-19-infection Accessed on 21/11/2022
9. https://www.facs.org/for-medical-professionals/covid-19/clinical-guidance/elective-surgery/- Accessed on 21/11/2022

Cite This Article: Amal Omar Ayoub & Abdulomohsen Folos (2022). Perioperative Nursing Care Standards in a SARS CoV-2 Infected Patient for Mandatory Coronary Artery Bypass Grafting. *East African Scholars J Med Surg*, *4*(11), 229-232