



A SURVEY OF CARDIOPULMONARY RESUSCITATION IN COVID19 PATIENTS IN ICU.

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ABSTRACT

Background: This study was done to show reasonable survival rates after CPR administration in COVID-19 patients suffering from Cardiac arrest and to maximize live outcomes after CPR, even in COVID-19 patients.

Methods: This study was conducted on patients in ICU at our hospital, sdumc tamaka kolar during the period from May 2021 to August 2021. In this study ,survey was done using Google Forms and forms was initiated to collect data on performance of CPR in diagnosed cases of COVID-19 cardiac arrest. The main outcome measured were determination of the percentage of COVID-19 patients discharged home who were administered CPR.

Result: There were 100 responses , At the time of cardiac arrest, 86 victims had diffuse lung infiltrates, 8 had mild lung disease, while 2 had no documented lung lesion. 5 victims had evidence of pulmonary embolism, 22 had cardiac involvement. Return of spontaneous circulation (ROSC) was achieved in 46% of cases but ROSC sustained in only 16.5%. 6.3% of patients, who received CPR, could be discharged home.

Conclusion: The survey has shown reasonable survival rates after CPR administration in COVID-19 patient. We should not ignore the need to maximize live outcomes after CPR, even in COVID-19 patients.

KEYWORDS : Cardiopulmonary resuscitation, coronavirus-19 disease, personal protective equipment, return of spontaneous circulation

INTRODUCTION:

The novel coronavirus 2 (SARS-CoV-2) pandemic has placed health care services under tremendous strain. India has recorded more than 460787 deaths from COVID till date November 7th[5]. The constant fear of virus infection and adherence to the novel crisis safety standards compound the problems faced by health care workers (HCW). Cardiopulmonary resuscitation (CPR) is a potential aerosol-generating procedure. Aerosol/droplets generation, oral suction, and fomite exposure during vigorous chest compression and airway management in patients with severe coronavirus disease 2019 (COVID-19) make CPR administration a high-risk procedure. During the conduct of CPR, thus, the safety of the HCW must receive inordinate priority. Poor outcomes have been reported after cardiac arrest in COVID-19 patients. Some clinicians are reluctant to initiate CPR in patients likely to succumb to the disease. During the initial phase of the pandemic, there were reports of even withdrawal of intensive care support, leave aside CPR, in patients assumed to be non-salvageable. A recent publication reported no survival to discharge in COVID-19 patients cardiac arrest , despite CPR[7]. We conducted a survey to determine the outcomes after CPR in COVID-19 patients in ICU and assess the use of personal protective measures.

Objectives:

This study was done to show reasonable survival rates after CPR administration in COVID-19 patients suffering from Cardiac arrest and to maximize live outcomes after CPR, even in COVID-19 patients.

METHODOLOGY:

Study Design And Setting: This was an observational study conducted on patients in ICU at R. L. Jalappa Hospital and Research centre, Tamaka, Kolar.

Study Population:

The participants were the health care workers like physicians, Anesthesiologist and residents.

Study Duration: 3 months (June 2021 to August 2021)

Sample Size: Sample size was calculated according to the formula

$$N = (4 \times P \times Q) / L^2$$

With the prevalence as 58.8%⁶ and allowable error of 5%, the sample size was calculated to be more than 95.

Sampling Technique: Snow ball sampling.

Study Tool And Data Collection:

A validated, self-administered electronic questionnaire and printed forms was used to collect the data. It was distributed through emails and online social networking platforms. The study tool had an informed consent at the beginning.

Ethical Consideration:

After obtaining ethical committee approval from Institutional Human Ethics Committee, the study was conducted. The informed consent was obtained before the initiating the study. The confidentiality of the participants was maintained throughout the phase of the study.

Data Analysis:

Statistical Analysis was done through SPSS version 23. The normal distribution of the continuous variable was assessed using Kolmogorov-Smirnov test. Variables was presented as mean (standard deviation (SD), frequency and percentages.

RESULTS:

There were 100 responses , a positive RT-PCR and Antigen test established the diagnosis of COVID-19 in 78 and 22 cases.

Table 1 The COVID- Positive Diagnosis Was Based On:

The COVID-positive diagnosis was based on	Gender of patient		Total
	Male	Female	
RT-PCR	65(82.3%)	13(61.9%)	78(78%)
COVID-19 Antigen Kit	14(17.7%)	8(38.1%)	22(22%)
HR-CT finding	0(0%)	0(0%)	0(0%)
Other	0(0%)	0(0%)	0(0%)
Total	79(100%)	21(100%)	100(100%)

In this 5 people were under 30 yrs ,32 were 30-50 yrs, 21 were 50-60 yrs, 32 were 60 to 80 yrs and 10 were more than 80.

Table 2: Age Of Patient On Whom CPR Was Performed

Age of patient on whom CPR was performed	Gender of patient		Total
	Male	Female	
< 30 years	4(5.1%)	1(4.8%)	5(5%)
30-50 years	24(30.4%)	8(38.1%)	32(32%)
50-60 years	16(20.3%)	5(23.8%)	21(21%)
60-80 years	25(31.6%)	7(33.3%)	32(32%)
> 80 years	10(12.7%)	0(0%)	10(10%)
Total	79(100%)	21(100%)	100(100%)

At the time of Cardiac arrest, 86 victims had diffuse lung infiltrates, 8 had mild lung disease, while 4 had no documented lung lesion.

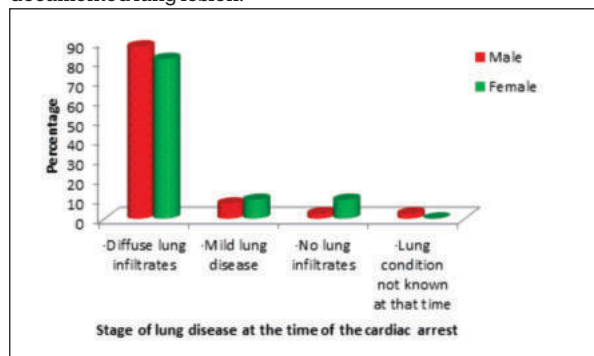


Figure 1: Stage Of Lung Disease At The Time Of Cardiac Arrest

Four victims had evidence of pulmonary embolism, 22 had cardiac involvement. In 46% of cases, the return of spontaneous circulation (ROSC) was achieved. However, ROSC was sustained in only 14% of cases. Nearly a third of the patients revived (6.25% of all patients) could be discharged to home.

Table 3: Immediate Outcome Of CPR

Immediate Outcome of CPR	Male (%)	Female (%)	Total (%)	OR
Successful Return of Spontaneous Circulation (ROSC)	35(44.3%)	11(52.4%)	46(46%)	0.385
No Return of Spontaneous Circulation (ROSC)	31(39.2%)	9(42.9%)	40(40%)	
Return of Spontaneous Circulation (ROSC) but didn't sustain	13(16.5%)	1(4.8%)	14(14%)	

Table 4: Final Outcome

Final Outcome	Male (%)	Female (%)	Total (%)	OR
Patient discharged to home	5(6.3%)	0(0%)	5(5%)	0.549
Patient succumbed to disease later	31(39.2%)	7(33.3%)	38(38%)	
Patient could not be weaned off mechanical ventilation and succumbed to a secondary cause	43(54.4%)	14(66.7%)	57(57%)	

All 100 responders were wearing level-3 personal protective equipment (PPE) during resuscitation. Out of 100 , 4 people had fear of contracting disease and 24 people were hesitant to give CPR because of old age of the patient.

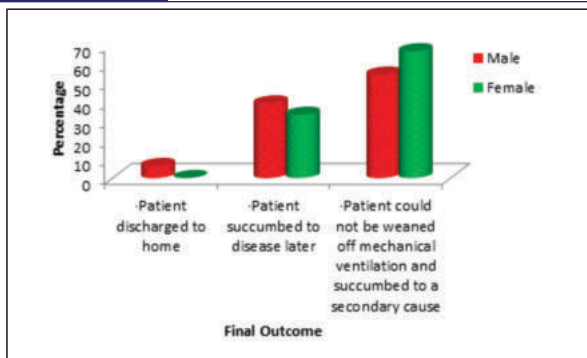


Figure 2: Final outcome

DISCUSSION:

An initial study from China reported a 13% ROSC after CPR in COVID-19 patients, but only 2.9% survived 30 days.[6] Thapa et al. reported a success rate of 53.7% for ROSC after IHCA, but all the victims succumbed later.[7] The poor outcomes reported by these studies dampened spirits and raised concerns about CPR's futility, especially considering the compromised HCW safety environment. In our survey, successful ROSC was reported in 54% of cases. 6.25% of cases administered CPR cases survived and were discharged out of ICU .In 86% of the responses received, CPR was administered to patients with diffuse lung infiltration. Totally 2 of the 5 survivors had severe lung disease, while the balance 3 had either mild lung disease. In most COVID-19 patients, refractory progressive hypoxemia and shock, despite maximal respiratory and circulatory support, leads to cardiac arrest. Such patients may not benefit from CPR, although ROSC may be achieved. All response team members and Health care workers must equip with full PPE and barrier precautions rigorously enforced to ensure their safety. A limitation of our survey was that we did not seek data of complications during the hospital stay after resuscitation and the cause of death of these patients. Autopsy studies showed deep vein thrombosis in more than 50% of Covid-19 patients with 30% suffering from pulmonary embolization. It is recommended that thrombolysis be considered [8] and may even be performed during ongoing CPR.[9]

CONCLUSION:

This survey has shown reasonable survival rates after CPR administration in COVID-19 patients suffering Cardiac arrest. We should not ignore the need to maximize live outcomes after CPR, even in COVID-19 patients. HCWs must strive to provide all interventions that may benefit the patient.

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