



IJS

International Journal of Sciences

Published online 10 10, 2022
ISSN 2763-5392



Aspects related to the management of Cardiorespiratory Arrest in patients suspected or confirmed for COVID-19

Kathia Rayane dos Santos Lima¹, Jacielly Mendes da Silva², Lara Cristine Santana³, Caroline Dantas Albuquerque Carneiro⁴, Jean Carlos Cavalcanti Santos⁵, Juliana Maria da Silva⁶, Ana Karolina do Nascimento Pereira⁷, Cibele Leandro da Costa⁸, Aldenice Ribeiro da Costa⁹, Maria Stella Amorim de Lima¹⁰

1 Nursing of the University Center of Vitória de Santo Antão-UNIVISA

2 Nursing of the Maurício de Nassau University Center-UNINASSAU

3 Nursing of the University Center of Vitória de Santo Antão-UNIVISA

4 Master in Public Health from Oswaldo Cruz Foundation-PE

5-7 Nursing of the University Center of Vitória de Santo Antão-UNIVISA

8 Master in Human Health and Environment. Professor at Maurício de Nassau University Center (UNINASSAU)

9 Physiotherapist at Maurício de Nassau University Center (UNINASSAU)

10 Professor of the Nursing course of the University Center of Vitória de Santo Antão-UNIVISA

E-mail adresse: Kathia Rayane dos Santos Lima (kathiarayanne5@gmail.com), Jacielly Mendes da Silva (jaciisillva41@gmail.com), Lara Cristine Santana (santanalara711@gmail.com), Caroline Dantas Albuquerque Carneiro (carol_dantas@hotmail.com), Jean Carlos Cavalcanti Santos (jean.202114207@univisa.edu.br), Juliana Maria da Silva (juliana.2013190074@univisa.edu.br), Ana Karolina do Nascimento Pereira (anakarolinaaa12@gmail.com), Cibele Leandro da Costa (cibeleandro.costa@gmail.com), Aldenice Ribeiro da Costa (aldenicercostaft@gmail.com), Maria Stella Amorim de Lima (stella_amorim@hotmail.com)

*Corresponding author

To cite this article:

Lima, K.R.S.; Silva, J.M.; Santana, L.C.; Carneiro, C.D.A.; Santos, J.C.C.; Silva, J.M.; Pereira, A.K.N.; Costa, C.L.; Costa, A.R.; Lima, M.S.A. *Aspects related to the management of Cardiorespiratory Arrest in patients suspected or confirmed for COVID-19. International Journal of Sciences*. Vol. 4, No. 2, 2022, pp.74-79. ISSN 2763-5392, DOI 10.29327/229003.4.2-19

Received: 09 29, 2022; **Accepted:** 09 30, 2022; **Published:** 10 10, 2022

Abstract: Given the pandemic situation of the new coronavirus, cardiorespiratory arrest becomes a huge challenge for the entire multidisciplinary team, bringing extra risks to health professionals. This study aimed to present the aspects related to the management of cases of Cardiorespiratory Arrest in patients suspected or confirmed for COVID-19. This was an integrative review where the collection was carried out at the Virtual Health Library during March 2021. We identified 17 articles and, after selective and exploratory reading, 08 articles were selected to make up the study sample. Care for patients suspected or confirmed for COVID-19 follows national and international protocols and guidelines. Changes in professional Para mentation, early defibrillation and care were observed in the performance of chest compressions and ventilation. It is necessary to encourage the permanent education of health teams in order to improve the quality of care and enable these protective measures for professionals.

Keywords: Cardiopulmonary resuscitation; Cardiac arrest; COVID-19.

1. Introduction

Sars-cov-2 is a new type of coronavirus discovered in China that has high transmissibility potential, especially indoors, being able to produce an infection called COVID-19. This pathology is characterized, in most cases, as an acute respiratory syndrome that can vary from mild or asymptomatic forms, corresponding to 80% of cases, to the most severe manifestations that require more intensive care and account for around 5% of infected patients (CHICA-MEZA *et al.*, 2020; PATANKAR *et al.*, 2020).

The main route of dissemination of the virus is by air borne, that is, by contact with droplets of respiratory secretions among individuals (ZEIDAN *et al.*, 2020). The disease can be clinically manifested in several ways ranging from hyperthermia, cough, myalgia and fatigue, to more severe findings such as acute respiratory distress, pulmonary edema and multisystemic failure. Usually, the mean time of these clinical manifestations is 08 days (CHICA-MEZA *et al.*, 2020). These cases of greater severity, characterized as severe acute respiratory syndrome (SRS), may require intensive care, because they are more related to negative outcomes of the disease (ZEIDAN *et al.*, 2020; ALMEIDA, 2020).

Although COVID-19 is clearly manifested as a respiratory infection, studies show that cardiovascular complications are common in infected patients, where the most severe cases may culminate in Cardiorespiratory Arrest (CRP), clinical situation marked by sudden loss of blood flow as a consequence of myocardial failure in performing its blood pumping function effectively (MA *et al.*, 2020).

CRP cases should be managed through the execution of R and cardiopulmonary C animation (CPR), a procedure that combines chest compressions with artificial ventilation in order to preserve brain function until further measures are taken to restore spontaneous blood circulation and breathing (FRITZ; PERKINS, 2020).

Given the pandemic situation of the new coronavirus, PCR becomes a huge challenge for the entire multidisciplinary team, bringing extra risk to health professionals, due to the possible exposure to body fluids from the administration of chest compressions, in addition to the several procedures involving the generation of aerosols, such as positive pressure ventilation and the installation of advanced airways (MACHADO *et al.*, 2020).

Therefore, it is essential that the entire health team be aligned with the new flow of CRP care in the cases of patients with suspicion or confirmation of COVID-19, looking at the changes in the operationalization of CPR in order to reduce the risk of contamination for professionals.

This study aims to present the aspects that relate to the management of CRP cases in patients classified as suspected or confirmed cases of COVID-19 by health teams.

2. Methodology

This was an integrative review, a type of study that aims to determine the current knowledge on a specific theme, synthesizing results obtained on a theme, in an orderly and comprehensive manner (ERCOLE *et al.*, 2014).

The study was based on the following guide question:

What aspects are related to the management of cardiorespiratory arrest cases in patients reported as suspected or confirmed cases of COVID-19 by health teams?

The search for literature occurred in March 2021. The databases consulted were: Latin American literature and the Caribbean in Health Sciences (LILACS) and Scientific Electronic Library Online (SciELO). The descriptors were selected from the health terminology consulted in the Descriptors in Health Sciences (DECS-BIREME), they are: "Cardiopulmonary resuscitation", "Cardiac arrest", "Cardiac massage", "Pandemic", "coronavirus infections" and "COVID-19", using the Boolean operator AND.

The inclusion criteria established were: articles published in the period from 20 to 2021, in Portuguese, with full text available, in lilacs and SciELO databases and that related to the issues related to the guide question. Exclusion criteria were: articles that were included in bases not mentioned in the inclusion criteria, incomplete articles, articles in other languages and articles published outside the mentioned period.

A table was created with the description of the year of publication, authors, title, method and evidence, in order to facilitate the analysis and synthesis of the data.

3. Results and Discussion

Seventeen publications were identified from the search in the databases. The selective and exploratory reading of titles and abstracts was carried out, followed by the reading of the articles in full. Subsequently, the final sample was 08 articles because they were considering all inclusion criteria. Table 1 points out the selected articles for the sample.

Table 1: Selected articles on aspects related to the management of cardiorespiratory arrest cases in patients classified as suspected or confirmed cases of COVID-19 second year, journal, authors, title, method and evidence of the study (Vitória de Santo Antão, 2021).

Year	Journal of publication	Authors	Title	Method	Evidence
2021	Brazilian Journal of Health Review	Piacezzi <i>et al.</i>	COVID-19 pandemic : changes in cardiopulmonary resuscitation	Observational study	The main adjustments were in relation to the use of personal protective equipment, the restriction of the number of people during the service and the performance

					e of safe ventilation, with devices that minimize the formation and dissemination of aerosols				adjustments and CPR maneuvers in pronated patients.		
2021	Collective health magazine	Santana <i>et al.</i>	Analysis of protocols in patient care Cardiorespiratory arrest with suspected or suspected diagnosis of COVID-19	Random qualitative, exploratory and documentary integrative vision	The protocols corroborated the use of adequate, quantitative Parameterization of professionals involved in the PCR scene; use of drugs and the intubation and breathing technique that generates fewer aerosols	2020	Anna Nery School	Lopes <i>et al.</i> , 2020	Challenges in the management of cardiorespiratory arrest during the COVID-19 pandemic: a study of reflection Study of theoretical reflection, descriptive character and approach Qualitative	Need to update the Professionals as a mechanism for protection and maintenance of the quality of care provided.	
						2020	Brazilian Archives of Cardiology	Guimarães <i>et al.</i>	Positioning for Cardiopulmonary Resuscitation of Diagnosed or suspected COVID-19	Literature review	Decision making, guidance on precautions, initial care, airway management, chest compressions, prone resuscitation
2020	Uerj Nursing Journal	Machado <i>et al.</i>	Cardiorespiratory arrest in the coronavirus pandemic: comprehensive review of the literature	Literature review	Current specificities of CPR maneuvers: ambience, human and material resources, recognition of CRP and initial actions, ventilation strategies and invasive airway access; mechanical ventilator	2020	Text and Context Nursing	Birth <i>et al.</i>	Management of diagnosed patients or with suspected COVID-19 in Parada Cardiorespiratory: scoping review	Literature review	Systematized care to identify possible routes of care to patients in CRP
						2020	Journal of clinical and surgical research	Luz and Silva	Cardiopulmonary resuscitation (CPR) in patients with COVID-19 during the	Integrative review	Patient monitoring prevention and specific CPR protocols for patients with

			perioperative period		COVID-19
2020	Scientific journal Hospital Santa Isabel	Feitosa-filho <i>et al.</i>	Cardiopulmonary Resuscitation in Patients with COVID-19	Integrative review	Systematized care to identify possible routes of care to patients in CRP

Source: The authors

Studies show that infection with the new coronavirus causes some specific changes in the cardiovascular system, such as arrhythmias, tachycardia and acute myocardial infarction (SANTANA *et al.*, 2021). CRP is a common condition in critically ill patients with COVID-19, being associated with low survival, particularly among patients aged 80 years or older and/or with comorbidity and risk factors (FEITOSA FILHO *et al.*, 2020; SANTANA *et al.*, 2021; LIGHT; SILVA, 2020).

The COVID-19 pandemic created new scenarios that require modifications to the common CPR protocols, signaling the need for updates on the theme by the professionals involved in order to minimize the risks of contamination and improve the effectiveness of the procedure (FEITOSA FILHO *et al.*, 2020).

Thus, the care of the patient suspected or confirmed for COVID-19 follows the protocols and national guidelines (International Liaison Committee on Resuscitation (ILCOR) of 2015, directrices of the American Heart Association (AHA) of 2019 and Update of the Guideline of Cardiopulmonary Resuscitation and Emergency Care of the Brazilian Society of Cardiology 2019) (GUIMARÃES *et al.*, 2020). The use of protocols shows positive and effective results, directly influencing the quality of care (SANTANA *et al.* 2021).

From the moment of the patient's arrival at the hospital, it is necessary to develop an individualized treatment strategy, which should be planned according to the patient's clinical conditions, with the general recommendations adapted to the local environment, as well as with the criteria of the specialists involved in the care, including consideration of non-resuscitation instructions (FEITOSA FILHO *et al.*, 2020).

In relation to the use of Personal Protective Equipment (PPE), it is recommended the prompt availability of Personal Protection kits in the emergency car, with a view to promoting less delay in the beginning of chest compressions and continuity of care. Included in the N95 mask kit, Shields face, waterproof apron, beanie, high-top disposable gloves and goggles. The use of Motorized air purificators was also recommended, since they

offer greater protection and are more comfortable during a CPR (NASCIMENTO *et al.*, 2020; GUIMARÃES *et al.*, 2020).

The team should work with the smallest possible number of professionals, usually between four and five people, who must present pre-established activities (PIACEZZI *et al.*, 2021; MACHADO *et al.*, 2020; GUIMARÃES *et al.*, 2020). Given the first signs of CRP risk, professionals should carry out fast and safe transport to a respiratory isolation unit with negative pressure and HEPA (High Efficiency Particulate Arrestance), high efficiency particulate air filter. When this device is not available, a private room with a closed door is recommended (PIACEZZI *et al.*, 2021; MACHADO *et al.*, 2020; GUIMARÃES *et al.*, 2020; LIGHT; SILVA, 2020).

The AHA emphasizes the need for prioritization of immediate defibrillation if the patient with suspicion or diagnosis of COVID-19 is at an accelerated pace, that is, in these cases, shock should be performed immediately (200J biphasic and 360J single-phase). Defibrillation should occur even before obtaining the airway and the onset of chest compressions, which in turn should shock and reach a frequency of 100 to 120 compressions/minute, with a depth of 5 to 6 cm, allowing the total return of the thorax after compression (PIACEZZI *et al.*, 2021; SANTANA *et al.*, 2021; LOPES *et al.*, 2020). A conduct that aims to eliminate the risk of contamination for professionals is the use of mechanical devices in place of manual chest compressions (PIACEZZI *et al.*, 2021; MACHADO *et al.*, 2020; LOPES *et al.*, 2020; LIGHT; SILVA, 2020).

Ventilation with a bag-valve-mask (BMV) device should be avoided due to the high risk of aerosol formation and team contamination. In case of extreme need, one can choose by the technique of sealing the mask, involving the addition of two professionals, and the use of roaring cannula. P, the installation of a HEPA filter between the mask and the bag, if available (PIACEZZI *et al.*, 2021; NASCIMENTO *et al.*, 2020; LOPES *et al.*, 2020).

If safe BVM ventilation is not possible, continuous chest compressions associated with the use of a non-re-inhalant oxygen mask with a surgical mask covering the patient's mouth and nose are recommended until safe ventilation is available (PIACEZZI *et al.*, 2021). Performing CPR maneuvers in patients in a high position is also a fundamental approach to minimize the risk of contamination of the teams (PIACEZZI *et al.*, 2021; LOPES *et al.*, 2020; GUIMARÃES *et al.*, 2020).

If the patient is in a strong position at the time of CRP, CPR should be performed with hands positioned in the interscapular region, between the seventh and tenth thoracic vertebrae, and the defibrillator should be applied in the anteroposterior position. It should be avoided to change the decubitus of the patient to the supine position, unless it is possible to do so without risk of disconnection of equipment and aerosols (PIACEZZI *et al.*, 2021).

Regarding pharmacological treatment, the medication of choice is adrenaline 1mg for all CRP rhythms. From the third cycle of CPR consider Amiodarone 300mg as an attack

dose and dose of 150mg for maintenance(SANTANA *et al.*, 2020). After the administration of medications, it is indicated the performance of a flush of 20ml of saline solution, with subsequent elevation of the limb in which it was administered, in order to increase the venous return(PIACEZZI *et al.*, 2021).

The achievement of an advanced airway should be performed early, by means of orotracheal intubation with a tube with a balone, aiming at the reduction of aerosol formation and the supply of the quality of ventilation and oxygenation. Dive if it interrupts the performance of compressions to perform the procedure (LIGHT; SILVA, 2020).

If the patient is already intubated at the time of PCR, it should be kept on mechanical ventilation, with high efficiency filter and closed circuit. In this case, ventilator settings should be changed to CPR or asynchronous mode, with an inspired oxygen fraction of 100%, at controlled pressure, sufficient to provide chest elevation and respiratory rate of 10 breaths per minute (PIACEZZI *et al.*, 2021).

4. Conclusions

Given the scenario caused by this new coronavirus, some questions related to PCR need to be elucidated. It was found that the initial steps for the management of CRP consist in the implementation of more general protection measures, especially to enable the correct evaluation of the patient and for the professional to know exactly what he/she needs. With COVID-19, the standard measures instituted began to consider the transmissibility of the virus, taking into account contact through respiratory droplets and aero-generating activities.

It was noticed that the management of CRP requires greater care and attention of professionals, but also follows the natural protocols established nationally and internationally. The change in management with the patient concerns the high transmissibility of the virus, instilling over the professional's performance a redoubled care, especially with regard to fluid exchange. Thus, the management of CRP cases requires more effective use of EPIs and more specific care about patient contact. This is precisely because the pandemic ends up requiring stricter care protocols, in which the performance and CRP conducts are protective to both the professional and the patient. It is necessary to encourage the permanent education of health teams in order to improve the quality of care and enable these protective measures for professionals.

References

- [1] ALMEIDA, I. M. Proteção da saúde dos trabalhadores da saúde em tempos de COVID-19 e respostas à pandemia. *Rev. bras. saúde ocup.* São Paulo: v. 45, e17, 2020.
- [2] CHICA-MEZA, C.; PENA-LÓPEZ, A.; PENA-LÓPEZ, L. A.; VILLAMARIN-GUERREIRO, H. F.; MORENO-COLLAZOS, J. E.; RODRIGUEZ-CORREDOR, L. C.; LOZANO, W. N.; VARGAS-ORDONEZ, M. P. Cuidado respiratório en COVID-19. *Acta Colombiana de Cuidado Intensivo.* Colômbia: v.20, n.2, p.108-117, 2020.
- [3] ERCOLE, F.F.; MELO, L. S.; ALCOFORADO, C. L. G. C. Revisão integrativa versus revisão sistemática. *Revista de Enfermagem.* Belo Horizonte: v.18, n.1, p.1-260, 2014.
- [4] FEITOSA-FILHO, G. S., RIBEIRO, R. G., PEREZ, J. M., SANTANA, É. Ressuscitação Cardiopulmonar em Pacientes com COVID-19. *Revista Científica Hospital Santa Izabel, Salvador:* v. 4, n. 2, p. 100-104, 2020.
- [5] FRITZ, Z., PERKINS, G. D. Cardiopulmonary resuscitation after hospital admission with covid-19. *v.69: p.m1387, 2020.*
- [6] GUIMARÃES, H. P., TIMERMAN, S., RODRIGUES, R. D. R., CORRÊA, T. D., SCHUBERT, D. U. C., FREITAS, A. P., LOPES, M. A. C. Q. Posicionamento para Ressuscitação Cardiopulmonar de Pacientes com Diagnóstico ou Suspeita de COVID-19–2020. *Arquivos Brasileiros de Cardiologia.* Rio de Janeiro: v. 114, n. 6, p. 1078-1087, 2020.
- [7] LOPES, F. J., RIBEIRO, J. B., STAVALE, R., BOLZAN, D. W., GUIZILINI, S., LOPES, R. S. M. Desafios no manejo da parada cardiorrespiratória durante a pandemia da COVID-19: um estudo de reflexão. *Escola Anna Nery.* Rio de Janeiro: v. 24, n. spe, 2020.
- [8] LUZ, V.F.; SILVA, W.A.; Cardiopulmonary resuscitation in patients with COVID -19 during perioperative period . *Journal of Surgical and Clinical Research.* Natal: v.11, n.2, p.148-162, 18 Dec. 2020.
- [9] MA, L., SONG, K., HUANG, Y. Coronavirus disease 2019 (COVID-19) and cardiovascular complications. *Journal of Cardiothoracic and Vascular Anesthesia,* v.35, n.6, p.1860-1865, 2020.
- [10] MACHADO, D. M., DE AZEVEDO VIANNA, C., DE SOUZA, L. C., LEITE, T. C., DA SILVA, M. M. CAMPOS, J. F. Parada cardiorrespiratória na pandemia por coronavírus: revisão compreensiva da literatura. *Revista Enfermagem UERJ,* Rio de Janeiro: v. 28, p. e50721, 2020.
- [11] NASCIMENTO, J. C. P., ROCHA, R. R. A., DANTAS, J. K. D. S., OLIVEIRA, E. D. S., DANTAS, D. V., DANTAS, R. A. N. Manejo de pacientes diagnosticados ou com suspeita de covid-19 em parada cardiorrespiratória: scoping review (Online). *Texto & Contexto-Enfermagem.* Florianópolis: v. 29, p.e20200262, 2020.
- [12] PATANKAR, A., MODI, P., UPPE, A., TUPPEKAR, B., CHANDRAKAR, S., NAIR, G., LANGADE, D. COVID-19 and Management of Severe Acute Respiratory Infection (SARI): A Questionnaire-Based Study Among Indian Healthcare Professionals. *Current Health Sciences Journal,* v. 46, n. 2, p. 156-166, 2020.
- [13] PIACEZZI, L.H.V.; COSTA, K.A.L.; MAURICIO, L.F.S.; LOPES, M.C.B.T. *et al.* Pandemia da COVID-19: mudanças na ressuscitação cardiopulmonar. *Brazilian Journal of Health Review.* Curitiba: v.4, n.1, p 2930-2943 jan./feb. 2021.
- [14] SANTANA, A. G. C.; CERQUEIRA, F. P.; MACÊDO, W. A. B.; CARNEIRO, B. R.; SILVEIRA, C. A. O.; BRITO, J. S.; OLIVEIRA DA SILVA, M.; BARBOSA,

6 Lima, K.R.S.; Silva, J.M.; Santana, L.C.; Carneiro, C.D.A.; Santos, J.C.C.; Silva, J.M.; Pereira, A.K.N.; Costa, C.L.; Costa, A.R.; Lima, M.S.A. *Aspects related to the management of Cardiorespiratory Arrest in patients suspected or confirmed for COVID-19...*

F.R. Análise de protocolos no atendimento ao paciente em parada cardiorrespiratória com suspeita ou diagnóstico de COVID-19. *Revista de saúde coletiva*. Rio de Janeiro: v.11, n. 5, p.5858-5863, 2021.

- [15] ZEIDAN, A., BAMADHAJ, M., AL-FARAIDY, M., ALI, M. Video laryngoscopy intubation in patients with COVID-19: how to minimize risk of aerosolization? *Anesthesiology* v. 133, n. 2, p. 481-483, 2020.