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# A nursing care of patients after cardiac arrest in the course of myocardial infarction

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## Summary

**Introduction:** A sudden cardiac arrest is a condition, which directly threatens life, and there is a cessation of cardiac mechanical activity. This life-threatening condition occurs when one ceases to function properly with the systems responsible for maintaining vital functions.

**Purpose:** Presenting the role of nurses in the care of patients after cardiac arrest in the course of myocardial infarction.

**Material and method:** The method applied was that case study.

**Conclusions:** The main problem of the patient after cardiac arrest were as follows- the possibility of re-cardiac arrest, shortness of breath, discomfort due to immobilization, depressed mood. During the nursing actions should eliminate the factors influencing the development of complications that can lead to death. The role of nurses is patient education aimed at improving the quality of life and reduce the risk of recurrence of cardiac arrest. Nursing care of the patient

after cardiac arrest requires nurses to constantly extend knowledge, excellence and knowledge of the latest guidelines. Sudden cardiac arrest is a major challenge for modern medicine and should increase the scope of research on this issue

Key words: Sudden cardiac arrest, Nursing care, Myocardial infarction.

## **Admission**

A sudden cardiac arrest is a condition, which directly threatens the life, and there is a cessation of cardiac mechanical activity. Life-threatening condition occurs when one ceases to function properly with the systems responsible for maintaining basic life functions, which include circulation, breathing and operation of the central nervous system, occurs when the state of clinical death, which is reversible. The final result of sudden cardiac arrest to a large extent depends on the time in which the patient will be transported to the hospital. It is also important that first aid given is at the scene, because it has the greatest impact on the future possibility of the patient completing their hospitalization and leaving the hospital on their own, when given sufficiently fast it is invaluable. Unfortunately, SCA still has a very small surviving- it is only 7.6% of patients. In Europe, there is an annual 350 000 000-700 documented cases of sudden cardiac arrest. The biggest impact on the incidence of death due to cardiac arrest has cardiovascular disease because of which the annual life loses 4 million people, which makes 47% of all reported deaths taking place in Europe. The cause of ischemic disease is occurring with the consequences mentioned are also cardiomyopathies, congenital heart diseases in the area of neuroscience and metabolic disorders, aneurysms, and exercise injury [2]. The occurrence of sudden cardiac arrest is often caused by disease process that lasts a long time. Sudden cardiac arrest can have many causes that can be divided due to being reversible and irreversible, often made up of several factors. However, as one of the most common reasons they are given cardiovascular diseases, of which the first takes place ischemic heart disease occurs in 80% of cases, also in the below-described [3]. The challenge is to increase the effectiveness of resuscitation, defined as still insufficient - is about 2%. The term high risk factors for the occurrence of cardiac arrest. The assumption reduce episodes of cardiac arrest, the nurse has a big impact by conducting patient education, it is important to know the risk factors that can be modified and not modifiable factors which include male gender, age > 65 years, genetics and the possibility of the occurrence of coronary heart disease described as the most common cause of death [4]. The important tasks of nurses should be her being able to

recognize sudden cardiac arrest, in order to take swift action. The nurse in the therapeutic team is the person who will remain with the patient most of the time and should also enlarge their knowledge about new reports concerning CPR, which appear every few years in the form of guidelines of the European Resuscitation Council supported by many studies, to be able to provide the patient support at the highest level in accordance with the specific algorithms BLS and ALS and post-resuscitation care guidelines [5]. Regulation of the Minister of Health of 16 December 2016 on the organizational standard of health care in the field of anesthesiology and intensive care determines the rules of the ICU.

### **A case report**

The patient brought to the hospital by EMT city after losing consciousness at the scene was granted to him first aid. The patient was taken to hospital where they diagnosed myocardial infarction without the elevation of the T wave-NSTEMI. Confusion, cardiac and respiratory problems were noticed. The interview was conducted with his wife, who informed about ischemic heart disease, hypertension and paroxysmal atrial fibrillation, as confirmed by medical records. Initially, when out the ICU the patient was unconscious and passive oxygen therapy was carried out using the face mask, since persistent low saturation SpO<sub>2</sub> at 80% oxygen flow of 6 l/min, breath preserved- 16/min. The patient was founded Foley's catheter. All the time intravenously the medical team smoothed disorders of acid-base electrolyte and water. The need to maintain blood pressure and pharmacological support inefficient circulatory norepinephrine and dopamine was administered by continuous infusion through a central venous catheter. The nasogastric tube was used after two days of stay in hospital and treatment the patient regained consciousness and nasogastric tube was removed. At the time of the interview there could be observed some anxiety in the patient who was worried about his health, he also complained of chest pain, dizziness and nausea. There were no lesions. There was also no change of neurological, no evidence of meningeal, pupils narrow, equal, reactive. No allergies to drugs and other substances. Angina never occurred.

The Patient classified as class II care, required assistance with hygiene, because he did not have enough strength to satisfy his needs and every time he felt shortness of independent action. Mental state significantly reduced because of anxiety associated with fear about their health and lives. The patient admitted that I did not pay more attention to diet, likes to occasionally drink alcohol, smoke cigarettes for 25 years and does not see his conduct anything wrong. His physical activity was limited only to go shopping. Qualified for implantable cardioverter, the

patient was not entirely convinced. The Patient was transferred to the Department of Intensive Supervision Cardiological.

For the given patient care process was created that was designed to concentrate the theory care Dorothea Orem for removal of the limitations present in the self-care and support in addition to the deficit caused by the lack of independence of the patient[5]. The focus was on allowing the patient to return to the state of health of the period before hospitalization.

Measurements on the day of the interview:

RR: 170 / 120mmHg

HR 90 / min, well discernible, steady.

Breath: 14 / min and regular problems with secretions from coughing tree bronchial.

SpO2%: 85%, the body temperature: 36.6 deg. C, the level of blood glucose 96mg%, the weight of 107kg.

growth 178cm, BMI: 33.77 - And the degree of obesity.

According to the classification GRACE 2.0 - the patient is at high risk.

Hamilton's scale - the stage of severe depression.

During a patient's stay in the ICU for 4 days it observed many care problems some of them were discussed.

Nursing Diagnosis:

1. The possibility of re-SCA which is a possible complication of myocardial infarction.

Objective: To prevent deterioration of the patient's condition that could lead to a recurrence of cardiac arrest.

2. The possibility of pneumonia due to immobility.

Objective: prevent the onset of pneumonia.

3. The risk of pulmonary embolism or stroke caused by atrial fibrillation.

Objective: Preventing complications associated with thrombotic dissemination of material that could occur in the heart during atrial fibrillation.

4. The possibility of thromboembolic complications caused by immobility and cardiac arrhythmias.

Objective: Reduce the possibility of thromboembolic events.

5. The risk of infections in connection with the insertion of a predetermined central and Foley catheter.

Objective: Reduce the possibility of infection.

6. Shortness of breath and a feeling of chest pain due to reduced exercise tolerance

Objective: Improve the patient's exercise tolerance, shortness of breath and pain elimination.

7. Patient anxiety caused by fear of death.

Objective: To provide a sense of security.

Nursing interventions were associated with diagnostic function, therapeutic and nurses care and focused on the monitoring parameters, downloading material for diagnostic tests and medical execution of orders.

### **Justification for action**

Observing signs of parameters allows the early diagnosis, decision for a long treatment in the case of alarming symptoms of life-threatening condition or deterioration in the patient's condition [6]. Hypoxemia and hypercarbia may cause another episode of cardiac arrest, gas analysis is a test to help detect abnormal oxygenation. Fluctuations in blood glucose can affect patient mortality. Hypothermia and hyperthermia are a threat to patients. According to the guidelines, it is recommended to maintain the temperature at 33-36 ° C, as this reduces the risk of damage to the central nervous system [1].

Changing the position of the body facilitates removal of secretions from the lungs, changing the body position activates the circulation and rising the head have a positive effect on the respiratory function of the respiratory muscles and diaphragm during the gas exchange. The mouth hygiene and prevention measures reduce the possibility of pneumonia [6,7,8]. Shortness of breath may result in pulmonary edema [5]. You should carry out X-ray examination in order to exclude the occurrence of complications such as CPR conducted. Tension pneumothorax. Changes in temperature affect the risk of hypercapnia [1].

Stroke and pulmonary embolism often occurs in the course of atrial fibrillation, which the patient is suffering and is determined as a risk factor. Most atrial fibrillation occurs in the course of disorders sinoatrial suitable normal heart rhythm. In this situation, the heart work is not efficient, and blood stasis in the cells leads to the formation of clots, which can move with the blood to the brain resulting in an embolic stroke, or pulmonary arteries. [9] The circulatory system should be stimulated in order to prevent occurrence of blood stasis which can significantly reduce the overall efficiency of the patient by reducing the strength of the motion [7]. During ischemia immune pathways are activated and increases the activity of the clotting system, which can result in multiple organ failure and infection. [1]

Skin is the first body protective barrier and its interruption can be a source of systemic infections. You should observe the place of establishment of intravascular access, use aseptic technique to prevent infection. Regarding urinary catheter care, observe aseptic measures during maintenance of the catheter because incorrect actions may cause urinary tract infections. [6,10]

Eliminating dyspnea and chest pain and increased exercise tolerance, have an influence on the comfort of the patient's mental state, minimize the inhibition and positive effect on the possibility of further action aiming to restore the condition of the patient to that which will be able to function independently [7]. Saturation at the level of 94-98% associated with obtaining better results neurological patient. As for patients with stop of circulation for a short time - there is no need for intubation and mechanical ventilation, it is advised to administrate oxygen by a face mask and to maintain oxygen saturation level higher than 94%. As many as 56% of patients report fatigue. By nursing activities in providing comfort, going back to being self-sufficient and showing ways to solving problem sit is possible to lower the death.

In people with diseases of the cardiovascular system indicator of psychological stress, which causes limitations in daily functioning is high. In 19-27% of cases there is also the phenomenon of post-traumatic stress [5,11].

## **Discussion**

The patient after cardiac arrest requires a holistic, comprehensive care that focuses not only on the biological aspect but also mental and social [6,11]. The most important aspects of care should be reducing the risk factors that may affect the recurrence of cardiac arrest, preventing the complications that would prevent a return to full fitness and is often the cause of death to be like. Pneumonia. The priorities of the nurse's tasks include careful observation and monitoring vital signs, including the conduct of detailed documentation. It is important to support and provide psychological comfort to the patient and help resolve its problems. In patients after cardiac arrest are low, anxiety and post-traumatic stress symptoms that may reduce the possibility of a return to full fitness. An important part is to satisfy the needs of the patient in the most difficult moments for him when he is not able because of some health limitations to take care of himself. It is also important to prevent the occurrence of bedsores and infections, which unfortunately, frequently occur in everyday practice, however, these are the aspects on which we being the staff can have some influence using the available forces and means that should lead to minimizing the above problems. [2,10]

By conducting proper education a nurse can reduce mortality in a population suffering from cardiovascular disease. Unfavorable diet, physical inactivity, obesity, addictions, and other factors which are referred to as risk factors for myocardial infarction and lack of knowledge on topics reasonable in the prevention of disease often lead to life-threatening conditions. The patient had a heart attack and its consequences in life-threatening cardiac arrest, which could have been avoided.

In the process of nurturing attention was paid to the possibility of a stroke caused by atrial fibrillation, there is also a probability of occurrence of this incident in the future, since many risk factors presented as the cause of myocardial infarction in a patient are common in stroke, e.g. Hypertension, irregularities arising from style life. Nursing should be focused on the elimination of potential risks that could adversely affect the further prognosis of the patient while on ICU. Zielińska Borkowska [6] in her work says that through the awareness of the risks existing nursing staff can increase the effectiveness of the observation conducted and actions should therefore strive for excellence, taking part in all kinds of projects, aimed at increasing the skills and minimizing the risk of errors, which are a source of problems for the patient and for a member of the therapeutic team. The patient was giving first aid by his wife-giving him nitroglycerin, checking the state of consciousness, airway, breathing, heart rate, by calling 112 and performing CPR cardio respiratory ratio of 30 compressions 2 breaths algorithm CPR until the arrival of the rescue team of medical, which is related to the condition of the patient at the time of discharge, given a sufficiently fast increases the chances of survival of the patient [3]. First aid is part of the obligation arising from the law and not to take any action can lead to the far-reaching consequences specified in art.162 of the Criminal Code. The chain of survival determining the early detection was launched early emergency call, early defibrillation, and early transport to the hospital. [12] Fast first aid has an impact in terms of any subsequent neurological disorders, which occur by insufficient supply of oxygen to the brain. In the patient in question, there was no damage to the CNS, which can be compared with the data in the study Young, who writes that as many as half of all cases of people on whom resuscitation cardiopulmonary respiratory was performer regained heart work- suffered brain damage. It is also significant that up to 80% of sudden cardiac arrest episodes I happen at home and 90% are fatal [13]. The authors of the guidelines confirm good achievements incidence of neurological patients in their research, not only with the presence of numerous cognitive impairment. From my own observations, I think it appropriate to increase the hours spent on teaching first aid in schools at different levels of learning. I would also like to emphasize the importance of the role of a nurse who can carry out such training. Of great importance in cardiovascular diseases, as

well as the associated consequences are healthy life styles with in our patient, there are many risk factors that may cause another cardiac arrest, attention is paid to the need for their elimination in order to provide a better quality of life. Krzemińska et al., In their study confirms that hypertension, heart disease - coronary and rheumatic disorders, and against lipid with obesity and diabetes, they are the leading cause of heart failure. Therefore, an important role is played by education and prevention in this field, being able to increase life expectancy. A high prevalence of risk factors results, go hand in hand with a reduction in quality of life [14]. In the present case stemmed from an interview numerous irregularities concerning the current lifestyle of the patient, according to the researchers, education and health- promotion has a significant influence on its fate, as it can reduce the speed of the development of the disease. According to the research, it leads to an increase in the length and quality of life by eliminating risk factors. Bad health habits apply to most patients, influence the deepening of risk factors for cardiovascular disease and the possibility of having a stroke, they also include a diet rich in animal fats, containing large amounts of sugar, large quantities of salt in excess of the daily recommended dose, too little eaten vegetables and fruit, not the correct choice of methods food processing, tobacco smoking (active and passive), not applying sufficient weight to physical activity, daily stress associated with work, household duties, care of loved ones, financial problems and lack of ability to cope with it. Most people also do not have adequate knowledge of the possibility of a heart attack, because they consider it a problem that does not concern them directly. It is worth stressing that the BMI factor with that patient is well above the norm. BMI to specify validation, or its absence in body weight affects significantly the likelihood of cardiac arrest. According to the available test group of men are known as less taking care of the body weight compared to women [9,10,15,16]. Males are also said consume more alcohol, which has an impact on the incidence of coronary heart disease [14]. The patient required a surveillance and monitoring, confirms the desirability of action Zielinska and other authors agree about the important role it plays by observing the patient's nurse. Not only the parameters appearing on the monitor should be checked but also the impact on the general observation is the overall assessment of the patient's account, among others, color skins, mucous membranes, consciousness. A nurse is a person who stays most time with the patient. In today's era of technological development, the department can see a lot of equipment to facilitate daily work, early diagnosis. However, be aware of common sense because the technology often proves unreliable and presents the results of not having reflected in reality. Verifying the correctness breath- whose value is in the range of 12-16/min, arterial blood pressure- recommended to keep the amount of 120/80mmHg, pulse- in cardiac arrest more than 40/min, daily diuresis- 1



ml/kg/h, body-temperature between 33-36 degrees Celsius, saturation- should be monitored continuously for 24 hours and kept at 94-98% to control the concentration of glucose - recommend less than 180 mg/dl. These activities, allow early response and based on them increase the chance of detecting any life-threatening conditions, the implementation of effective interventions and increase the patient's chances of survival [1,6]. In efforts to reduce the risk of developing pulmonary inflammation taken care of oral hygiene, which is confirmed in the literature. However, according to the author it is often overlooked or not done at all. Removal of bacterial plaque, reduces the possibility of pneumonia [17].

In patient care residing in the ward anaesthesiology and intensive care is essential to eliminate the threats that may affect the prognosis of the patient, adverse events, and difficult to treat complications, the use of aseptic and antiseptic, and paying attention to the points identified as critical in everyday practice, which in its Salik writes article. The patient was immobilized, he had circulatory problems, for which it did not deal with the basic activities. He could not take care of daily hygiene, felt discomfort in this area and had a depressed mood, this deficit could cause life-threatening complications. The authors observed a similar dependence on sources that proper skin care, adherence to aseptic technique increases safety and improves patient comfort. Also touched on the possibility of a new solution for use in patient care disposable equipment, which could affect the final therapeutic effect for a limited contact with harmful microorganisms occurring in hospitals. [6,7,10,18] The patient had limited physical fitness, he stayed in bed a long time, there were problems with self-nutrition, he could not take care of hygiene, said problems the patient agrees with the described risk factors - about which he writes Szkilar, may increase the likelihood of pressure ulcers. [17,18] The patient had limited physical fitness, he stayed in bed a long time, there were problems with self-nutrition, he could not take care of hygiene, said problems the patient agrees with the described risk factors - about which he writes Szkilar, may increase the likelihood of the occurrence of bedsores. [17,18] The patient had limited physical fitness, he stayed in bed a long time, there were problems with self-nutrition, he could not take care of hygiene, said problems the patient agrees with the described risk factors - about which he writes Szkilar, may increase the likelihood of the occurrence of bedsores.[17,18]

The problem was the patient's fear of death and symptoms of depression associated with it. The article Piegzy et al. recognized this problem as occurring more frequently in patients who are treated for a heart attack. However, there is still a scarce amount of research on anxiety disorders and on the Oxygenal in patients who have had cardiac arrest and suffering from cardiovascular

diseases. According to the authors of the guidelines depression reaches 14-45% of people surviving cardiac arrest. [1,11]

The patient having to stay in bed for a long period of time is at a risk of complications - respiratory, cardiovascular, paying attention to the vein thrombosis presented in the nursing diagnosis, muscles become weaker, they cease desire to eat food, bedsores and created mood deteriorates causing anxiety and depression. T.W. patient was covered by comprehensive care aimed at him as soon as possible to restore efficiency measures were taken intended to improve the quality of life, reduced feeling of breathlessness- which complained, using the recommended positions and side and frequent change up every 2 hours, respiratory exercises, lifting her head to tilt 30 degrees. Early rehabilitation and commissioning, are presented in the work Malinowska.

During his stay at ICU, the patient was treated in many aspects according to guidelines set by the algorithm of care after resuscitation. He was diagnosed with the possibility of recurrence of cardiac arrest in the future. Cardiovascular disease causing irreversible consequences for the organism, are still a challenge to modern medicine and it is necessary to perform new research in this area, improving the effectiveness of current practices and their own knowledge in order to reduce mortality due to cardiac arrest, among society- writes Tomaszek et al.[1,3]

## **Conclusions**

- The main problem of the patient after cardiac arrest were the possibility of re-occurring of cardiac arrest, shortness of breath, discomfort due to immobilization, depressed mood.
- During the nursing actions should eliminate the factors influencing the development of complications that can lead to death.
- The role of nurses is patient education aimed at improving the quality of life and reducing the risk of recurrence of cardiac arrest.
- Nursing care of the patient after cardiac arrest requires nurses to constantly extend knowledge, excellence and knowledge of the latest guidelines.
- Sudden cardiac arrest is a major challenge for modern medicine and should increase the scope of research on this issue.

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