J Nur Today

REVIEW ARTICLE

www.jolnt.com

e-ISSN 2456-1630

Cardiac Emergency Drugs and Nurses Role

Vijayaraddi Vandali[1]*, Vinayraj Katare[2] and Rekha B Biradar[3]

*[1]Associate Professor, P P Savani School of Nursing, P P Savani University, Kosamba, Gujarat, India

[2]Tutor, P P Savani School of Nursing, P P Savani University, Kosamba, Gujarat, India

[3]Community Health Officer, Devdurga, Karnataka, India

Greentree Group

Received: 03.09.2017

Edited : 30.10.2017

Accepted: 02.11.2017

Published: 15.11.2017

ABSTRACT

Nurses plays vital role in prevention of deaths related to cardiac emergencies by administering cardiac emergency drugs and taking care of certain needy. Few important cardiac drugs are such as Adrenalin Injection, 0.1mg/ml , Amiodarone Injection, 50mg /ml , Atropine sulfate Injection, 1mg/ml in 1 ml ampoule , Lidocaine Injection 5mg/ml,10mg/ml, 20mg/ml in 20ml vial , Magnesium Sulfate Injection, 2%, 5%, 10%, 20%, 50% in 20ml , Nor epinephrine Injectable Solution, 1mg/ml & Procainamide Hydrochloride Injection,100mg/ml in 10ml vial.

KEYWORDS

Nurse, Cardiac Emergency & Cardiac drugs

INTRODUCTION

Nurse's role is most important in delivering cardiac emergency drugs interms of proper dose, route and side effect of particular drug.

In hospital setting, emergencies typically occur in emergency departments and intensive care units. Generally the "goal of using emergency drugs is to prevent the patient from deteriorating to an arrest situation".

'A registered nurse needs a physician's order to administer medications. In emergencies, RNs with advanced cardiac life support certification can administer selected drugs based on standing orders of the particular hospital'.

Drugs for acute coronary syndrome (ACS)

Acute coronary syndrome is a spectrum of clinical manifestations associated with acute myocardial infarction and unstable angina. The acronym 'MONA' to help them remember the initial medical treatment options for a patient with ACS[1].

M: Morphine

O: Oxygen

N: Nitroglycerin

A: Aspirin

Adrenaline

This is the first drug given in all causes of cardiac arrest and should be readily available in all clinical areas. Adrenaline concentrates the blood around the vital organs, specifically the brain and the heart, by peripheral vasoconstriction. Strengthens cardiac contractions as it stimulates the cardiac muscle[2].Adrenaline can be given repeatedly during a cardiac arrest until the condition of the patient improves. This can be repeated every 3-5 minutes.

Amiodarone

It is given during cardiac arrest to treat specific cardiac arrthymias, mainly ventricular fibrillation and ventricular tachycardia. Amiodarone has a complex effect on the heart but the main effect is to slow down the metabolism of cardiac tissue. The drug blocks the action of

hormones which increases the heart rate. The overall effect is to slow the heart[3].

Calcium chloride

It is required for contraction muscular tissue throughout the body, and is especially important for the strength of contraction of cardiac tissue. If given during cardiac arrest it can stabilise the contraction of cardiac tissue after metabolic changes have caused instability and arrhythmias.

Calcium chloride should administer intravenously and must not be injected directly into tissue due to the high risk of tissue necrosis[5].there are two main side-effects of calcium that are important in the emergency cardiac arrest situation. Increase blood acidity and should be used with caution in patients who have lowered blood PH.

Magnesium sulphate

It is an important electrolyte involved in the contraction of muscular tissue, including cardiac muscle. A reduction in blood levels of this element can frequently cause cardiac arrhythmias, often leading to cardiac arrest.

Common causes of excessive magnesium loss from the body include long-term use of potassium-losing diuretics, alcohol misuse or diarrhea. While giving magnesium intravenously nurse should monitor blood pressure, urine output.

Anti-Arrhythmic

- Amiodarone 300mg or 5mg/kg – only anti-arrhythmic in new adult

guidelines, in pediatrics

- Lignocaine 1mg/kg – pediatrics
- Magnesium 0.1-0.2mmo/kg – pediatrics
- Atropine 1-3mg or 20mcg/kg – removed from adult PEA/asystole guidelines, still pediatrics
- $NaHCO_3$ 1mmol/kg – pediatrics[4]

Drugs can be used during Cardiac Arrest:

- Adrenalin Injection, 0.1mg/ml
- Amiodarone Injection, 50mg /ml
- Atropine sulfate Injection, 1mg/ml in 1 ml ampoule
- Lidocaine Injection 5mg/ml,10mg/ml, 20mg/ml in 20ml vial
- Magnesium Sulfate Injection, 2%, 5%, 10%, 20%, 50% in 20ml
- Procainamide Hydrochloride Injection,100mg/ml in 10ml vial
- Sodium Chloride Injection 0.9% (Normal Saline), 10ml, 20ml, 500ml, 1000ml; 235mg/ml, 3% in 500ml Injection, 30%- 30mg in 10ml
- Oxygen inhalation etc.

The absorption of adrenaline given by the subcutaneous or intramuscular routes is unpredictable especially in shock states but administration by these routes can be life-saving in patients in shock states due to anaphylaxis. In ventricular fibrillation or asystole, adrenaline should be given in

doses of 1 mg by 20 intravenous bolus. Administration should be by a central line if already present or by a large peripheral vein and followed by a 20 ml 0.9% saline flush to ensure it rapidly reaches the central circulation. If there is no intravenous access then adrenaline can be given via the endotracheal tube[6].

"Atropine is used in the treatment of asystole and severe bradycardia. It acts to block the effects of the vagus nerve on the heart. A dose of 3 mg in an adult produces complete atropinization, blocking all the cholinergic receptors. The main adverse effect of atropine is to produce a sinus tachycardia which may be harmful in the presence of ischemic heart disease. The usual total dose of atropine used in cardiac arrest is 40 micrograms per kg which may be given as a single bolus or in several divided doses a few minutes apart[7]".

Sodium bicarbonate is to treat the metabolic acidosis associated with cardiac arrest. It should be given earlier in the presence of acute renal failure, hyperkalaemia, or tricyclic antidepressant overdose. The usual dose is 1 mmol per kg intravenously over 1 to 2 minutes[8].

Nurses responsibilities in administration cardiac emergency drugs:

- To ensure safe medication administration, the nurse should be aware of what is ordered, and need to recognize when a prescribed dose of a medication is too high or low.
- More education and experience are associated with improved patients" safety. When administering medications,
- Nurses are accountable for knowing why the medication is being used, what are the possible side effects to be monitored. Steps to nursing standard called 6 rights of medication administration that includes right medication, right dose, right client, right route, right time, and right documentation.
- Report all medication errors that do and do not harm patients.
- Understanding potential errors may provide key information on how medication errors as a whole can be prevented[9].
- Nurses working in an environment where individuals are punished for making mistakes can result in omission of error reporting and encourage hiding mistakes, ultimately making it difficult to identify errors and to prevent them from happening (Fahimi, et al 2008).
- Nurse has to monitor vital signs TPR & BP timely/as and when required.
- Nurse also has to monitor excessive sweating, shaking of extremities etc.

CONCLUSION

Nurses must have thorough knowledge regarding cardiac emergency drugs interms of dose, route, side effects, classification, care, prevention of side effects etc while handling with the mentioned drugs. Nurse also update her knowledge with regard to cardiac emergency drugs timely/periodically by reading journals, attending workshops, conferences, training programmes etc.

Acknowledgement: we would like to thank our parents and colleagues.

REFERENCES

1. American Heart Association. ACLS Provider Manual 2006 (with student CD). Dallas, TX: American Heart Association; 2006.

2. Colucci W. Treatment of acute decompensated heart failure. 2008. www.UpToDateol.com. Accessed May 21, 2010.

3. Gahart BL, Nazareno AR. 2008 Intravenous Medications: A Handbook for Nurses and Health Professionals. St. Louis, MO: Mosby; 2007.

4. https://lifeinthefastlane.com/ccc/drugs-for-cardiac-arrest/

5. Peberdy MA, Kaye W, Ornato JP, et al. Cardiopulmonary resuscitation of adults in the hospital: a report of 14,720 cardiac arrests from the National Registry of Cardiopulmonary Resuscitation. Resuscitation. 2003;58(3):297-308.

6. 2005 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Management of cardiac arrest. Circulation. 2005;112(suppl 1):IV-58–IV-66.

7. http://apps.who.int/medicinedocs/documents/s22355en/s22355en.pdf

8. http://apps.who.int/medicinedocs/documents/s17037e/s17037e.pdf

9. http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/cardiology/cardiovascular-emergencies/