Cardioversion - Nursing Implications

presentation by

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Disclosures

• There are NO CONFLICTS OF INTEREST related to this presentation.
• The information presented herein is for general educational purposes.
• This presentation should not be considered as an exclusive source of information on the topic.

Acknowledgements

• I'm grateful to UT Southwestern administration & faculty physicians who teach and train me on a daily basis with practical case scenarios.
• I especially acknowledge Drs. James Daniels, Jose Joglar, Mark Link, Richard Wu, & Mrs. Micki Lacker, NP for their continuous training/teaching efforts and patience. Without their help, I would not be standing here today.
• I acknowledge the relentless efforts of Dr. Rhonda Hough, APRN Director and Dr. Chris McLarty, APRN Assistant Director at UT Southwestern for their leadership and motivation to all APRNs.
**Definition & Physiology**

- Cardiovation is the delivery of energy that is synchronized to the QRS Complex, while defibrillation is the non-synchronized delivery of a shock randomly during the cardiac cycle (Knight, 2016).
- Cardiovation terminates arrhythmias by delivering a synchronized shock that depolarizes the tissue involved in a reentrant circuit.
- By depolarizing all excitable tissue of the circuit and making the tissue refractory, the circuit is no longer able to propagate or sustain reentry.
- As a result, cardiovation terminates those arrhythmias resulting from a single reentrant circuit, such as atrial flutter, atrioventricular nodal reentrant tachycardia, atrioventricular reentrant tachycardia, or monomorphic ventricular tachycardia.
Cardioversion - Indications

- Cardiac Arrhythmias: Atrial flutter, atrial fibrillation, ventricular tachycardia, ventricular fibrillation.
- In our PACU, we mostly do an elective cardioversion for Atrial Flutter/Fibrillation.
- In CVICU/ED setting: Defibrillation is also done in emergent VT/VF cases.

Pre-Cardioversion - Safety Checks

- Informed consent: Get the contact number of immediate family member on Consent Form
- Electrolytes: K>4 & Mag>2
- Anticoagulation: If on Warfarin, INR levels must be consistently therapeutic (2.0-3.0) for at least four weeks. If on NOACs (Xarelto, Apixaban, Pradaxa), patient must be on it four weeks without any interruption.
- Appropriate sedation
- Aspiration Prevention: Suction apparatus within reach
- If patient with device: Device analyzer within reach
- If K and Mag levels inadequate: Replace
- If not anticoagulated appropriately: Confirm, how long the patient has been in arrhythmia. If <48 hours confirmed; can proceed with DCCV
- If arrhythmia >48 hrs: A trans esophageal echocardiogram (TEE) is required to rule out left atrial/left atrial appendage thrombus
- If TEE is negative for thrombus: Proceed with DCCV
Factors Affecting Success of Cardioversion

Device related variables: Electrodes, Energy (several studies have suggested that less energy is required and the success rate is higher with the anteroposterior electrode position in patients cardioverted for atrial fibrillation).

Patient with Device: Patients with PPM/ICD require special attention to electrode placement. In such patients, recommendation is to place the external electrode pads in the anteroposterior position and avoid any contact with the skin overlying the device. Electrodes should be placed at least 12 cm away from device.

Patient related variables: Type & Duration of arrhythmia.

The Type of arrhythmia and the Patient's Clinical Condition are important determinants of defibrillation success.
Procedures

- Verify informed consents obtained for procedure, anesthesia, and TEE (if required)
- Electrodes Placement
- Check defibrillator: SYNC
- Time out
- Sedation by anesthesia: appropriate
- Select Joules as required: Atrial Flutter – 100 J, Afib -Start with 200 J, EP attending’s discretion
- Charge, Clear, Shock!

Complications

- Provocation of other fast or slow arrhythmias
- Sedation related complications: Aspiration
- Skin Burn/Irritation
- A stroke can occur when the shock either causes a clot that is already present to travel to the brain or elsewhere throughout the body, or results in formation of a new clot after the cardioversion. This is less likely in patients who have had an arrhythmia for less than 24 to 48 hours

AHA Guidelines for Prevention of TE Complications

Source: 2014 AHA/ACC/HRS Guidelines for Management of Patients With AF
**Post Procedure Care**

- Patient can go home once wide awake, alert, oriented, and able to swallow well.
- A family member or friend should drive due to the residual effects of anesthesia. Patients who receive sedation cannot drive for at least 24 hours.
- Some patients have irritation of the skin in the area where the shock was delivered; advice not to rub anything on area. Some suggest to apply an emollient cream such as Aquaphor® or Eucerin® - may be applied to reduce irritation.

**Follow up Instructions**

- Advise patient to continue taking anticoagulation pills for the next four weeks.
- Adhere with drugs – AAD or rate controlled (Per EP/Cardiologist).
- Resume activities as tolerated, no driving for 24 hours.
- Keep appointments with EP/Cardiology as scheduled.
- Adequate hydration and regular activities and exercises are encouraged.
- Compliance with medication, diet, and exercises for adequate blood pressure management is encouraged to be in normal rhythm.
References


THANK YOU ALL

Thank you ALL for being here!