Zaporozhye State Medical University

Chair of Medicine of Catastrophes, Neurosurgery and Military Medicine

Lecture: Critical Care on Cardiovascular Diseases

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Topic: Hypertensive Crisis

- **A hypertensive crisis** (HC) is a severe increase in blood pressure that can lead to a stroke.
- Extremely high blood pressure – above 180/ /110 mm of mercury (mm Hg) – damages blood vessels.
- HC is divided into 2 categories – urgent and emergency.

Signs and symptoms of HC

- **may include:**
- Elevated blood pressure
- Severe headache
- Severe anxiety
- SHORTNESS OF BREATH

Life–threatening signs and symptoms of HC:

- Fluid in lungs (pulmonary edema)
- **Brain swelling or bleeding**
- **A tear in aorta (aortic dissection)**
- **Heart attack**
- Stroke
- Eclampsia (on pregnant)

TREATMENT

Initial Treatment of Hypertensive Emergency:

The initial goal for BP reduction to achieve a progressive, controlled reduction in BP to minimise to risk of hypoperfusion in cerebral, coronary and renovascular beds.

- Oral agents for Severe Hypertension
- Captopril (enalapril, ramipril) – ACE-inhibitor
- Clonidine – centrally acting alpha-adrenergic agonist
- Labetalol – a combined alpha- and beta-adrenergic-blocking agent
- Prazosin – an alpha-adrenergic blocking agent

Parenteral Agents for Hypertensive Emergencies:

- Labetalol
- Sodium nitroprusside
- Nicardipine
- Nitroglycerine
- Fenoldopam
- Hydralasine
- Enalaprilat
- Esmolol
- Phentolamine
- Diazoxide

SYNCOPE

Syncope is defined as a transient self-limited loss of consciousness with an inability to maintain postural tone that is followed by spontaneous recovery.

The term syncope excludes seizures, coma, shock or other states of altered consciousness

Causes

Cardiac causes:

- Abnormal heart rhythms
- Bradycardia
- Sick-sinus (variable)
- Supraventricular or ventricular tachycardia
- Cardiac outflow obstruction
- Acute myocardial infarction
- Aortic dissection
- Cardiomyopathy

Noncardiac causes:

- Vasovagal
- Dehydratation
- Situational syncope
- Neurologic Syncope

Laboratory Studies

- Serum glucose level
- CBC (complete blood cell count level)
- Serum electrolyte level
- Cardiac enzymes
- Urinalysis

Imaging Studies

- CHEST RADIOGRAPHY
- HEAD CT-SCANNING
- ECHOCARDIOGRAPHY
- ELECTROCARDIOGRAPHY
- HOLTER MONITOR

- STRESS-TEST CARDIAC
- HEAD – UP TILT – TABLE TEST

- CAROTID DOPPLER
- ELECTROPHYSIOLOGICAL TESTING

Emergency Department Care

- Situational syncope treatment focuses on educating patients about the condition
- Orthostatic syncope treatment also focuses on educating the patients
- Cardiac arrhythmic syncope is treated with antiarrhythmic drugs or pacemaker placement
- Cardiac syncope may be treated with beta-blockade to decrease outflow obstruction
- Neurologic syncope may be treated in the same fashion as orthostatic syncope

Cardiac arrhythmia

- Cardiac arrhythmia is a term for any of a large and heterogeneous group of conditions in which there is abnormal electrical activity in the heart. The heart beat may be too fast or too slow, and may be regular or irregular.

Arrhythmia Types

- Sinus arrhythmia
- Sinus tachycardia
- Sick synus syndrome
- Premature Atrial Contraction (PAC)
- Supraventricular tachycardia (SVT)
- Wolff-Parkinson-White syndrome (WPW)
- Atrial flutter
- Atrial fibrillation
- Ventricular tachycardia (VT)
- Ventricular fibrillation
- Cardiac Standstyll (Asystole)

Symptoms

Palpitations: increased awareness of the heart beating faster

- CHEST PAIN
- SHORTNESS OF BREATH
- LIGHTHEADEDNESS OF FAINTING
- FATIQUE OR WEAKNESS

Tests for detecting Arrhythmias

- Electrocardiogram (ECG)
- Resting ECG
- Exercise ECG (stress-test)
- 24 – Hour ECG (Holter) monitoring
- Transtelephonic monitoring
- Intracardiac Electrophysiologic Procedure
- Esophageal Electrophysiologic Procedure

Antiarrhythmic Classification

- Class 1a. Quinidine, Procainamide, Disopyramide. Uses: ventricular A., prevention of AF
- Class 1b. Lidocaine, Phenytoin, Mexiletine.Uses: VA
- Class 1c. Flecainide, Propafenone, Moricizine. Uses: prevents paroxysmal AF, treats recurrent tachyarrythmias.
- Class 2. Beta-blocking. Propranolol, Timolol, Sotalol, Metoprolol, Atenolol. Uses: Prevent Recurrence of Tacchyarr.
- Class 3. K-channel blocker. Amiodarone, Ibutilide. Uses: in WPW-syndrome. Atrial Fibrillation.
- Class 4. Ca-channel blocker. Verapamil, Diltiazem. Prevent recurrence of paroxysmal Supraventricular tachyarrythmias.

Special Treatment

- Cardioversion. Doctor may apply an electrical shock to the chest wall.
- Automatic implantable defibrillators. To correct serious ventricular arrhythmias.
- Artificial Pacemaker.
- Radiofrequency Catheter Ablation and Surgery