SUD

- SUDDEN DEATH IN MIDDLE AGED MEN
- SIDS
- SUDDEN UNEXPLAINED NOCTURNAL DEATH SYNDROME
- SCARED TO DEATH
- SUDEP
- SUDDEN DEATH DURING NATURAL CATASTROPHE
- SUDDEN DEATH IN DRUG ABUSE
- SUDDEN DEATH DURING ASTHMA ATTACKS
- SUDDEN DEATH DURING ALCOHOL WITHDRAWAL
- SUDDEN DEATH FROM GRIEF
- SUDDEN DEATH DURING PANIC ATTACKS
BRAIN-HEART

- "VOODOO" DEATH(SUD)
- CARDIAC STUNNING
- EKG CHANGES
- NEUROGENIC ARRHYTHMIAS
- SUDEP
- PSYCHOSOMATIC ILLNESS

AW

PERI-PARTUM CARDIOMYOPATHY

- CAN OCCUR UP TO 6 MONTHS POST-PARTUM
- DILATED CARDIOMYOPATHY WITH LV FAILURE
- CAUSE UNKNOWN: NUTRITIONAL DEFICIENCIES, SMALL VESSEL CORONARY DISEASE, HORMONAL EFFECTS, TOXEMIA, MYOCARDITIS OR IMMUNOLOGICAL RESPONSE TO FETAL ANTIGEN
- TREATMENT INCLUDES AGGRESSIVE TX FOR CHF, ANTI-COAGULATION AND IF NO RESPONSE, TRANSPLANTATION
- RESEMBLES "TAKOTSUBO"
- RISK OF RECURRENCE
BRAIN-HEART

- VOODOO DEATH:
- 600,000/YR. IN U.S.
- SUDDEN DEATH ASSOCIATED WITH DEATH OF A CLOSE PERSON, DURING ACUTE GRIEF, THREAT OF LOSS OF A CLOSE PERSON, DURING MOURNING OR ON AN ANNIVERSARY, LOSS OF STATUS OR SELF-ESTEEM, PERSONAL DANGER OR THREAT OF INJURY, AFTER DANGER IS OVER, REUNION, TRIUMPH OR HAPPY ENDING.
NEUROGENIC ARRYTHMIAS

- AUTONOMIC INFLUENCE
- SYMPATHETIC OVERWHELMS PARASYMPATHETIC
- CONSISTENTLY HIGH NOREPINEPHINE LEVELS
- CONTRACTION BAND NECROSIS (SUBENDOCARDIAL, INVOLVING CONDUCTION SYSTEM)
- PAC’S AND VPC’S
- ATRIAL FIBRILLATION (CAUSE OR RESULT OF STROKE?)
- SINUS ARREST
- TORSADES
- V-FIB ARREST
EKG CHANGES

- T-WAVE INVERSIONS (CEREBRAL T WAVES)
- U WAVES
- PRONGATION OF Q-T INTERVAL
- ARRYTHMIAS
- REPOLARIZATION CHANGES (RISK OF FATAL ARRHYTHMIA)

The neurocardiac lesion: Gross specimen of a patient who died during an acute psychological stress shows fresh endocardial hemorrhages (1 of many is shown by the arrow).

30 Year Old Man who Jumped to His Death after 20 Minutes on Roof

Cardiac contraction band necrosis (also known as coagulative necrosis, myofibrillar degeneration)
Intense mineralization within minutes of the onset of contraction band necrosis.

NEJM 2005 MYOCARDIAL STUNNING

- Wittstein et al. described 19 patients who presented with LV dysfunction after sudden emotional stress.
- Patients had angiography and serial echos, 5 had endomyocardial biopsy, 13 had catecholamine levels and compared to patients with MI.

MYOCARDIAL STUNNING

- 95% women
- Clinical picture included chest pain, pulmonary edema, and cardiogenic shock.
- EKG showed T-wave inversion and prolonged QT interval.
- No coronary artery disease on angiogs.
- Severe LV dysfunction (mean EF < 20) with rapid resolution in 2 to 4 weeks to EF of > 50.
- Biopsies showed contraction band necrosis.
- Plasma catecholamine levels were dramatically higher in stress-induced cardiomyopathy compared to patients with MI as well as neuropeptide Y.
- "Takotsubo" type changes in some cases.
Serial Echocardiographic Assessment of the Ejection Fraction in 19 Patients with Stress Cardiomyopathy
MECHANISM

- CATACHOLAMINE INFUSION CAUSES ARRHYTHMIA
- CONTRACTION BAND NECROSIS WITH EARLY CALCIFICATION
- INCREASE CALCIUM IN CELLS AND NOT IN SR
- STRESS INDUCED TAKOTSUBO-LIKE CARDIOMYOPATHY IN ELDERLY WOMEN AND PREGNANCY

SUDEP – Overview

- Patients with refractory epilepsy face an elevated risk of sudden death, with rates as high as 1% per year
- This phenomenon, known as sudden unexpected death in epilepsy (SUDEP), is believed to be a seizure-related occurrence, but the exact underlying mechanisms are uncertain

Electroencephalographic and electrocardiographic tracings from a patient with ictal bradycardia (A) and then asystole (B) during a right temporal lobe seizure. Jehi and Najm (2008)
SUMMARY

- BRAIN LESIONS, INCLUDING STROKE, SAH, SEIZURE DISCHARGES, EMOTIONAL CRISIS MAY PRODUCE ADRENERGIC CATECHOLAMINE STORM WHICH CAUSE ATRIAL AND VENTRICULAR ARRYTHMIAS, CONTRACTION BAND NECROSIS OR PULMONARY EDEMA