CARDIAC CONCERNS IN NEWBORNS

CRITICAL CONGENITAL HEART DISEASE (CHD): APPROXIMATELY 25% ARE CRITICAL – REQUIRING INVASIVE INTERVENTION (SURGERY OR CATH)

MANY NEWBORNS WITH CRITICAL CHD ARE IDENTIFIED SOON AFTER BIRTH DUE TO SYMPTOMS, ETC.

SOME ARE NOT DIAGNOSED UNTIL AFTER DISCHARGE

BUT!!!
CARDIAC CONCERNS IN NEWBORNS
SOME ARE NOT DIAGNOSED UNTIL AFTER DISCHARGE
AND
RISK OF MORBIDITY and MORTALITY INCREASES WITH A DELAY IN RECOGNITION

CARDIAC CONCERNS IN NEWBORNS

What to do?
- Don’t Panic
- Education
- Maintain Level of Suspicion

CARDIAC CONCERNS IN NEWBORNS

SOME INFORMATION:

PREVALENCE:
6-13/1000 LIVE BIRTHS
MOST COMMON:
- VSD, ASD, PDA
- TETRALOGY: most common cyanotic lesion

REQUIRE NEONATAL INTERVENTION:
- TRANSPOSITION
- TRUNCUS
- SINGLE VENTRICLE
- PULMONARY ATRESIA
- AORTIC STENOSIS (SEVERE)
- PULMONARY STENOSIS (SEVERE)
- COARCTATION (SEVERE)
- TOTAL PULMONARY VEINS RETURN
CARDIAC CONCERNS IN NEWBORNS

- DO NOT REQUIRE EARLY INTERVENTION:
  - VSD
  - ASD
  - TETRALOGY OF FALLOT
  - MILD TO MODERATE OBSTRUCTIVE LESIONS:
    - AORTIC AND PULMONARY STENOSIS, COARCTATION

- BUT

CARDIAC CONCERNS IN NEWBORNS

- NEED USEFUL CLINICAL INFORMATION FOR THE CLINICIAN IN THE TRENCHES:
  - PERCENTAGES, RELATIVE RISKS, LISTS OF LESIONS ARE NOT NECESSARILY TERRIBLY HELPFUL WHEN DEALING FACE TO FACE WITH A SINGLE PATIENT.

CARDIAC CONCERNS IN NEWBORNS

- FETAL DIAGNOSIS
- HISTORY
- CLINICAL RECOGNITION
- PULSE OXIMETRY

CARDIAC CONCERNS IN NEWBORNS

- HISTORY
  - MAINLY HELPFUL FOR NON CARDIAC ABNORMALITIES
CARDIAC CONCERNS IN NEWBORNS

- Difficulty Feeding
- Fussiness
- Tachypnea
- Sweating
- Cyanosis
- Shock
- Murmur

CARDIAC CONCERNS IN NEWBORNS

- NO SIGNS OR SYMPTOMS

  > “NOT OUT OF THE WOODS”

CARDIAC CONCERNS IN NEWBORNS

- PHYSICAL ASSESSMENT:
  - ACTIVITY
  - COLOR
  - BREATHING
  - PULSE
  - HEART RATE
  - PERFUSION
  - MURMURS

CARDIAC CONCERNS IN NEWBORNS

- PHYSICAL EXAM:
  - RESPIRATORY
    - RATE, RETRACTIONS, FLARING, GRUNTING, ETC.
  - AUSCULTATION OF THE HEART
    - Arrhythmia, gallop, murmur
  - PALPATION OF PULSES
  - ABDOMEN: organomegaly?
  - VITAL SIGNS

CARDIAC CONCERNS IN NEWBORNS

- USUAL PRESENTATION:
  - VARIOUS COMBINATIONS OF:
    - TACHYPNEA
    - TIRING WITH FEEDS,
    - CYANOSIS,
    - ABNORMAL PULSES,
    - MURMUR

CARDIAC CONCERNS IN NEWBORNS

- PULSE OXIMETRY
  - NOW MANDATORY AFTER 24 HOURS
  - WOULD OBTAIN < 24 HOURS IF ANY CLINICAL SUSPICION
  - CONSIDER it a 4TH VITAL SIGN IN INFANTS
CARDIAC CONCERNS IN NEWBORNS

- CHEST X-RAY
  - EVALUATE THE LUNGS
    - CLEAR VS. OPACITY
    - LOCALIZED VS. DIFFUSE
    - PULMONARY VASCULAR MARKINGS
  - SECONDARILY TO EVALUATE THE HEART
    - SIZE, SHAPE, ETC.
- EKG
  - MOST LESIONS HAVE NORMAL NEWBORN EKG

CARDIAC CONCERNS IN NEWBORNS

- NEEDS IMMEDIATE ATTENTION:
  - RESPIRATORY DISTRESS
  - CYANOSIS (INCLUDING LOW PULSE OX)
  - ORGANOMEGALY
  - FEEDING PROBLEM
  - ABNORMAL PULSE
  - GALLOP

CARDIAC CONCERNS IN NEWBORNS

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  (of particular cardiac concern)
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CARDIAC CONCERNS IN NEWBORNS

■ NEEDS IMMEDIATE ATTENTION:
  (of particular cardiac concern)
  ➢ RESPIRATORY DISTRESS
  ➢ CYANOSIS (INCLUDING LOW PULSE OX)
  ➢ ORGANOMEGALY
  ➢ FEEDING PROBLEM
  ➢ ABNORMAL PULSE
  ➢ GALLOP

CARDIAC CONCERNS IN NEWBORNS

■ OTHER CAUSES FOR URGENT CONCERN:
  ➢ ABNORMAL CHEST X-RAY
  ➢ ABNORMAL EKG:
    ➢ AXIS
    ➢ HYPERTROPHY

CARDIAC CONCERNS IN NEWBORNS

■ GENERALLY NOT EMERGENT
  ➢ MURMUR
  ➢ MINOR EKG ABNORMALITIES

CARDIAC CONCERNS IN NEWBORNS

■ LIMITATIONS:
  ➢ FETAL:
    ➢ VSDs
    ➢ COARCTATION
    ➢ MILD VALVAR ABNORMALITIES

CARDIAC CONCERNS IN NEWBORNS

■ LIMITATIONS:
  ➢ CLINICAL RECOGNITION:
    ➢ DUCTAL DEPENDENT LESIONS

CARDIAC CONCERNS IN NEWBORNS

■ LIMITATIONS:
  ➢ PULSE OXIMETRY:
    ➢ VSD
    ➢ SOME COARCTATIONS
    ➢ NON EMERGENT LESIONS
CARDIAC CONCERNS IN NEWBORNS

- Recap of concerning findings:
  - Cyanosis/Abnormal Pulse Ox
  - Abnormal Pulse
  - Gallop
  - Organomegaly
  - Abnormal CXR
  - Abnormal EKG

- Nothing is foolproof
- Current tools and protocol will pick up vast majority of critical lesions in the newborn period
- Always maintain a level of suspicion
- Keep the beat