UPDATE ON DIAGNOSIS AND MANAGEMENT OF FETAL GROWTH RESTRICTION

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www.fetalmedicinebarcelona.org
1. Identify small fetus

2. FGR vs. SGA

3. Early vs. Late

4. Stage-based management protocol
1. Identify small fetus

2. FGR vs. SGA

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Neonatal and Fetal GA-adjusted “normal” weight in the same population
1. Identify small fetus

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The discovery of UA and hemodynamics of IUGR

Constitutionally small  Placental insufficiency  Extrinsic cause

SGA  IUGR

Primary fetal defect

IUGR = abnormal UA Doppler
SGA: proportion of perinatal adverse outcomes in 376 consecutive cases

- Neonatal acidosis
- CS for distress
- Abnormal NBAS
- Any

Figueras 2011
Impact of growth restriction in late pregnancy stillbirth

N=2625 stillbirths

FGR as relevant condition identified in 43-60%
Prognostic criteria of “poor outcome”-SGA
CS for distress and/or neonatal acidosis

UtA >p95
CPR <p5
EFW CENTILE <3

N=447 SGA + 447 controls

Figueras 2012
Distribution of cases when IUGR = abnormal UA Doppler

Savchev 2013
Distribution of cases when IUGR = abnormal CPR or UtA or EFW

Savchev 2013
1. Identify small fetus
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IUGR = low CPR or high UtA or EFW < p3 or low PIGF

**EARLY IUGR (1%)**

- **PROBLEM: MANAGEMENT**
  - Placental disease: high (UA+, PE high)
  - Hypoxia ++: systemic CV adaptation
  - Tolerance to hypoxia. Natural history
  - High mortality and morbidity

**LATE IUGR (5-7%)**

- **PROBLEM: DIAGNOSIS**
  - Placental disease: low (UA-, PE low)
  - Hypoxia +/-: central CV adaptation
  - Low tolerance: no natural history
  - Low mortality but poor long outcome.
FETAL DETERIORATION IN PLACENTAL INSUFFICIENCY
EARLY VS LATE IUGR (>34s)

PLACENTAL DISEASE

- Increment placental impedance
- UTERINE A. >p95
- CPR <p5
- UMBILICAL A. >p95
- Centralization
- MIDDLE CEREBRAL A. <p5
- Ao ISTHMUS >p95
- growth

COMPENSATED HYPOXIA

- minimal tolerance to hypoxia
- Placental injury <30%
- mild hypoxia
- no cardiovascular adaptation

DECOMPENSATED HYPOXIA

- cardiac ischemia
- Diastolic failure
- DUCTUS VENOSUS >p95 and a-
- Systolic cardiac failure

SERIOUS INJURY

- DEATH
- CTG / BPP ABNORMAL

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IUGR= low CPR or high UtA or EFW<p3 or low PIGF

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<th>LATE IUGR (5-7%)</th>
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Savchev 2013
RATIONALE FOR A STAGE-BASED APPROACH TO THE MANAGEMENT OF FGR

PLACENTAL DISEASE

- Diagnostic/chronic markers
  - Early and Late IUGR
  - Increment placental impedance

HYPOXIA

- Prognostic/Acute markers
  - Early IUGR

ACIDOSIS

SERIOUS INJURY

DEATH

Stage fetal deterioration

- II
- III
- IV
- V

Risks of prematurity

- LOW
- MODERATE
- HIGH

Red Line LATE IUGR

Red Line EARLY IUGR

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<table>
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<th>Clase</th>
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<tr>
<td>I</td>
<td>Doppler normal pero PFE&lt;3</td>
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<tr>
<td>II</td>
<td>Aumento resistencia placentaria o redistribución inicial</td>
</tr>
<tr>
<td>III</td>
<td>Aumento grave resistencia y/o redistribución grave</td>
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<tr>
<td>IV</td>
<td>Alteración hemodinámica grave</td>
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<tr>
<td>V</td>
<td>Alto riesgo de muerte</td>
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**Protocolo CIR**

**Primer paso:** si todo N = PEG

- **CPR** <p5
- **Ut A** >p95
- **MCA** <p5
- **AEDV**
- **Aol** >p95
- **DV** >p95
- **REDV**
- **UVpuls**

*CGT decelerations of reduced short-term variability*
IUGR
Management protocol according to severity stages

- Stage
- Follow-up
- Delivery
- Mode
- Mort.
- Morb.

<26w | 26-28 | 28-32 | 32-34 | 34-37

Follow-up:
1/w

Delivery:

Mode:
LI

Mort.: >90% | 50% | <10%
Morb.: >90% | 50%
Small fetus (EFW <p10) must be divided in:
- FGR (placenta, poor perinatal and long-term outcome)
- SGA (we don’t know, perinatal outcome N, poor long term)

Early and late-onset FGR (GA 32s) represent two distinct phenotypes of the same disease

Clinically, a single stage-based protocol allows optimizing decisions in all cases
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