

## **Small for Gestational age (SGA), Fetal Growth restriction (FGR), Intrauterine Growth Retardation (IUGR)**

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### **Scope**

This guideline recommends assessment, follow-up and handling in cases with ultrasound (UL) estimated fetal weight <-15% (< 10 percentile), which is defined as cut-off for SGA/IUGR.

### **Screening, investigations and control**

#### **Background**

- Fetuses with IUGR are at increased risk of intrauterine fetal death, peripartum asphyxia and neonatal complications. In addition they may have increased risk of a number of medical diseases later in life. Evidence A-B, I-II
- Epidemiological studies have shown, that a birth weight between -15 og -22% is associated with a slightly to moderate (RR 1.1-3.1) and gestational age dependent, significant increased risk of adverse obstetric outcome. Further, a birth weight less than -22% is associated with an increased and significant (RR 2.7-4.4) risk of adverse outcome. Evidence B, IIa.

#### **Screening of all pregnant women**

- There is no evidence that low risk women benefit from ultrasound screening for fetal size and growth. Evidence B-C, II-III.
- It is relevant to identify groups at risk for further assessment/follow-up (table 2). Evidence B-C, II-III.
- Assessment of fetal size by abdominal palpation can be used, but because of the uncertainty of the method it cannot stand alone. Evidence C-D, III-IV
- Assessment of fetal size by symphysis-fundal height measurements can be used, especially serial measurements, but because of the uncertainty of the method it cannot stand alone. Evidence C, II
- It is not recommended to screen low risk pregnant women with measurement of flow in the uterine artery (UtA). Evidence B, II.

#### **Screening of groups at risk**

- Measurement by ultrasonography of estimated fetal weight (EFW) is a screening tool for low birth weight because of the uncertainty of the measurement. The detection rate for children with low birth weight (BW) is dependent on the cut-off of EFW.

- If the cut-off is defined as  $< -22\%$  a detection rate of 30-50 % for children born with low BW ( $-22\%$ ) and a corresponding false positive rate (FPR) of about 1,5 % is expected. If the cut-off is set at  $< -15\%$  then 80 % of children born with low BW ( $-22\%$ ) are detected and the false positive rate (FPR) will be around 9% (see 73 Appendix 2).
- Pregnant women with increased risk of IUGR should be offered UL-biometry EFW based on individual assessment at for example gestational age (GA) 28 and 34. Evidence C, III.
- When screening pregnant women at increased risk of IUGR measurement of flow in UtA in the 1st and 2nd trimester may be included as part of an overall risk assessment in order to optimize the follow-up program and possibly start treatment with ASA in the therapeutic window (before GA 16). Measurement of flow in UtA in the 1st trimester has a poorer sensitivity and specificity than in the 2nd trimester. Evidence C, III.
- If the flow in UtA is normal in GA 22-24 no further control of UtA is indicated. Evidence C, III.

### Assessment and control if SGA / IUGR

- Assessment of fetal size by UL-biometry is recommended when investigating and controlling for suspected SGA. Evidence C, III.
- Several smaller studies have shown, that also stagnant UL EFW (decrease in weight percentil  $>20$ , change in z-score or grams/day) is a risk factor, but because of the uncertainty of UL EFW the identification of stagnant growth is difficult. Evidence C, III.
- There is no clear definition of stagnant growth, but this group recommends: decrease in weight percentile  $> 20$  over 2 weeks. Stagnant growth is not included in the definition of IUGR, but should be considered as an aggravating factor in relation to IUGR. Evidence D, III.
- It is not recommended to use customized growth charts routinely in assessment of the fetal weight deviation, because the expected improved prediction of truly IUGR probably is minimal in comparison with the routinely use of Hadlocks formula, when calculating FW. Evidence C, II.
- Assessment of pregnant women in high risk of IUGR by flow in the umbilical artery (UA) and the resulting handling decreases the perinatal mortality and morbidity and is therefore recommended in cases of suspected and/or control of SGA/IUGR. Evidence A, Ia.
- It is not indicated to do routinely measurements of flow in UA in pregnant women at low risk for IUGR. Evidence A, Ia.
- In case of SGA/IUGR, UA and MCA flow should be assessed. Evidence C, III.
- It is recommended to use CPR to assess the fetal redistribution in all cases of suspected IUGR. Evidence- B-C , II-III.
- It is recommended to use Astraia to calculate the CPR and use  $<2.5$  percentile as the threshold for abnormal CPR. Evidence – C-D, III-IV.
- Treatment with steroid can cause a transient improvement in the flow of the UA and DV, while the flow in the MCA and the UtA are not affected. Evidence C III.
- Especially at GA  $< 32$  weeks (and especially at EFW  $< -33\%$ ) flow in DV should always be assessed and taken into account when considering preterm delivery. In cases with abnormal venous flow immediate delivery should always be considered. Evidence C III.
- Antenatal CTG may be used in assessment of the fetal condition in combination with UL examination in cases where SGA or IUGR is suspected. Evidence- B-C, III.
- The assessment of amniotic fluid volume and fetal movements should be part of the examination of the fetus. Evidence C, III.

- If the second trimester anomaly scan has not been performed, this should be done in all cases of SGA/IUGR including assessment of the placenta and umbilical cord insertion. If EFW < -33% an expert ultrasound examination should be considered including fetal heart assessment and if relevant assessment for aneuploidy and intrauterine infection. Evidence C, III.

### Timing delivery

- If EFV < 500 g delivery is rarely indicated. Evidence C, III.
- Is the fetus viable?.
- It is often indicated to await the effect of steroids in cases where the gestational < 34 weeks. Evidence C, III.
- If the ductus venosus flow is abnormal, prompt delivery is recommended – depending on the gestational age. Evidence C, III.

### Indications for delivery (-depending on gestational age). Evidence B-C, II-III.

- Gestational age > 28: Changes in the CTG seen as:
  - Unprovoked or late decelerations.
  - Probably reduced variability
- GA < 32 and early SGA with repealed/reversed diastolic flow (flow class 3) in the UA:
  - Delivery if abnormal flow in DV/pulsating flow in the umbilical vein (UV).
  - If normal venous flow delivery no later than GA 32.
- GA > 32
  - Delivery if flow class 3 in the UA
  - If abnormal flow in the UA and/or low CPR delivery no later than GA 37.
- SGA and normal flow:
  - Delivery should be considered from GA 37, depending on the severity of the growth impairment and an overall individual assessment. Delivery can be exposed in cases of slight SGA and no other aggravating factors, whereas severe SGA and/or other aggravating factors will indicate delivery at GA 37.

### Mode of delivery

- Vaginal delivery is recommended if (Evidence C, III):
  - UA flow class 0, 1 and 2A.
  - Consider CTG-”stress-test” before vaginal delivery.
  - The fetus should be assessed by continuous CTG during active delivery.
- Cesarean section is recommended if (Evidence C, III):
  - UA flow class 2B and 3
  - Abnormal flow in DV and/or UV
  - Consider caesarean section if:
    - ✓ Abnormal biophysical profile.
    - ✓ Fetal redistribution (reduced CPR)
    - ✓ EFW < -33%
    - ✓ Changes in the CTG during stress-test.

### Prophylaxis/treatment

- If current IUGR smoking should be discouraged and 24 hour oxygen treatment can be considered. Evidence A, Ib.
- Women with previous IUGR should be recommended not to smoke. Evidence A, Ib.
- Women with previous IUGR should be recommended a minimum of 7 kilo weight gain in the coming pregnancy and to eat a varied diet. Evidence D, III.
- Investigation for thrombophilia should be offered to all women with previous severe IUGR. Evidence D, III
- If previous IUGR and thrombophilia prophylactic treatment with LMWH/low-dose ASA can be indicated depending on the type of thrombophilia. Evidence D, IV.
- If previous severe preeclampsia and IUGR treatment with low-dose ASA may be considered. Evidence A, Ib.

### Prognosis

- The prognosis is strongly associated with gestational age at delivery and the GRIT study support a pending attitude in timing of delivery. Evidence B, II
- SGA is associated with the metabolic syndrome, impaired intelligence, fertility, vision and growth. Evidence B-C, II-III