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IUGR IN DICHORINICS MULTIPLES

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GATA Maternal / Fetal

Growth Aberration in Multiple Pregnancy

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- Twins 10.2%, triplets 34.5% less than 1500gr (VLBW)
  Martin 2003
- VLBW, in twins 9 fold, in triplets 30 fold higher than singleton
  Alexander 1998
- Twins and triplets comprise more than 25% of VLBW infants
- 3.3% of all neonates are twin and triplets
  Martin 2003

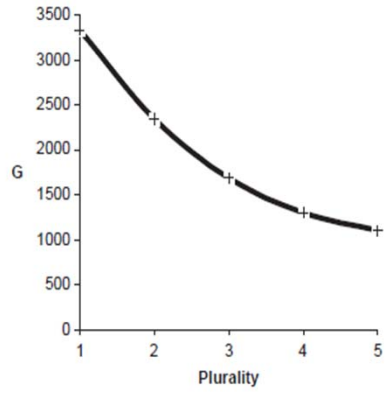

Fig. 1. Relationship between mean birth weight and plurality. (*Data from* Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2002. Natl Vital Stat Rep 2003;52:1–113.)

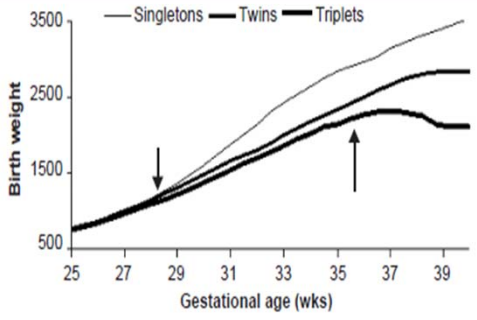

Fig. 2. Growth curves of singletons, twins, and triplets show the deviation of multiples' curves from the singleton's curve at 28 weeks' gestation (*left arrow*) and the deviation of the triplets' curve from the twins' curve at 35 to 36 weeks' gestation (*right arrow*). (*Adapted from* Alexander GR, Kogan M, Martin J, et al. What are the fetal growth patterns of singletons, twins, and triplets in the United States? Clin Obstet Gynecol 1998;41:114–25; with permission.)

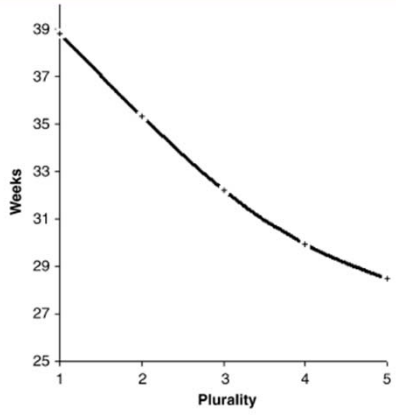

Fig. 3. Relationship between mean gestational age and plurality. (*Data from* Martin JA, Hamilton BE, Sutton PD, et al. Births: final data for 2002. Natl Vital Stat Rep 2003;52:1–113.)

Growth abnormalities

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- One SGA
- Both SGA
- Growth discordance
- 2/3 of twins, smaller one <10th centile
- CRL discordance predict later weight discordance

Blickstein 2004, Tai 2007

First trimester US

1) Discordance of greater than 10% was associated with increased risk of anatomical abnormality

Kalish 2004

1) Discordance has also been associated with an increased risk for birth weight discordance and for perinatal morbidity

Kalish 2003, Tai 2007

IUGR and SGA status in multiples

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- IUGR infants are infants who fail to grow according to their growth potential
- All third trimester multiples are likely to be growth restricted
- Multiples have different growth rates
- Each member has its own growth pattern

Blickstein 2002, 2003, 2004

Growth Discordance

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- Birthweight discordance is common
  - 75 % of twins, less than 15% discordance
  - 20% of twins , 15-25% discordance
  - 5% of twins ,more than 25% discordance
  - 1% of twins, more than 40% discordance

Growth Discordance

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- Is discordance a chance event?
- More than 25% discordance, the smaller is 3-6 times more often twin B

  Blickstein 1987,1999
- More than 25% discordance, PM increases
- Not all discordant pairs are similar and some fare better

  Blickstein 1999,2003

Risk factors for growth discordance

- Antenatal bleeding
- Umbilical cord abnormalities (velamentous)
- Uteroplasental insufficiency
- Fetal issues (chromosomal, genetic, anatomic abnormalities
- MC
- Maternal complications (chronic hypertension, PIH)
- MFPR

Wen 2005, Kingdom 2005, Audibert 2003

Growth Discordance

-20% growth discordance may result in an increased risk for some adwerse outcomes but not for serious morbidity and mortality

-After adjusting for chorionicity, antenatal steroids, oligohydramnios, preeclampsia and gestational age at delivery discordant twins were at increased risk for LBW, VLBW, NICU administration, neonatal oxygen requirement or hyperbilirubinemia

Amaru 2004

Growth Discordance

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- Adverse outcome is greater with larger discordance

  Hollier 1999,Demissie 2002
- Different clinical implication in different gestational age
- Severe discordant twins are at dispropartionate risk for PM, when compared with concordant smaller or larger twins

  Bronurm 2003

Growth Discordance in Triplets

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- More than 25% discordance, 30.4%
- Discordance levels 25.1-35% and more than 35%; 19.4% and 9.5 %
- This is associated with increased risk of fetal death and frequancy of SGA infants

  Mordel 1993,Fountain 1995,Blickstein 2003 Jacobs 2003

Growth Discordance

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- Less than 25% discordance seems to be related a normal variation
- More than 35% discordance seems to be related to the exhausted uterine environment and reflects growth restriction

  Blickstein 2000

Evaluation of fetal growth

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- Growth abnormalities
- Ultrasonography
- Doppler velocimetry

  Chasen and Chervenak 2009

Evaluation of fetal growth

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- IUGR and prematurity are major causes of higher mortality and morbidity
- First and second trimester the growth is not significant than singletons
- In third trimester particularly after 30-32 weeks slower fetal growth
- Placental crowding and anomalies of umblical cord
- Growth curves, specifically for twins, are of limited usefullness (small population, chorinocity, outcome)

Grennert 1978, Alexander 1998, Hamilton 1998

Ultrasonography in IUGR multiples

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- Serial ultrasound recommended
- Fundal height determination is not sensitive
- The effectiveness of US in predicting discordans at birth is controversial
  - In one study (Sen.,Sp.,PPV,NPV:55, 97, 82, 91%)
  - In another study (Sen.,Sp.,PPV,NPV:33, 43, 33, 11%)

ACOG 2001, Caravello 1997, Hill 1994, Chauhan 2004

US in IUGR multiples

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- After 20 weeks every four-six weeks
- Fetal growth decelerетion is optimally detected between 20 and 28 weeks
- Many infants with IUGR can be identified at 20-24 weeks
- İf there is no evidence of groth abnormality at that time than frequent scanning might not be necessary

Gonzalez-Quintero 2003, Grobman 1999

Doppler velocimetry in IUGR multiples

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- UA doppler may improve the performance of US in detecting FGR
- But the available data do not show a clear benefit of doppler over the use US alone
- The largest trial was limited by insufficent power and there were no difference

Chittacharoen 2000, Giles 2003

Management of Growth Aberration in Multiple Pregnancies

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- It is complex
  - Diagnosed remote from term
  - Potential error in the diognosis

Blickstein 1996

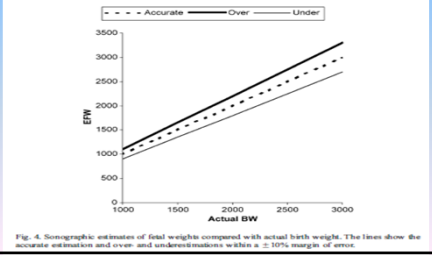

Fig. 4. Sonographic estimates of fetal weights compared with actual birth weight. The lines show the accurate estimation and over- and underestimations within a ± 10% margin of error.

Management of Growth Aberration in Multiple Pregnancies

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- Early onset of discordance
  - Placental, early third trimester
  - Fetal anomaly
  - Early onset without anomaly
- Chorionicity
  - MC, cerebral palsy, LBW
  - DC
  - Neurologic morbidity independent of IUGR

Kalish 2003 Adepbite 2004

- Difficult to asses fetal well-being

Magann 2000,Bernardes 2000

Management of Growth Aberration in Multiple Pregnancies

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- UA and uterine arter doppler are expected to improve outcomes of multiple pregnancies
- The sensitivity of abnormal Ut. A. Doppler
  - 9.7% for IUGR
  - 7.9%for weight discordance 20% or more
  - 10.3 % for any advers outcome
- Low sensitivity for perinatal outcome
- The routine use of Doppler US in the management of multiples is not suggested

Geipel 2002, ACOG 2004

Management of growth aberration in multiple pregnancies

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- Giles at all (2003), MCPR trial
- Doppler and no-doppler group
- Randomized at 25 weeks, repeated at 30 and 35 weeks
- No significant difference in PM rate (11/1000 vs 9/1000 – No Doppler, Doppler)
- Doppler evaluation did not seem to add any avantage

Giles 2003

Management of growth aberration in multiple pregnancies

- In the midtrimester
  - Expectant management
  - Termination of the entire pregnancy
  - ST of the IUGR fetus
  - Eddelman 2002, 200 ST, with a range 12-24 weeks

Indications; chromosamal defect structural anomalies, plasental insuffiency and cervical incompetence
Overall lose rate was 4%
The average gestational age at delivery 36 1/7, 84% delivery after 32 weeks

Management of growth aberration in multiple pregnancies

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- **Should be followed as any other pregnancy with IUGR**

  Blickstein 2004,Hollier 1999,Talbot 1997

- **This reduce iatrogenic preterm multiple births**

  Blickstein 2003 , Blickstein 2004

- **There is no RCT, retrospective data do not truly represent**

Patient counseling

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- Having VLBW infant in twins(<1500gr)
  - At least one; 1/5 nullipar, 1/12 multipars
  - Having two; 1/11 nullipars, 1/22 multiparas
- Having VLBW infant in triplets (<1000gr)
  - At least one; 1/8 nulliparas, 1/14 multiparas
  - Having two; 1/16 nulliparas, 1/31 multiparas
  - Having three; 1/29 nulliparas, 1/40 multiparas

Blickstein 2000

Patient counseling

- Before any decisions, it is important to look for the etiology
- To counsel patients that conservative management
- Adverse outcome for healty twin
  - Preterm delivery
  - LBW
  - Advers sequele due to prematurity

Goldman 2008

Patient counseling

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- Adverse outcome in terms of birth weight
  - Parity
  - Maternal age, especially after age 40
  - Maternal stature
  - Nutritionel intervention
- The parity and body mass index must be further studied in large series

Luke 1998,Luke 2000, Nugent 2002

IUGR in multiples

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- Exceptional metabolic challenge adequate - dietary intervention
- It is normal for multiples to be smaller than singletons
- No consideration by using singleton standarts
- SGA fetus in multiples, to follow or to treat as if it was an SGA singleton

Blickstein 2005

DC twins discordant for IUGR (29 twins)

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- A policy of expectant management until 32 weeks of gestation
- Overall mortality 24%
- IUGR mortality in utero 35%
- Normal grown twins no mortality or handicapped
- Management as if they were singletons
  - Minimum gestation for potential survival is 26 weeks
  - 40% mortality for normal grown
  - 70% mortality for IUGR

Sebire 1997

DEATH OF ONE TWIN

- After 20 weeks, %5
- Following intrauterin demise of one twin
  - Preterm birth, MC; 68%, DC; 57%
  - Co-twin demise, MC; 12%, DC; 4%
  - Co-twin neurologic defect,MC;18%,DC; 1%

Ong, 2006

Management of one twin death

- There is no strong indication to delivery in DC
- A condition affecting both twin (preeclampsia, chorioamniotitis); delivery
- Not necessary to monitor coagulopathy
- Platelet count and fibronojen level

Chasen, Chervenak 2009

Assesment of fetal well-being

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- There is no proven benefit from rutine use of antepartum testing (NST, BPP, AFV, Doppler) in uncomplicated twins
- Fetal assesment is probably indicated in higher risk situations
  - FGR
  - Discordant twin
  - Abnormal AFV
  - Preeclampsia
- The best technique to asses AFV in DA twin is uncertain

Knuppel 1985, ACOG 1998, Barigye 2005

Management of DC twins multiples with growth abnormality

- Serial growth scans (identifies 80% of clinically significant growth discordance)
- Weekly antenatal testing (BPP, NST)
- One or both growth restricted, twice weekly BPP, NST,Doppler vs
- Depending on the results of the fetal surveillance, testing may be intensified
- Steroids for fetal lung maturity
- In the absence of IUGR and/or nonreassuring fetal status without any other maternal or obstetric issues, delivery at term

Goldman 2008