STILLBIRTHS

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Prevalence

- In 2002
- 26,000 stillbirths,
  6.4/1,000 total births
- 28,000 infant deaths 7.0/1,000 live births
- 19,000 neonatal deaths
  4.7/1,000 live births

STILLBIRTH

- **Neonate born with no evidence of life at birth weighing 500 grams or more**
- **Antepartum stillbirth**
- **Intrapartum stillbirth**
- **Occurs in 5-12 per thousand births**
- **Roughly half of all perinatal deaths**

Why Bother?

- Marker of adequacy of pregnancy care.
- Disappointment or tragedy to the family
- Medical litigation
- Loss of faith in medical system
- Recurrence risk

Who is at RISK?

- Decreasing age of fetus
- Increasing age of mother
- First baby
- Black race
- Low socioeconomic class
- Smoker/Drug abuse
- Intrauterine growth restriction
- Twins

What causes it?

- MATERNAL
- PLACENTAL
- CORD
- FETAL
- UNEXPLAINED

Causes:PBL

- 39 year old gravida 9 para 8, body mass index of 43 kg/m2, presented with decreased fetal movements at 36 weeks of gestation. She had an uneventful ante partum care. Ultrasound showed intrauterine fetal demise; the estimated fetal weight was at the 3rd percentile for 36 weeks of gestation. The most likely diagnosis is
- Unexplained stillbirth
- Abruption
- Fetal anomaly
- Umbilical cord accident
- Feto-maternal hemorrhage

Is it the MOTHER?

- Poor weight gain
- Hypoxia
  - Asthma
  - Heart disease
- Hypertensive disease
  - Preeclampsia
  - Renal disease
  - Chronic hypertension
- Diabetes
- Drugs

- Lupus
- Antiphospholipid antibodies
- Clotting disorders
- Sepsis
- Trauma
- Prolonged labor
- Uterine rupture
- Iso-immunization

Estimates of maternal risk factors and risk of stillbirth

Condition	Prevalence	Estimated rate of stillbirth	OR
All pregnancies		6.4/1000	1.0
Low-risk pregnancies	-380%	4.0-5.5/1000	0.86
Chronic hypertension	6%-10%	6-25/1000	1.5-2.7
Mild PIH	5.8%-7.7%	9-51/1000	1.2-4.0
Severe PIH	1.3%-3.3%	12-29/1000	1.8-4.4
Diabetes A1	2.5%-5%	6-10/1000	1.2-2.2
Diabetes insulin Rx	2.4%	6-35/1000	1.7-7.0
SLE	<1%	40-150/1000	6-20
Renal d	<1%	15-200/1000	2.20

Estimates of maternal risk factors and risk of stillbirth

Condition	Prevalence	Estimated rate of stillbirth	OR
Thyroid disorders	0.2%-2%	12-20/1000	2.2-3.0
Thrombophilia	1%-5%	18-40/1000	2.8-5.0
Cholestasis of pregnancy	<0.1%	12-30/1000	1.8-4.4
Smoking >10 cigarettes	10%-20%	10-15/1000	1.7-3.0
Twins	2.7%	12/1000	1.0-2.8
Triplets	0.14%	34/1000	2.8-3.7
Previous growth-restricted infant (<10%)	6.7%	12-30/1000	2-4.6
Previous stillbirth	0.5%-1.0%	9-20/1000	1.4-3.2

Race:

- Nationally, black women have about 2x risk of stillbirth of white women:
- Lower household income
- Less adequate prenatal care
- Less high school education
- More publicly funded prenatal care
- Less initial prenatal care in first 3 months
- Diabetes
- Hypertension
- Placental abruption
- Premature rupture of membranes

Risk Factors: PBL

- A 16 year old Caucasian woman G 1, P 0 at 32 weeks GA is admitted to L&D for decreased fetal movements, with uneventful PNC. Pre-pregnancy BMI is 35 kg/m2. She has gained only 10 lbs. Her glucose challenge test was 110 mg/dl at 14 week and 125 mg/dl at 30 weeks gestation. Ultrasound shows fetal demise with normal fetal ultrasonic anatomy. There is adequate amniotic fluid and EFW is at the 95th percentile for 30 weeks. Her greatest risk factor for stillbirth is
- A: Young Age
- B: Caucasian Race
- C: Obesity
- D: Nulliparity
- E: Large for Dates fetus

Unexplained stillbirths

- A fetal death that is unexplained by fetal, placental, maternal, or obstetric factors is the most frequent type of fetal demise, representing between **25% & 60%** of all fetal deaths
- Rates rising significantly **after 37 to 39 weeks** of gestation

Advanced Maternal Age

- Independent risk factor even after accounting for medical conditions Unexplained stillbirths occurs in:
- <35 years = 1.1/1000
- 35-39 years = 3.6/1000
- ≥40 years= 4/1000
- The magnitude of risk of stillbirth is the same for hypertension & diabetes that are routinely offered ante partum testing.

Extreme parity: Review of 27,069,385 births & 81,386 stillbirths *Aliyu et al. Obstet Gynecol 2005;106(3)44653*

- The risk for stillbirth is substantially elevated among very high and extremely high parity women
- Care providers may consider targeted peri-conceptional counseling.
- Maternal depletion syndrome
- Uterine exhaustion syndrome
- Pregnancy complications
- Fetal testing protocols

Obesity

- Increased smoking; Diabetes; Preeclampsia.
- After controlling for these factors, BMI remains a significant risk factor for stillbirth
- Risks increases as the gestation advances.
- Can’t perceive decreased fetal movements
- Hyperlipidemia, increased endothelial dysfunction, platelet aggregation, atherosclerosis
- Snoring, apnea-hypoxia, oxygen desaturation

Cholestasis of pregnancy

- 0.2-1.8%, (5.6% in Los Angeles)
- Chile/Latina
- Pruritus & Elevated bile acids.
- Genetic hypersensitivity to estrogen or estrogen metabolites.
- Mutations or polymorphisms of some hepatobiliary transport proteins
- Unexpected fetal demise. Bile acids may cause fetal cardio dysfunction resulting in sudden fetal demise that may not be picked up by fetal testing
- Perinatal mortality of 11-20%
- Pregnancy complications
- Ursodeoxycholic acid
- Early Delivery

What about the PLACENTA?

- **Abruption**
- **Fetal - Maternal bleeding**
- **Placental previa**
- **Placental insufficiency**
- **Post-term pregnancy**
- **Twin-twin transfusion**
- **Chorioamnionitis**

Is the Cord a problem?

- Cord compression
- Oligohydramnios
- Cord prolapse
- Vasa previa
- True knot in cord
- don't blame nuchal cord

- Cord pathology:
- Thrombosis
- Necrosis
- Hematoma
- Congestion

What is wrong with the BABY?

- Chromosomal anomalies
- Birth defects
- Non-immune hydrops
- Infections
  - Toxoplasmosis
  - Herpes
  - Syphyllis
  - Listeria

  Rubella
  Cytomegalovirus
  Chicken pox
  Parvo virus

Why find out what killed the baby?

- Acceptance
- Prevent guilt
- Recognition of significant disease in mother
- Counseling for future pregnancies
- Treatment of future pregnancies
- Detection of family inherited disorders
- Help others with similar problems

What should I do?

- Photograph
- Chromosome analysis
- Neonatal Autopsy
- Placental histopathology
- Anticardiolipid antibodies
- Lupus Anticoagulant

- Serum glucose
- Syphilis
- TORCH titers
- Parvo virus
- Bacterial cultures
- Kleihauer-Betke test
- Urine toxicology
- Thrombophilia

Thrombophilia

- Factor V Lieden mutation
- Prothrombin gene mutation
- Elevated homocystiene levels
- Protein S deficiency
- Protein C deficiency
- Antithrombin III deficiency

What happens next?

- **Induction of labor ASAP**
- **Bonding**
- **Tokens of remembrance**
- **Risk of depression**

What do you ask?

- **Any family, personal or pregnancy history of:**
  - **Hypertension**
  - **Diabetes**
  - **Birth defects**
  - **Smoking**
  - **Lupus**
  - **Fever**
  - **Syphilis**
  - **Blood clots**
  - **Thyroid disease**
  - **Hereditary disease**
  - **Drugs**
  - **Sickle cell**
  - **Rashes**
  - **Major illness?**

What do you ask?

- **In that pregnancy:**
- **When did baby last move?**
- **Was there any bleeding?**
- **Was there any leakage of fluid?**
- **Did you gain weight?**
- **Was baby small?**
- **Did baby look abnormal?**
- **Was the baby born early?**
- **Was there a problem with the umbilical cord ?**

Next time?

- Recurrent risk up to 10%
- Treat known causes
- Kick counts in next pregnancy
- Antenatal testing
- Deliver at term
- Intrapartum fetal monitoring

- **NON STRESS TEST**
- **BIOPHYSICAL PROFILE**
- **UMBILICAL DOPPLER**
- **UTERINE DOPPLER**

  VENOUS DOPPLER

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- Usually from 32 weeks
- Weekly or twice weekly
- Deliver if:
- Oligohydramnios
- Non-reassuring fetal heart rate patterns
- Poor biophysical profile

- Reviewed 115 cases of stillbirths
- 37% due to placental factors
- 28% due to cord complications
- 15% due to fetal causes
- 17% had only maternal risk factors
- 3% had no associations
- Ogunyemi D, Jackson U, Risk A. Clinical and pathologic correlates of stillbirths in a single institution. Acta Obstet Gynecol 1998; 77:722-8.

THE END

THANK YOU