Maternal Age Related Issues

Background
1. Definition:
   - Advanced maternal age:
     - Pregnant woman who will be ≥35 years of age on the estimated date of confinement
   - Term becoming obsolete; some experts suggest definition should be more dynamic
   - Greatest risk occurs >40 yr
2. General info:
   - Patients of AMA have 2-3x higher rates of hospitalization, cesarean delivery, and pregnancy-related complications
   - Racial considerations:
     - African Americans have 2x risk of adverse perinatal outcomes

Pregnancy Risk for Complications
1. Fetal anomalies
   - Chromosomal anomalies
     - 1/66 risk in women >40 yo
   - Cardiac malformations
   - Clubfoot
   - Diaphragmatic hernia
2. Miscarriage
   - Increase in both trisomic and euploid losses
   - 2.0 adjusted odds ratio for age 35-39 yr
   - 2.4 adjusted odds ratio for age ≥40 yr
3. Ectopic pregnancy
   - 2-8x increased risk of ectopic pregnancy
4. Preterm labor & delivery
   - Women ≥40 yo have adjusted odds ratio 1.4 for preterm delivery
5. Hypertension related complications
   - Maternal age >40 years RR 1.96 (95% CI 1.34-2.87) for multiparous women
   - Also increased if >10 year interval since previous pregnancy
6. Gestational diabetes
   - Adjusted odd ratio 1.8 for women aged 35-39 years and 2.4 for women ≥40 years old
   - ACOG considers age >25 a risk factor for gestational diabetes and recommends screening
7. Stillbirth
   - Relative risks of 1.2-4.5
   - Strategy of antepartum testing at 38 weeks may be beneficial
8. Placenta previa
   - Nulliparous women ≥40 years of age have 10x increased risk of placenta previa compared to nulliparous women aged 20-29
   - Absolute risk still small (0.25 vs 0.03%)
9. Placental abruption
Women aged 40 years and older had adjusted odds ratio 2.3 for abruption (when compared to women <35)

10. Caesarean section
- Women ≥35 years of age are more likely to deliver by cesarean

**Screening**

1. First trimester options
   - Tests:
     - Fetal nuchal translucency
     - Serum markers of beta-hCG and pregnancy-associated plasma protein A (PAPP-A)
   - Combination results in higher Down syndrome detection rate than 2nd-trimester maternal serum triple screen and is comparable to quadruple screen
   - Detects 83% of cases of Down syndrome, with 5% FPR
   - Women found to have increased risk should be offered
     - Genetic counseling
     - Chorionic villus sampling (CVS) or 2nd trimester amniocentesis

2. Second trimester options
   - **Triple Screen**
     - Combination of maternal age and MSAFP, unconjugated estriol (MSuE3) and human chorionic gonadotropin (MS hCG) measured at 15-20 weeks gestation
     - Detects 65% of fetuses with Down syndrome with 5% FPR
     - Also detects neural tube defects, gastroschisis, omphalocele, placental dysfunction, Smith-Lemli-Opitz syndrome, and trisomy 18
   - **Quad screen**
     - Adds dimeric inhibin-A (DIA) to triple screen
     - Increases detection rate to 75-85%
   - Note: if patient received 1st trimester testing, subsequent 2nd trimester screening is not indicated
     - Unless performed as a component of integrated test, stepwise sequential, or contingent sequential test

3. Combined trimester options
   - **Integrated test**
     - Definition:
       - Measurement of serum markers with or without ultrasound, in 1st and 2nd trimesters
       - Nuchal translucency at 10-13 weeks
       - PAPP-A at 10-13 weeks
       - alpha fetoprotein (AFP), unconjugated estriol (uE3), hCG, and inhibin A obtained at 15-18 weeks
     - Sensitivity:
       - Greater with lower false-positive rates than 1st-trimester screening alone
   - **Stepwise sequential test**
     - Definition:
       - 1st trimester portion of integrated screen; offer CVS only to women at high risk of an affected fetus
**Contingent sequential test**
- **Definition:**
  - 3 tiered approach with subsequent decisions based on 1st trimester results
    - Women at very high risk offered immediate invasive prenatal diagnosis
    - Women at very low risk provided with their risk estimate and require no additional testing
    - Women at intermediate risk receive 2nd trimester marker testing

4. Research
- **SEQureDx**
  - Uses fetal nucleic acid technology
  - Non-invasive test
  - Still being studied

**Pregnancy Monitoring**
1. Early pregnancy:
   - No recommendations
2. Late pregnancy:
   - No randomized control trials to assess efficacy of a strategy of routine antepartum testing late in pregnancy
   - Weekly antepartum testing and labor induction may lower the risk of unexplained fetal death in women ≥35 yo
   - Consider weekly monitoring starting at 38 weeks

**Current Recommendations**
1. ACOG 2007 recommendations
   - All women be offered aneuploidy screening before 20 weeks of gestation
   - All women should have the option of invasive testing, regardless of maternal age
2. USPTSF 1996 recommendations
   - Offering screening for Down syndrome and neural tube defects by serum multiple-marker testing is recommended for all low-risk pregnant women
     - (This testing should be offered only to women who are seen for prenatal care in locations that have adequate counseling and follow-up services)
   - Offering amniocentesis or chorionic villus sampling (CVS) for chromosome studies is recommended for pregnant women at high risk for Down syndrome
   - Insufficient evidence to recommend for or against screening for Down syndrome by individual serum marker testing or ultrasound examination
   - Offering routine CVS or amniocentesis to women >35 should be done with discussion of the risks and benefits
   - Daily multivitamins with folic acid to reduce the risk of neural tube defects are recommended for all women who are planning or capable of pregnancy
Patient Education

References

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