437 Team: Obstetrics and Gynecology

IUFD

Objectives:

- Describe the symptoms and common causes of fetal demise in each trimester including genetic and nutritional factors.
- Describe the diagnostic methods to confirm the diagnosis and etiology of fetal demise.
- Describe the medical and psychosocial management of a patient diagnosed with a fetal demise.
- Outline the steps to disclose a diagnosis of fetal demise to a patient.
- Identify factors unique to developing countries that may lead to fetal demise.

References:

- Kaplan USMLE step 2 CK - Obstetrics and Gynecology
- Team 435

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FETAL DEMISE

Prelude :

Overview:

- Intrauterine fetal demise (IUFD/stillbirth/fetal death) is fetal death between 20 weeks gestation and the onset of labor.
- If the gestational age is inaccurate or not determined; a birthweight of >500 gram constitutes as IUFD.
- IUFD complicates about 1% of pregnancies.
- The cause of IUFD is either not known or cannot be determined in more than 50% of the cases.
- Other related terminology (Kaplan):
  - **Antenatal demise** occurs before labor.
  - **Spontaneous abortions;** pregnancy loss occurring before 20 weeks gestation.
  - **Intrapartum death;** fetal death from the onset of labor to birth.
  - **Perinatal death;** encompasses fetal death from 20 weeks gestation to 28 days after birth.
  - **Neonatal death;** newborn death between birth and the first 28 days of life.
  - **Infant death;** between birth and the first year of life.
  - **Maternal death;** The mothers death either during pregnancy or within 90 days of birth.

Significance:

- Disseminated intravascular coagulation (**DIC**) (most single important potential complication for expectant management) is the most serious consequence, with prolonged fetal demise (>2 weeks) resulting from release of tissue thromboplastin from deteriorating fetal organs.
- Grief resolution may be prolonged if psychosocial issues are not appropriately addressed.

Presentation :

- Mother reports absence of fetal movements
- Uterus smaller than expected of date.
- Absence or decrease in pregnancy-related symptoms including nausea.
- Fetal heart tone not detected using Doppler device
- Possible bleeding, cramping and/or labor.

In many cases there are no signs and/or symptoms.

- Before 20 weeks' gestation, the most common finding is uterine fundus smaller than dates.
- After 20 weeks' gestation, the most common symptom is maternal report of absence of fetal movements.

diagnosis :

- Real-time **ultrasonography confirming** the lack of fetal movement and absence of fetal cardiac activity is used for diagnosis. us is the most definitive way to confirm
- 2 doctors must confirm the diagnosis before disclosing the death to the mother
- No point in measuring β-HCG as it will still be produced by the placenta.

Risk factors :

- Fetal demise is most commonly idiopathic.
- When a cause is identified, risk factors include:

Antiphospholipid syndrome	overt maternal diabetes	maternal trauma	severe maternal isoimmunization
fetal aneuploidy	fetal infection	Non-hispanic black race	Advanced maternal age
Multiple gestations (esp monochorionic subtype)	Poor nutritional status	Nulliparity	Obesity
Smoking	No access to clinic	Male gender	Low SES and education
History of: IUFD, preterm delivery, IUGR , preeclampsia in a prior pregnancy			

Causes and associated conditions :

Maternal	Fetal	Placental	Global
- Overt diabetes **- Preeclampsia and eclampsia** **- Antiphospholipid syndrome (APS)** - Chronic HTN - Thrombophilias - SLE - Renal disease - Thyroid disorders - Cholestasis of pregnancy - sickle cell disease. **- Infections**: syphilis, listeria, human parvovirus B19, malaria, CMV, TORCH	**- Cord accident** **- Hydrops fetalis:** A. Immunogenic (Rh incompatibility) B. Non-immunogenic: infection (parvovirus B19) or chromosomal (α-thalassemia) **- Fetal chromosomal, genetic, and structural abnormalities** **- IUGR** **- Fetomaternal hemorrhage**	**- Placental abnormalities:** A. Placenta succenturiata B. Placenta velamentosa C. Vasa previa - **Placental abruption** **Imp (it's the most common single identifiable cause of IUFD) 10%-25%**	**-Malaria endemic areas** **-Low socioeconomic class** **-Poverty** **Poor nutrition**

Management :

Determined by gestational age and most imp the patient preference

Watchful expectancy	- About 80% of patients experience the spontaneous onset of labor within 2 to **3** weeks of fetal demise. (if more than that we have to deliver) also rule out fever, vaginal discharge, or any other symptoms. - Rare complications include intrauterine infection and maternal coagulopathy - Patients feelings of guilt and personal loss may create anxiety making this approach unacceptable.
Induction of labor (IOL)	- **Indications:** emotional, those in risk of chorioamnionitis, IUFD >5 weeks . **From week 12-28:** (20w) A. Vaginal suppositories of prostaglandin E_2 (dinoprostone) - Dinoprostone usage is contraindicated in patients with prior uterine incisions because of it's risk. - Usage is contraindicated in patients with history of asthma or active pulmonary disease. B. Misoprostol **(Cytotec)** . **After 28 weeks:** - If the cervix is favorable: cytotec followed by oxytocin are the drugs of choice. - Evacuation of the uterus may be performed by D&E versus induction of labor depending on gestational age and patient preference.
Mode of delivery	- A dilatation and evacuation (D&E) procedure may be appropriate in pregnancies of <23 weeks' gestation if no fetal autopsy is indicated. - Induction of labor with vaginal prostaglandin is appropriate in pregnancies of ≥23 weeks **or** if a fetal autopsy is indicated. - **Cesarean** delivery is almost **never** appropriate for dead fetus.
Psychosocial issues	- Acceptance of the reality of the loss may be enhanced by allowing the patient and her family to see the fetus, hold the fetus, name the fetus, and have a burial. - Encouraging expression of feelings and tears may speed grief resolution.
Identify cause	Workup may include: - cervical and placental cultures for suspected infection. - autopsy for suspected lethal anatomic syndrome. - karyotype for suspected aneuploidy. - total body x-ray for suspected osteochondrodysplasia. - maternal blood for Kleihauer-Betke (peripheral smear for suspected fetomaternal bleed). - Amniocentesis can yield living fetal amniocyte cells although the fetus is demised. Up to 10% of the karyotypes show aneuploidy.

Emotional cautions/disclosing the bad news :

- Do your best to find an etiological cause
- You should give her time to grief
- Don't force her to deliver. If she'd like to keep her baby then let her do that but follow her weekly and don't forget to investigate for DIC.
- most of them will deliver spontaneously.
- Don't put her in a postpartum ward the last thing they wanna hear is infants cry.
- She may develop depression in which you should consider SRRI's or a referral if needed

Regardless of the mode of therapy chosen :

- Weekly levels of **fibrinogen**, **hematocrit**, and **platelets** should be monitored during the period of expectant management.
- **Decreasing** fibrinogen levels and **increasing** PT/PTT, presence of fibrinogen-fibrin degradation products, and a decreased platelet count may indicate consumptive coagulopathy.
- If there is evidence of bleeding, blood volume support or fresh frozen plasma should be given before any intervention is made

Counseling :

- Mode of delivery must take into regard the mother's emotional feelings.
- It is important to to try help the family with their bereavement.
- If possible, it is best for all couples to know the cause of death of their child.
- Couples must know the importance of follow-up in subsequent pregnancies.
- Offer opportunity to hold infant and keep mementos including photos and footprints.
- Offer psychological counseling and visits with support groups.

Work-up for etiology :

- Complete antenatal and family history
- Screen for risk factors(lupus,DM, HTN, TSH, thrombophilia)
- Full physical exam on fetus.(congenital malformations, Xray to check for skeletal conditions)
- **Fetal karyotyping for chromosomal abnormality**
- Perform a physical exam on mother and obtain laboratory studies to rule out maternal conditions.
- **TORCH**/parvovirus studies and cultures for listeria. (as well as syphilis, malaria, and CMV)
- Cardiolipin antibodies should be tested in ALL women with IUFD.
- Testing for hereditary thrombophilias should be considered.
- Fetal-maternal hemorrhage screen (Kleihauer-Betke).
- Urine toxicology screen.
- Placental inspection the send for pathology assessment for **(infection, thrombosis, malformation of the umbilical cord, abruption)**

Teaching case (video case)

A 30 year-old G1P0 woman presents for a routine prenatal visit at 36 weeks gestation. Her prenatal course has been uncomplicated. She had a normal ultrasound at 20 weeks gestation with a normal fetal anatomic survey. She reports no problems and good fetal movement. Unfortunately, no fetal heart tones were heard by Doppler and an ultrasound evaluation confirmed no fetal cardiac activity. She is very upset and you spend time counseling her.

Questions

1- What is the definition of fetal demise?

IUFD/stillbirth is fetal death between 20 weeks gestation and the onset of labor. If the gestational age is inaccurate or not determined; a birthweight of >500 gram constitutes as IUFD.

2- What are the symptoms and physical findings and diagnostic methods used to confirm the diagnosis of fetal demise?

- Mother reports absence of fetal movements
- Uterus smaller than expected of date.
- Absence or decrease in pregnancy-related symptoms including nausea.
- Fetal heart tone not detected using Doppler device
- Possible bleeding, cramping and/or labor.
- Real-time ultrasonography confirming the lack of fetal movement and absence of fetal cardiac activity is used for diagnosis.

In many cases there are no signs and/or symptoms.

3- What risk factors are associated with fetal demise?

- Non-Hispanic black race
- Nulliparity
- Advanced maternal age
- Obesity
- Smoking
- Multiple gestation
- Poor nutritional status
- History of: IUFD, preterm delivery, IUGR and preeclampsia in a prior pregnancy.

4- What are some causes and conditions associated with fetal demise?

Maternal	Fetal	Placental
- **Overt diabetes** - **Preeclampsia and eclampsia** - **Antiphospholipid syndrome** - Chronic HTN - Thrombophilias - SLE - Renal disease - Thyroid disorders - Cholestasis of pregnancy - sickle cell disease. - **Infections**: syphilis, listeria, human parvovirus B19, malaria, CMV, TORCH	- **Cord accident** - **Hydrops fetalis:** A. Immunogenic (Rh incompatibility) B. Non-immunogenic: 4 infection (parvovirus B19) or chromosomal (α-thalassemia) - **Fetal chromosomal, genetic, and structural abnormalities** - **IUGR** - **Fetomaternal hemorrhage**	- **Placental abnormalities:** A. Placenta succenturiata B. Placenta velamentosa C. Vasa previa - **Placental abruption**

5- What work-up should be considered for a patient with a fetal demise?

- Complete antenatal and family history
- Screen for risk factors
- Full physical exam on fetus.
- Perform a physical exam on mother and obtain laboratory studies to rule out underlying maternal medical conditions.
- **TORCH**/parvovirus studies and cultures for listeria.(as well as syphilis, malaria, and CMV)
- Cardiolipin antibodies should be tested in ALL women with IUFD.
- Testing for hereditary thrombophilias should be considered.
- Fetal-maternal hemorrhage screen (Kleihauer-Betke).
- Urine toxicology screen.
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6- Describe the medical and psychosocial management of a patient diagnosed with a fetal demise.?

1. Confirm diagnosis (By 2 Dr's)
2. Disclose fetal death to the couple in appropriate manner
3. Offer the options of treatment to the patients either: immediate induction of labor/delivery or expectant management. Signs of bleeding requires either blood volume support or use of fresh-frozen plasma

a. **Watchful Expectancy; watch and wait**. Rare complications include intrauterine infection and maternal coagulopathy.
b. **Induction of Labor:**
   → **From the 12th-28th week:** Vaginal suppositories of dinoprostone can be used. If dinoprostone is contraindicated or is intolerable then give cytotec.
   → **After 28 weeks gestation,** if the condition of the cervix is favorable for induction and there are no contraindications, Cytotec followed by oxytocin are the drugs of choice.
   → Evacuation of the uterus may be performed by D&E versus induction of labor depending on gestational age and patient preference.

4. Regardless of the mode of delivery weekly levels of fibrinogen, hematocrit, and platelets should be monitored during the period of expectant management to avoid consumptive coagulopathy or DIC
5. Localize etiological and disclose to the parents.
6. Psychosocial management:

a. Attempt to help families with their loss.
b. Offer chance to hold the baby and keep mementos including photos/footprints.
c. Offer psychological counseling and visits with support groups.

7. Ensure subsequent pregnancies to be monitored closely.

7- How should a patient with a history of an unexplained fetal demise be followed in a future pregnancy?

- Modify original etiological cause if possible.
- Antenatal surveillance with Non Stress Tests, biophysical profiles beginning at approximately **32 weeks** gestation.
- Delivery for those with history of IUFD should be at 38 weeks EGA.
- Ultrasound surveillance to follow fetal growth.
- Fetal kick counts.
- Frequent visits, documentation of fetal heart tones and reassurance.