

Stillbirth

Topic- based Uworld Questions

Block 1, 2, 7, 8



A 28-year-old woman, gravida 2 para 1, at 37 weeks gestation comes to the emergency department because she has not felt her baby move for a day. Fetal heart tones are not heard by Doppler, and an ultrasound shows no fetal cardiac activity. The patient had a normal 12-week ultrasound and first-trimester screen. A second ultrasound at 18 weeks showed normal anatomy and placenta previa. A group B *Streptococcus* culture done last week was positive. Other prenatal testing was normal. The patient has a history of mild intermittent asthma. Her first child was born at 39 weeks gestation via a low transverse cesarean delivery for breech presentation. The patient and her family ask what happened to this baby. Which of the following is the most appropriate response?

- A. "The fetal demise was most likely due to a genetic abnormality."
- B. "The fetal demise was most likely due to infection."
- C. "The fetal demise was most likely due to the position of the placenta."
- D. "The fetal demise was most likely due to uterine rupture due to the prior cesarean scar."
- E. "The etiology of fetal demise is frequently unknown."

Submit

A 28-year-old woman, gravida 2 para 1, at 37 weeks gestation comes to the emergency department because she has not felt her baby move for a day. Fetal heart tones are not heard by Doppler, and an ultrasound shows no fetal cardiac activity. The patient had a normal 12-week ultrasound and first-trimester screen. A second ultrasound at 18 weeks showed normal anatomy and placenta previa. A group B *Streptococcus* culture done last week was positive. Other prenatal testing was normal. The patient has a history of mild intermittent asthma. Her first child was born at 39 weeks gestation via a low transverse cesarean delivery for breech presentation. The patient and her family ask what happened to this baby. Which of the following is the most appropriate response?

- A. "The fetal demise was most likely due to a genetic abnormality." (3%)
- B. "The fetal demise was most likely due to infection." (5%)
- C. "The fetal demise was most likely due to the position of the placenta." (4%)
- D. "The fetal demise was most likely due to uterine rupture due to the prior cesarean scar." (0%)
- E. "The etiology of fetal demise is frequently unknown." (85%)

Omitted

Correct answer

E



85%

Answered correctly



02 secs

Time Spent



02/12/2020

Last Updated

Explanation

Intrauterine fetal demise

Intrauterine fetal demise	
Definition	Fetal death at ≥ 20 weeks
Diagnosis	Absence of fetal cardiac activity on ultrasound
Management	20-23 weeks <ul style="list-style-type: none"> • Dilation & evacuation OR <ul style="list-style-type: none"> • Vaginal delivery* ≥ 24 weeks <ul style="list-style-type: none"> • Vaginal delivery*
Complication	Coagulopathy after several weeks of fetal retention

*Cesarean delivery by maternal choice if history of prior classical cesarean/myomectomy

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Intrauterine fetal demise (IUFD), or stillbirth, is defined as the death of a fetus at ≥ 20 weeks gestation prior to delivery. The **pathophysiology** of IUFD can be **maternal, fetal, or placental** in origin. The fetus should undergo autopsy, and karyotype/genetic studies should be performed. The placenta should be evaluated grossly and microscopically for evidence of thrombosis, abruption, infection, or other disease. Laboratory evaluation should be obtained for maternal antiphospholipid antibody syndrome and fetomaternal hemorrhage. Other testing (eg, evaluation for thrombophilia, cultures) can be performed to confirm or exclude an etiology suggested by the patient's medical history.

As the etiology of IUFD helps determine the recurrence risk and prevention strategies, knowing the cause can be invaluable in counseling the patient regarding future pregnancies. However, even after an optimal evaluation, up to half of cases have **no identifiable etiology**.

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As the etiology of IUFD helps determine the recurrence risk and prevention strategies, knowing the cause can be invaluable in counseling the patient regarding future pregnancies. However, even after an optimal evaluation, up to half of cases have **no identifiable etiology**.

(Choice A) Karyotype abnormalities are a strong risk factor for IUFD but also typically cause anomalies that are usually visible during ultrasonography. This patient's ultrasounds were normal, making a genetic defect less likely.

(Choice B) Infection (eg, parvovirus, syphilis, cytomegalovirus, *Listeria monocytogenes*) is a common cause of preterm IUFD. However, it is an uncommon cause for term IUFD, and this patient had no symptoms of infection during her pregnancy.

(Choice C) Although placenta previa can cause IUFD in the setting of obstetric hemorrhage, this patient had no bleeding.

(Choice D) Uterine rupture can cause IUFD but typically occurs during labor and presents with severe abdominal pain. This patient has no pain and is not in labor, making rupture unlikely. In addition, rupture is more commonly seen in patients who have had a classical (vertical), rather than low transverse, uterine incision.

Educational objective:

Intrauterine fetal demise refers to fetal death at ≥ 20 weeks gestation and prior to fetal expulsion. The etiology can be maternal, placental, or fetal in origin, but the etiology is most often unknown.

References

- [ACOG Practice Bulletin No. 102: management of stillbirth.](#)

The following vignette applies to the next 2 items. The items in the set must be answered in sequential order. Once you click **Proceed to Next Item**, you will not be able to add or change an answer.

A 27-year-old woman, gravida 1 para 0, at 28 weeks gestation comes to the office because she has not felt fetal movement for the past 2 days. Aside from a history of obesity, she has no other medical problems and her pregnancy has been uncomplicated. The patient's blood type is O, Rh negative. Prenatal ultrasound at 12 weeks gestation showed an intrauterine gestation consistent with dates. An ultrasound fetal anatomical survey at 19 weeks gestation showed no abnormalities. Vital signs are normal. Fundal height is 24 cm. Fetal heart tones are not heard by Doppler.

Item 1 of 2

Which of the following is the most appropriate next step in management of this patient?

- A. Blood antibody screen
- B. Coagulation profile
- C. Fetal kick counts
- D. Kleihauer-Betke test
- E. Nonstress test
- F. Transabdominal ultrasound

Submit

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A 27-year-old woman, gravida 1 para 0, at 28 weeks gestation comes to the office because she has not felt fetal movement for the past 2 days. Aside from a history of obesity, she has no other medical problems and her pregnancy has been uncomplicated. The patient's blood type is O, Rh negative. Prenatal ultrasound at 12 weeks gestation showed an intrauterine gestation consistent with dates. An ultrasound fetal anatomical survey at 19 weeks gestation showed no abnormalities. Vital signs are normal. Fundal height is 24 cm. Fetal heart tones are not heard by Doppler.

Item 1 of 2

Which of the following is the most appropriate next step in management of this patient?

- A. Blood antibody screen (4%)
- B. Coagulation profile (2%)
- C. Fetal kick counts (0%)
- D. Kleihauer-Betke test (3%)
- E. Nonstress test (32%)
- F. Transabdominal ultrasound (56%)

Omitted
Correct answer
F

 56%
Answered correctly

 01 sec
Time Spent

 02/12/2020
Last Updated

Intrauterine fetal demise	
Definition	Fetal death at ≥ 20 weeks
Diagnosis	Absence of fetal cardiac activity on ultrasound
Management	20-23 weeks <ul style="list-style-type: none">• Dilation & evacuation OR <ul style="list-style-type: none">• Vaginal delivery* ≥ 24 weeks <ul style="list-style-type: none">• Vaginal delivery*
Complication	Coagulopathy after several weeks of fetal retention

*Cesarean delivery by maternal choice if history of prior classical cesarean/myomectomy

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Stillbirth or **intrauterine fetal demise** (IUFD) refers to **fetal death at ≥ 20 weeks** that occurs prior to expulsion from the mother. Risk factors for IUFD include nulliparity, obesity, hypertension, and diabetes mellitus. Patients typically present with **decreased or absent fetal movement**. As with this patient, fetal Doppler ultrasound fails to detect a fetal heart rate. Inability to find the fetal heart rate by Doppler sonography is not diagnostic and can be due to fetal malpresentation or maternal obesity. The diagnosis of IUFD must be confirmed by **absence of fetal cardiac activity on ultrasound**.

(Choices A, B, and D) A blood antibody screen can confirm or exclude maternal alloimmunization as a potential cause of IUFD, and a Kleihauer-Betke test can confirm or exclude fetomaternal hemorrhage. A coagulation panel can screen for coagulopathy, a potential complication of prolonged (>2 weeks) retention of a stillborn. However, none of these tests can confirm or exclude IUFD.

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(Choices A, B, and D) A blood antibody screen can confirm or exclude maternal alloimmunization as a potential cause of IUFD, and a Kleihauer-Betke test can confirm or exclude fetomaternal hemorrhage. A coagulation panel can screen for coagulopathy, a potential complication of prolonged (>2 weeks) retention of a stillborn. However, none of these tests can confirm or exclude IUFD.

(Choice C) Fetal kick counts are helpful when patients are concerned that fetal movement frequency has decreased but cannot explain the inability to find a fetal heart beat by Doppler.

(Choice E) The nonstress test uses the same technology as bedside fetal Doppler to determine the fetal heart rate, but then plots the fetal heart rate over time on a fetal heart rate monitoring strip. A nonstress test is unlikely to provide any new information as the bedside fetal Doppler is unable to demonstrate audible fetal heart tones.

Educational objective:

Intrauterine fetal demise should be suspected when fetal Doppler sonography fails to detect a fetal heart rate in patients with decreased or absent fetal movement. Ultrasound is necessary to confirm the diagnosis.

References

- [ACOG Practice Bulletin No. 102: management of stillbirth.](#)

Obstetrics & Gynecology
Subject

Pregnancy, Childbirth & Puerperium
System

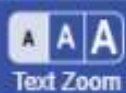
IUFD
Topic

Item 2 of 2

The patient undergoes induction of labor and vaginal delivery of a stillborn male fetus with no gross abnormalities. Review of the patient's prenatal records shows that the patient missed several appointments and was last evaluated at 20 weeks gestation. The patient asks how to prevent this from happening in future pregnancies. In addition to comforting the patient and offering emotional support, which of the following is the most appropriate response?

- A. "Consistent prenatal care could have prevented this outcome."
- B. "Fetal autopsy and placental evaluation may provide more information."
- C. "Serial monitoring of fibrinogen levels for the next 4 weeks is necessary."
- D. "Supplemental progesterone may decrease the recurrence risk."
- E. "The recurrence risk for fetal demise in future pregnancies is very small."

Submit



Item 2 of 2

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- A. "Consistent prenatal care could have prevented this outcome." (10%)
- B. "Fetal autopsy and placental evaluation may provide more information." (73%)
- C. "Serial monitoring of fibrinogen levels for the next 4 weeks is necessary." (2%)
- D. "Supplemental progesterone may decrease the recurrence risk." (2%)
- E. "The recurrence risk for fetal demise in future pregnancies is very small." (10%)

Omitted
Correct answer
B

 73%
Answered correctly

 03 secs
Time Spent

 02/12/2020
Last Updated

Explanation

Evaluation of fetal demise	
	<ul style="list-style-type: none">• Autopsy

Evaluation of fetal demise

Fetal	<ul style="list-style-type: none"> • Autopsy • Gross & microscopic examination of placenta, membranes & cord • Karyotype/genetic studies
Maternal	<ul style="list-style-type: none"> • Kleihauer-Betke test for fetomaternal hemorrhage • Antiphospholipid antibodies • Coagulation studies*

*For history of recurrent pregnancy loss, family or personal history of venous thrombosis, fetal growth restriction

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Thorough **maternal, fetal, and placental evaluations** are necessary to determine the etiology of **intrauterine fetal demise (IUFD)**. After delivery, the fetus should be examined for dysmorphic features and undergo an **autopsy**. **Fetal karyotype** should be performed and other genetic studies should be considered. A gross and **microscopic placental evaluation** is necessary to evaluate for signs of abruption (eg, clotted blood) or infection. The membranes and umbilical cord should also be inspected (eg, nuchal cords, true knots).

Maternal evaluation should include laboratory testing for **antiphospholipid antibody syndrome** and **fetomaternal hemorrhage**. A thrombophilia evaluation can be considered for patients with histories that suggest this etiology (eg, recurrent pregnancy loss, family or personal history of venous thrombosis, intrauterine growth restriction.)

Although determination of IUFD etiology can assist with anticipatory guidance in future pregnancies, often no etiology is found.

(Choice A) It should not be concluded that compliance with prenatal care would have prevented IUFD, particularly without the results of the maternal and fetal evaluations. In addition, the parents should be treated sympathetically.

(Choice C) A fibrinogen level screens for coagulopathy, a potential complication of IUFD that is retained in utero for several weeks. This patient has no history of thrombophilia and the stillborn has been delivered.

(Choice D) Progesterone supplementation is used to prevent the recurrence of preterm labor in patients with a history of preterm delivery. It will

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(Choice C) A fibrinogen level screens for coagulopathy, a potential complication of IUFD that is retained in utero for several weeks. This patient has no history of thrombophilia and the stillborn has been delivered.

(Choice D) Progesterone supplementation is used to prevent the recurrence of preterm labor in patients with a history of preterm delivery. It will not decrease the recurrence risk of IUFD.

(Choice E) The recurrence risk of IUFD is related to its etiology; therefore, it is not yet possible to estimate this patient's risk. For patients with unexplained IUFD, the recurrence risk is <1% but still slightly increased compared to patients with no history of IUFD.

Educational objective:

Crucial elements of intrauterine fetal demise (IUFD) evaluation include fetal autopsy, fetal karyotype, placental examination, and maternal laboratory testing for fetomaternal hemorrhage and antiphospholipid antibody syndrome. However, often no etiology is found for IUFD.

References

- [Stillbirth workup and delivery management.](#)

A 24-year-old woman, gravida 2 para 1, at 28 weeks gestation comes to the office with her husband because she has felt no fetal movement for 3 days. She has no pain, leakage of fluid, or bleeding. All testing during this pregnancy has been normal, including an anatomy ultrasound at 20 weeks gestation. Her first child was delivered vaginally at term. Temperature is 36.7 C (98 F), blood pressure is 120/80 mm Hg, and pulse is 94/min. Fetal heart tones are not heard by Doppler. Ultrasound demonstrated an absence of fetal cardiac activity and a small for gestational age fetus in breech presentation. A digital cervical examination shows the cervix to be long and closed. Laboratory results are as follows:

Hemoglobin	11.2 g/dL
Platelets	160,000/mm ³
Leukocytes	11,000/mm ³
Plasma fibrinogen	350 mg/dL (301-696)

Which of the following is the most appropriate management advice for this patient?

- A. Cesarean delivery is the safest mode of delivery
- B. Dilation and evacuation under general anesthesia is recommended
- C. External cephalic version should be performed because the baby is breech
- D. Labor can be induced in the hospital when you feel ready
- E. Spontaneous labor provides the best outcome

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Leukocytes	11,000/mm ³
Plasma fibrinogen	350 mg/dL (301-696)

Which of the following is the most appropriate management advice for this patient?

- A. Cesarean delivery is the safest mode of delivery (12%)
- B. Dilation and evacuation under general anesthesia is recommended (22%)
- C. External cephalic version should be performed because the baby is breech (4%)
- D. Labor can be induced in the hospital when you feel ready (53%)
- E. Spontaneous labor provides the best outcome (7%)

Omitted

Correct answer
D



53%
Answered correctly



02 secs
Time Spent



02/12/2020
Last Updated

Intrauterine fetal demise	
Definition	Fetal death at ≥ 20 weeks
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Complication	Coagulopathy after several weeks of fetal retention

*Cesarean delivery by maternal choice if history of prior classical cesarean/myomectomy

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Intrauterine fetal demise (IUFD) refers to **fetal death at ≥ 20 weeks** gestation and before the onset of labor. Although IUFD most commonly occurs in uncomplicated pregnancies, risk factors include fetal growth restriction, abnormal fetal karyotype, and tobacco use. Patients typically present with **decreased or absent fetal movement**. Fetal heart tones are not heard by Doppler sonography, and ultrasound confirms the **absence of fetal cardiac activity**. Once the diagnosis is confirmed, it is critical to inform the parents as empathically as possible.

The timing and route of an IUFD delivery are dependent on gestational age and patient preference. The diagnosis can be overwhelming for prospective parents, and some patients are unable to make decisions at the time of diagnosis. Patients should be informed that **vaginal delivery** is the preferred delivery route at **≥ 24 weeks** gestation, regardless of fetal presentation (eg, vertex, breech). Although most patients prefer to begin an induction immediately, it can generally be **delayed until the patient is ready**. However, retention of the fetus for several weeks can lead to

Complication

Coagulopathy after several weeks of fetal retention

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The timing and route of an IUFD delivery are dependent on gestational age and patient preference. The diagnosis can be overwhelming for prospective parents, and some patients are unable to make decisions at the time of diagnosis. Patients should be informed that **vaginal delivery** is the preferred delivery route at **≥ 24 weeks** gestation, regardless of fetal presentation (eg, vertex, breech). Although most patients prefer to begin an induction immediately, it can generally be **delayed until the patient is ready**. However, retention of the fetus for several weeks can lead to coagulopathy. Therefore, waiting for spontaneous labor (**Choice E**), which usually occurs 2-3 weeks after the diagnosis, is not recommended.

(Choices A and C) Cesarean delivery is associated with an increase in maternal morbidity and mortality compared with vaginal delivery. Cesarean delivery is indicated for a living breech fetus due to an increased risk of neonatal morbidity (eg, hypoxic injury, delivery-related trauma). However, in a patient with a breech IUFD, the maternal risks from a cesarean delivery would not be offset by any fetal benefits. Therefore, neither cesarean delivery nor external cephalic version is appropriate for this patient.

(Choice B) A dilation and evacuation is indicated for an IUFD that is diagnosed at < 24 weeks gestation.

Educational objective:

Induction of labor for vaginal delivery is the best option for management of intrauterine fetal demise at ≥ 24 weeks gestation. The delivery can be delayed to allow time for parental acceptance of the diagnosis, however, retention of the fetus for several weeks can lead to coagulopathy.

References

- [ACOG Practice Bulletin No. 102: management of stillbirth.](#)

A stillborn male fetus is brought to autopsy for evaluation. The fetus was delivered at approximately 36 weeks gestation to a 26-year-old woman, gravida 5 para 1 aborta 3, who received no prenatal care. The mother came to the hospital in active labor; an ultrasound on admission revealed no fetal cardiac activity. She had an uncomplicated vaginal delivery of the stillborn fetus, weight 2.2 kg (4.9 lb). The mother had a prior healthy female infant via normal vaginal delivery at 39 weeks gestation and 3 subsequent elective terminations of pregnancy. She does not use tobacco, alcohol, or illicit drugs. The fetus has short, bent extremities. X-ray reveals multiple limb fractures and a hypoplastic thoracic cavity. Which of the following is the most likely cause of these fetal abnormalities?

- A. Achondroplasia
- B. Amniotic band sequence
- C. Birth trauma
- D. Osteogenesis imperfecta
- E. Paget disease
- F. Potter sequence
- G. Vitamin D deficiency

Submit

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- A. Achondroplasia (8%)
- B. Amniotic band sequence (4%)
- C. Birth trauma (0%)
- D. Osteogenesis imperfecta (53%)
- E. Paget disease (0%)
- F. Potter sequence (27%)
- G. Vitamin D deficiency (4%)

Omitted

Correct answer
D53%
Answered correctly01 sec
Time Spent02/21/2020
Last Updated

Explanation

Type II osteogenesis imperfecta

Type II osteogenesis imperfecta	
Pathophysiology	<ul style="list-style-type: none"> Autosomal dominant Type 1 collagen defect
Ultrasound findings	<ul style="list-style-type: none"> Multiple fractures Short femur Hypoplastic thoracic cavity Fetal growth restriction Intrauterine demise
Prognosis	<ul style="list-style-type: none"> Lethal

An **intrauterine fetal demise** associated with growth restriction, **multiple limb fractures**, and a hypoplastic thoracic cavity is consistent with **type II osteogenesis imperfecta (OI)**. Type II OI is an autosomal dominant disorder due to defective type 1 collagen synthesis that results in decreased bone density and increased skeletal fragility. This disorder has a varying spectrum of severity, from mild (type I), moderate (types III-IX), to fatal perinatal (type II) disease.

Type II OI is typically diagnosed via antenatal ultrasound findings of multiple fractures, a shortened femur, a hypoplastic thoracic cage, and growth restriction. Type II OI is lethal; most fetuses either die in utero, during delivery due to trauma, or shortly after delivery due to pulmonary hypoplasia (a complication of thoracic cavity hypoplasia). Infants who survive delivery are given supportive care.

(Choice A) **Achondroplasia** is a non-lethal autosomal dominant bone dysplasia that presents with macrocephaly, frontal bossing, midface hypoplasia, genu varum, and limb shortening.

(Choice B) Amniotic band sequence is associated with limb defects (eg, amputation, hand defects, clubfoot), craniofacial defects, and/or abdominal wall defects. It does not present with bone fractures and is typically not lethal.

(Choice C) Birth trauma is most frequently associated with fetal macrosomia and shoulder dystocia. Birth trauma is typically due to shoulder dystocia maneuvers that can result in an isolated fracture (eg, clavicle, humerus).

(Choice E) Paget disease is a bone metabolism disorder due to defective osteoclast activity. This disease typically has an adult, rather than in

Prognosis

- Lethal

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(Choice C) Birth trauma is most frequently associated with fetal macrosomia and shoulder dystocia. Birth trauma is typically due to shoulder dystocia maneuvers that can result in an isolated fracture (eg, clavicle, humerus).

(Choice E) Paget disease is a bone metabolism disorder due to defective osteoclast activity. This disease typically has an adult, rather than in utero, onset and presents with headaches, hearing loss, spinal stenosis, and osteosarcoma.

(Choice F) Potter sequence is a lethal fetal anomaly that presents with pulmonary hypoplasia, limb deformities (eg, clubfoot, hip dislocation), and oligohydramnios. The sequence is most commonly due to urinary tract abnormalities (eg, bilateral renal agenesis, polycystic kidney disease). There is no association with limb fractures.

(Choice G) Maternal vitamin D deficiency is associated with fetal growth restriction, not with fractures or intrauterine fetal demise.

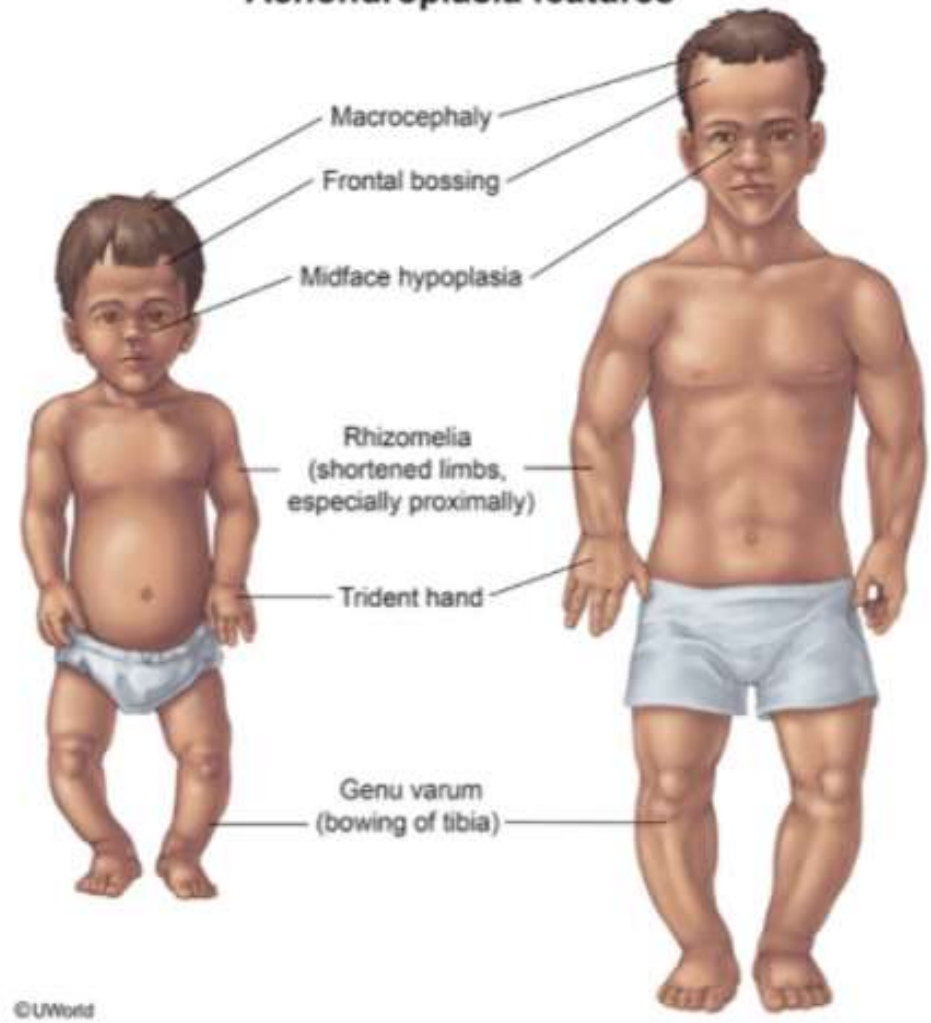
Educational objective:

Osteogenesis imperfecta is an autosomal dominant disorder characterized by mutations in type 1 collagen. Type II osteogenesis imperfecta, the most severe form, is associated with multiple fetal fractures and with intrauterine fetal demise. Other findings include limb deformities, fetal growth restriction, and a hypoplastic thoracic cavity.

Prognosis • Lethal

Exhibit Display

Achondroplasia features



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restriction, and a hypoplastic thoracic cavity

A 25-year-old woman, gravida 1 para 0, at 24 weeks gestation comes to labor and delivery due to decreased fetal movement. The patient has felt decreased fetal movement for the past day and no fetal movement in the past hour. She has had no contractions, vaginal bleeding, or leakage of fluid. Last week, the patient went to a picnic and the next day she had nausea, watery diarrhea, and muscle aches, but no rashes or joint pain. Her symptoms resolved after 24 hours. She has no chronic medical conditions and takes no daily medications. Temperature is 98.9 F (37.2 C), blood pressure is 118/68 mm Hg, and pulse is 90/min. Cardiopulmonary examination is normal. There is no flank pain and the uterus is nontender. On pelvic examination, the cervix is closed, and membranes are intact. No fetal heart tones are detected on Doppler, and a transabdominal ultrasound confirms an intrauterine fetal demise. Which of the following pathogens is the most likely cause of this patient's presentation?

- A. *Borrelia burgdorferi*
- B. Group B *Streptococcus*
- C. *Listeria monocytogenes*
- D. Parvovirus B19
- E. *Staphylococcus aureus*


Submit

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- A. *Borrelia burgdorferi* (0%)
- B. Group B *Streptococcus* (1%)
- C. *Listeria monocytogenes* (76%)
- D. Parvovirus B19 (9%)
- E. *Staphylococcus aureus* (11%)

Omitted

Correct answer

C



76%

Answered correctly



02 secs

Time Spent



06/02/2020

Last Updated

Explanation

<i>Listeria monocytogenes</i>	
Pathogenesis	<ul style="list-style-type: none"> • Foodborne transmission • Bacterial invasion of intestinal epithelial cells • Transplacental passage to fetus
Clinical features	<ul style="list-style-type: none"> • Febrile gastroenteritis in immunocompetent host • Invasive disease (eg, sepsis, meningitis) in neonates, pregnant women, elderly, immunocompromised
Laboratory findings	<ul style="list-style-type: none"> • Gram-positive rods on culture (eg, stool, blood, CSF)
Treatment	<ul style="list-style-type: none"> • Supportive care for gastroenteritis in normal host • Parenteral antibiotics for invasive disease

CSF = cerebrospinal fluid.

This patient with intrauterine fetal demise in the setting of a recent episode of watery diarrhea likely had a foodborne infection due to **Listeria monocytogenes**. *L. monocytogenes* is a facultative intracellular anaerobe that typically causes outbreaks via ingestion of contaminated foods (eg, deli meats). The bacteria can replicate at cold temperatures (eg, refrigeration) and invade the intestinal mucosa once ingested, causing **gastroenteritis** (eg, fever, vomiting, diarrhea).

Most infections in healthy patients are self-limited; however, pregnant women (who are relatively immunosuppressed) are at increased risk of invasive disease (eg, bacteremia) and **fetal infection** via **transplacental transmission**. Infection acquired in early pregnancy (eg, first and second trimesters) typically results in granulomatosis infantiseptica (ie, disseminated abscesses/granulomas) and possible **intrauterine fetal demise**. Infection in the third trimester may be less severe and present as fetal distress, preterm delivery, or early-onset neonatal sepsis.

Therefore, pregnant patients are advised to avoid foods commonly contaminated with *L. monocytogenes* such as raw meats and vegetables,

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Therefore, pregnant patients are advised to avoid foods commonly contaminated with *L. monocytogenes* such as raw meats and vegetables, unpasteurized dairy products, and processed (eg, deli) meats. In addition, proper handwashing after handling soil or decaying vegetation (eg, gardening) is recommended.

(Choice A) Early infection with *Borrelia burgdorferi* (ie, Lyme disease) typically presents with erythema migrans rather than gastroenteritis. In addition, adverse fetal effects are uncommon.

(Choice B) Group B *Streptococcus* can cause intrauterine fetal demise; however, pregnant women are usually asymptomatic or have urinary tract infections rather than gastroenteritis.

(Choice D) Parvovirus B19 infection can cause intrauterine fetal demise; however, this diagnosis is less likely because it is not spread via contaminated food. In addition, maternal infection typically causes arthralgias and arthritis (particularly of the small joints) and rash (not seen in this patient).

(Choice E) *Staphylococcus aureus* is a rare cause of intrauterine fetal demise and gastrointestinal symptoms. Patients typically have gastroenteritis dominated by nausea and vomiting (rather than diarrhea), making this diagnosis less likely.

Educational objective:

Listeria monocytogenes is a common foodborne infection due to consumption of contaminated food (eg, unpasteurized milk, deli meats) and typically causes a self-limited gastroenteritis. During pregnancy, *L. monocytogenes* can cause transplacental fetal infection and possible intrauterine fetal demise.