MATERNAL911®

Intrahepatic Cholestasis of Pregnancy

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Course Description:
This course focuses on participants gaining a better understanding of Intrahepatic Cholestasis of Pregnancy (ICP), early recognition of women affected by this condition, and the issues it brings to a woman and her unborn fetus.

Approximate Time to Complete: 55 minutes

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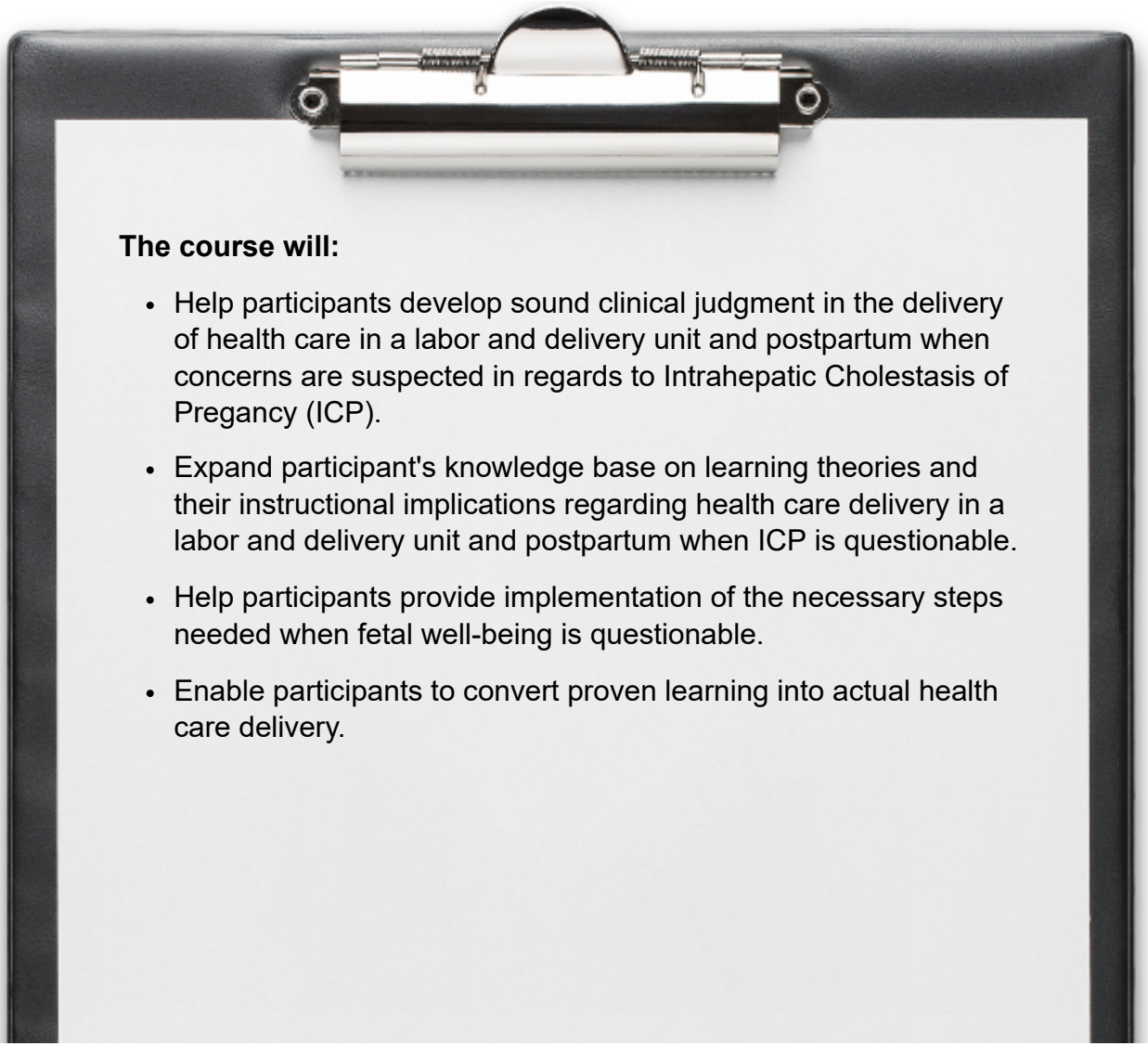
Introduction



The course will:

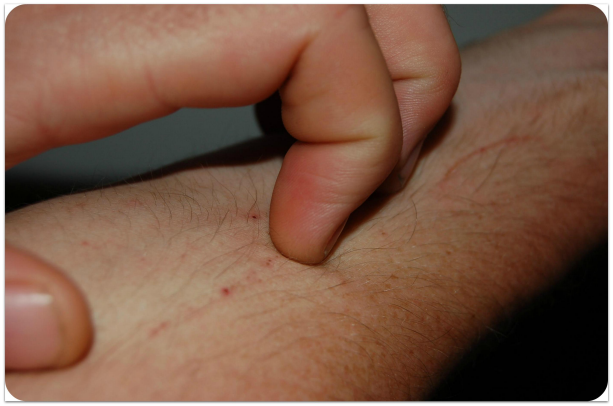
- Help participants develop sound clinical judgment in the delivery of health care in a labor and delivery unit and postpartum when concerns are suspected in regards to Intrahepatic Cholestasis of Pregancy (ICP).
- Expand participant's knowledge base on learning theories and their instructional implications regarding health care delivery in a labor and delivery unit and postpartum when ICP is questionable.
- Help participants provide implementation of the necessary steps needed when fetal well-being is questionable.
- Enable participants to convert proven learning into actual health care delivery.

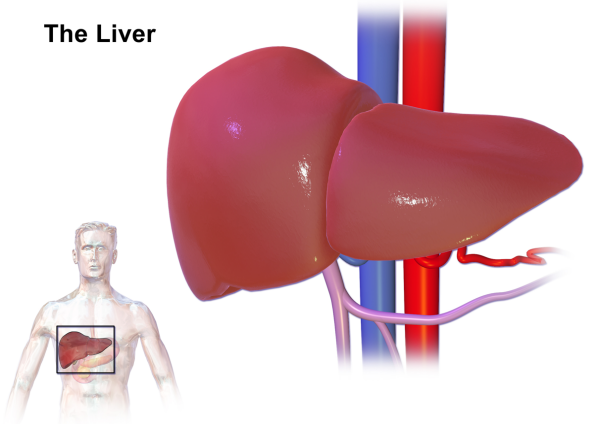
Intrahepatic Cholestasis of Pregnancy (ICP) Definition

ICP is diagnosed based on pruritus and elevation in serum bile acid concentrations. This condition generally develops in the late second and/or third trimester of pregnancy.

However, cases have been reported as early as 8 weeks of pregnancy and moderate itching at any point in pregnancy should not be ignored.

The incidence rate varies worldwide, from <1 to 27.6%. It is thought the differences among population groups and environmental factors may contribute to the incidence rates [4, 5].





Incidence of ICP

It is not clearly understood, but the disease commonly occurs in the winter months in the countries of Sweden, Finland, and Chile [2].

It is also more common in multiple gestations with the highest risk associated with higher order multiple gestations [8].

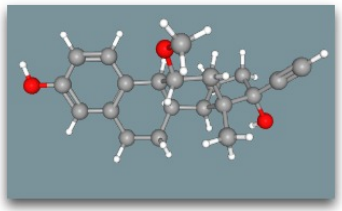
Sweden Finland Chile

Finland - Single Color by FreeVectorMaps.com

In Chile, 27.6% of Araucanos Indians are affected with ICP, representing the highest incident rate worldwide [4].

In the United States, the occurrence rate is from 0.32% of women in Bridgeport Hospital, Connecticut to 5.6% in a Hispanic population in Los Angeles, California [6, 7].

Genetic Susceptibility



Hormonal Factors

Environmental Factors

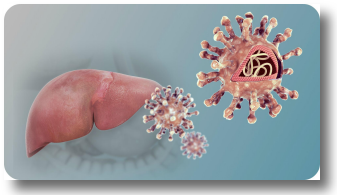
The etiology of ICP is not clearly understood; however, a combination of the following risk factors are suspected:

National Center for Biotechnology Information. PubChem Database. Moxestrolum, CID=71714, https://pubchem.ncbi.nlm.nih.gov/compound/Moxestrolum (accessed on Nov. 10, 2019) Source link

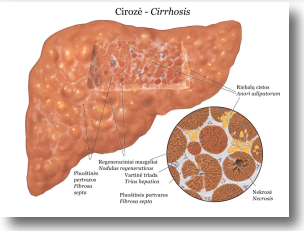
Additional Risk Factors

Other factors that affect the incident rate include [11]:

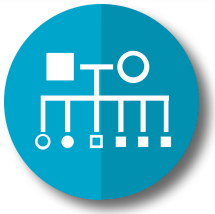
Personal history of chronic hepatitis C



Personal history of nonalcohol liver cirrhosis



Prior personal history or family history of intrahepatic cholestasis



Advanced maternal age

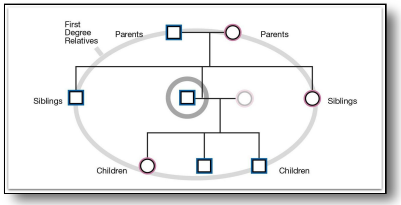
A woman who has had ICP has a 60 to 70% risk of recurrence in subsequent pregnancies. The severity varies in subsequent pregnancies.

Etiology - Genetic Susceptibility

The genetic cause of ICP is very complicated, but genetic susceptibility in evidence demonstrates [12]:

Familial Clustering

Increased risk in first-degree relatives



Increased risk in some ethnic groups

Recurrence rate of 60-70% in subsequent pregnancies

Etiology - Genetic Susceptibility

PFIC3 is a familial form of ICP and has been associated with the a mutation in the ABCB4 gene.

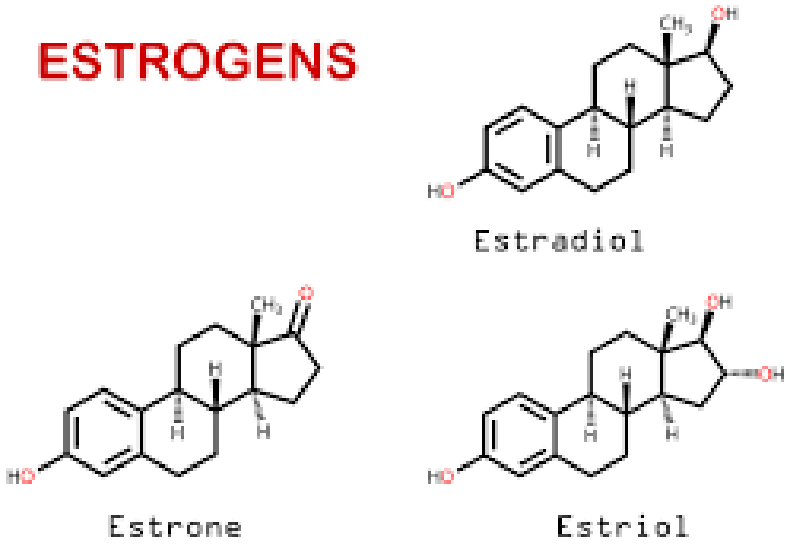
- 16% of Caucasian patients with ICP have the ABCB4 gene mutation [22].
- Numerous heterozygous mutations in the ABCB4 gene were reported in women with ICP [16,86].
- Other genes possibly involved in ICP pathogenesis include ABCB11, ATP8B1, ABCC2, NR1H4 [16, 17, 18, 19, 20, 22, 23, 86].

Etiology - Hormone Effect in ICP

Estrogen [21, 22]

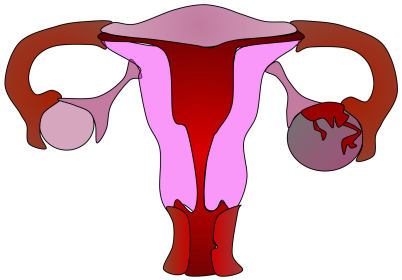
In experimental and clinical studies, estrogen has been associated with ICP.

- Serum estrogen reaches peak levels in the second half of pregnancy when ICP is noted to occur.
- Serum estrogen levels are higher in multiple gestation when compared to singleton pregnancies. This supports findings that ICP occurs more often at higher rates in multiple gestation.

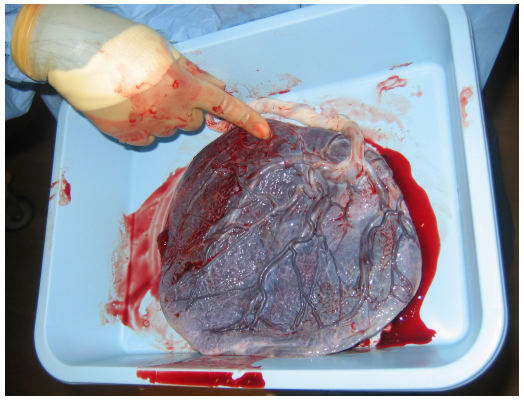


Etiology - Hormone Effect in ICP

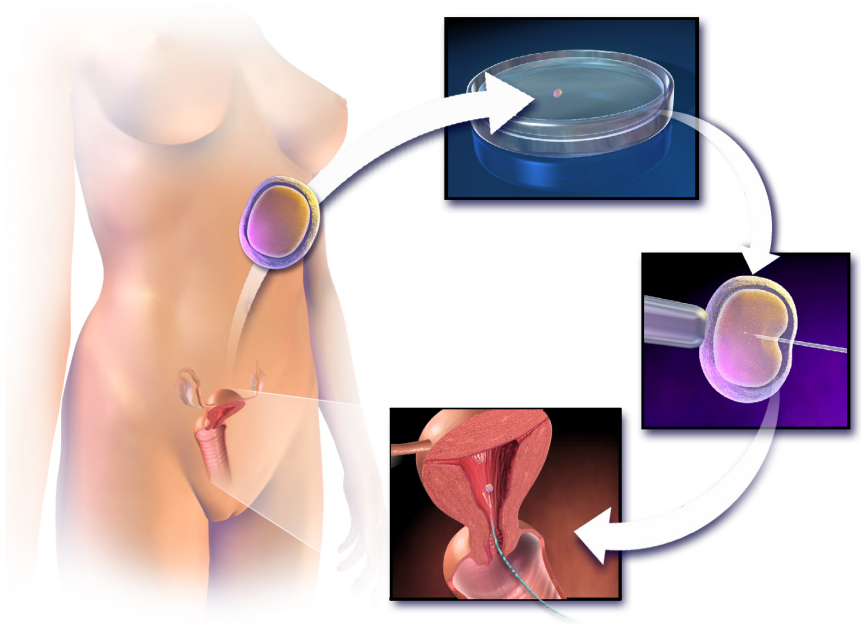
ICP has been seen earlier in pregnancy following ovarian hyperstimulation, probably related to the considerably high serum estrogen level.



The placenta is the major source of estrogen production during pregnancy in the second and third trimester, which is likely why ICP resolves after delivery of the placenta.



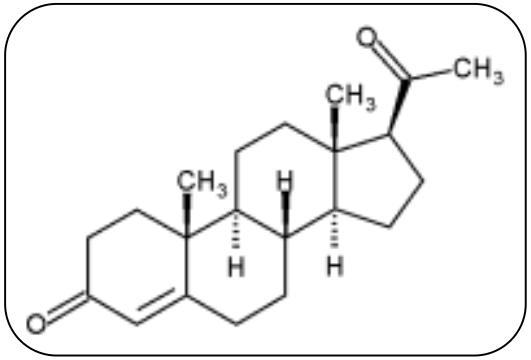
Etiology - Special Populations and Hormone Effects



Transient symptoms of cholestasis may be seen in women with a history of cholestasis undergoing ovarian stimulation for in vitro fertilization due to high estrogen levels.

Etiology - Hormone Effect in ICP

Progesterone metabolism may contribute to the pathogenesis of ICP.

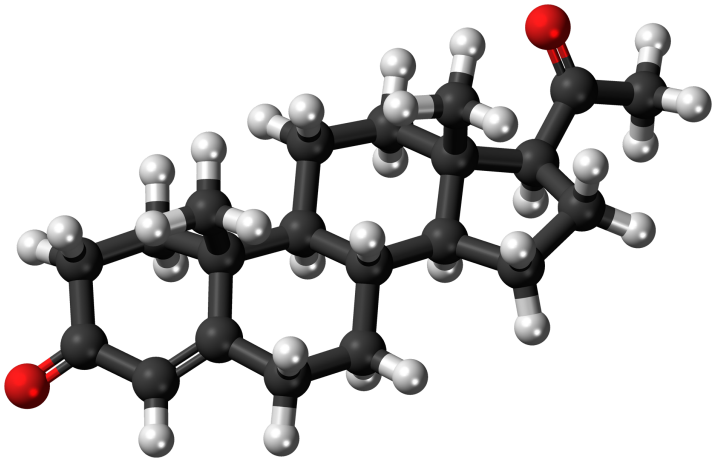


Progesterone

Progesterone

- In women who are genetically predisposed, the development of large amounts of sulfated progesterone metabolites in pregnancy may result in saturation of the hepatic transport used for biliary excretion of these compounds [23, 24].

Etiology - Hormone Effect in ICP



Progesterone

- It is not known if administration of exogenous progesterone during pregnancy increases the risk of ICP.
- Progesterone supplementation for reducing the risk of spontaneous preterm birth (PTB) was not associated with an increased rate of ICP in a placebo-controlled randomized trial [32].

Etiology - Special Populations and Hormone Effects

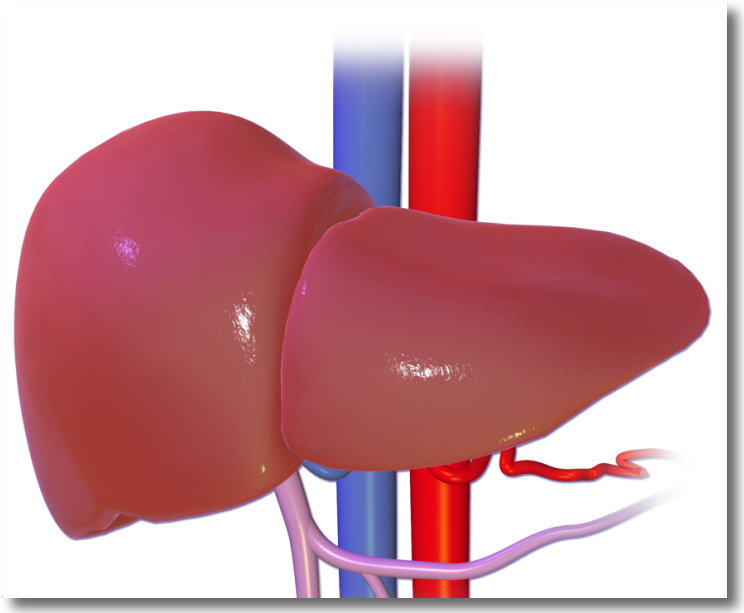
- It is uncertain if providing progesterone supplementation to women with a history of previous preterm birth (PTB) or a short cervical length in the current pregnancy should be avoided if she has a previous history of ICP.
- The decision of whether or not to initiate supplemental progesterone in a pregnancy should be individualized based on risks and benefits.

Etiology- Environmental Factors in ICP

- Seasonal and geographic variables influence the expression of the disease.
- Low selenium levels related to dietary deficiency and low vitamin D levels due to lack of sunlight exposure have been suspected causative factors [11, 33].

Etiology - Underlying Liver Disease

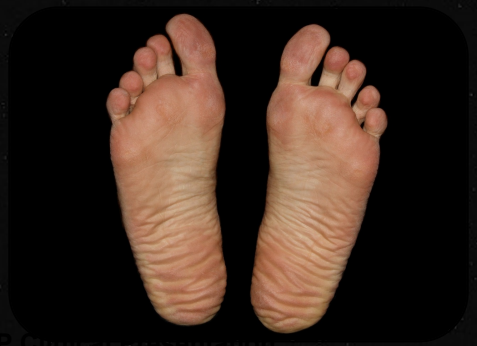
- Liver disease has been identified in a small number of women who develop ICP [27-30].
- Hepatitis C and nonalcoholic liver cirrhosis are associated with increased risk of ICP [28].



ICP Clinical Presentation

Women with ICP may present with mild to unbearable pruritus. Pruritus may be generalized, but usually starts on the soles of the feet and the palms of the hands.

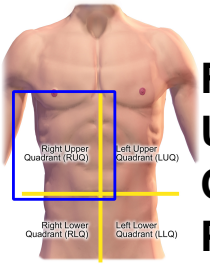
Pruritis is usually worse at night.



ICP Clinical Presentation

Click on the pictures for other ICP symptoms that may occur

Nausea



Abdominopelvic Quadrants

Right Upper Quadrant Pain

Sleep Deprivation

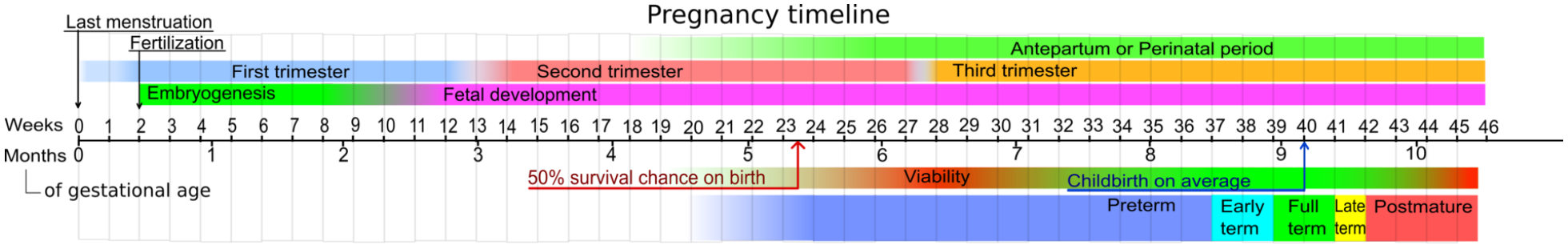
Oily Stools

Poor Appetite

ICP Patient Presentation

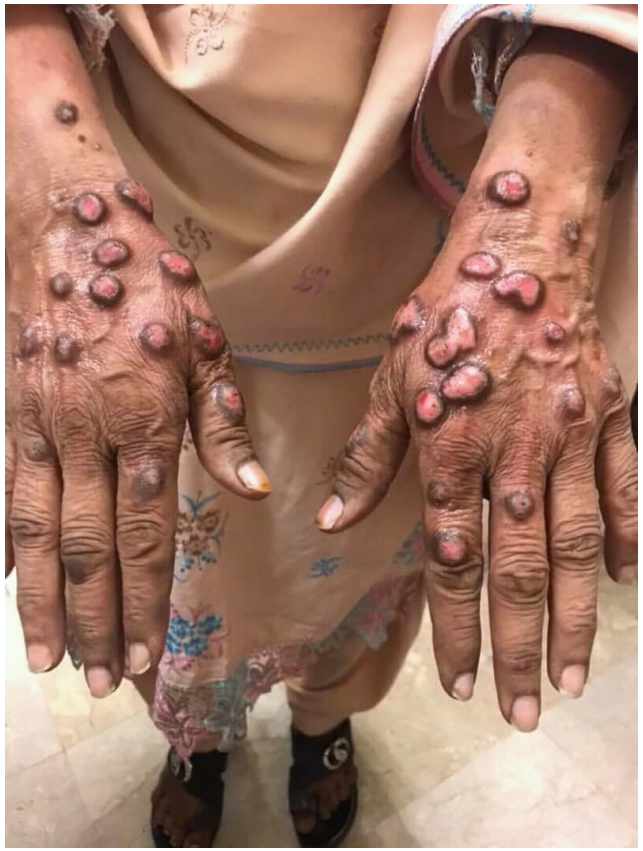
Consider these symptoms at the different stages of pregnancy:

- Symptoms of ICP may be transient in the first trimester in women who have encountered ovarian hyperstimulation after in vitro fertilization [22].
- Symptoms that are persistent and worsening occur in women who have naturally conceived [31].
- Pruritus and other symptoms usually develop during the late 2nd or 3rd trimester.
- The causes of liver disease should be evaluated in women who develop encephalopathy or other stigmata of liver failure.



ICP Physical Examination

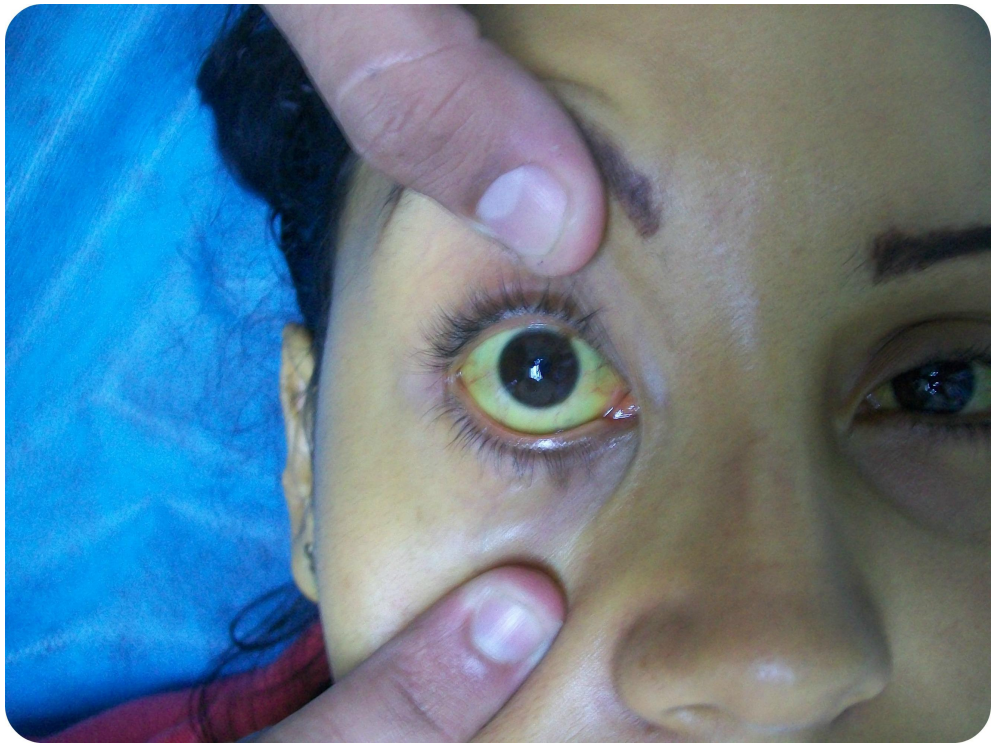
- Women with ICP most commonly have no physical manifestations of the disease.
- Typically, if a rash is present, alternative diagnoses should be investigated.
- In severe cases, women with pruritis may present with scratch marks and excoriations. Prurigo nodules may occur secondary to scratching.



ICP Physical Examination

In women with ICP, 14 to 25% will develop jaundice. Jaundice generally develops one to four weeks after the itching begins [32].

Other causes of jaundice should be determined if there is no pruritus.



ICP Laboratory Findings

The normal physiological changes that occur in pregnancy must be considered when performing a workup of abnormal liver tests in a pregnant woman [85].

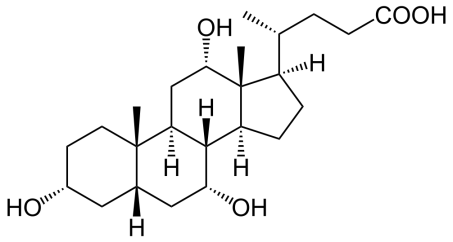
ICP is diagnosed based on elevated serum bile acids. Women may also have elevated liver transaminases [25, 33, 34].

Pruritis may occur prior to the development of lab abnormalities [35].

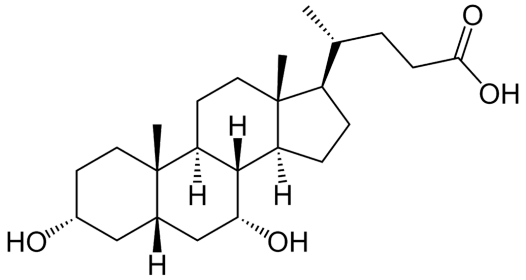
Click the silhouette for more information.

ICP Laboratory Findings

The normal physiological changes that occur in pregnancy must be considered when performing a workup of abnormal liver tests in a pregnant woman [85].



cholic acid



chenodeoxycholic acid

Cholic and chenodeoxycholic acids are the primary bile acids that are increased, but cholic acid increases more than chenodeoxycholic acid which causes an increased ratio [32, 35, 37]. A ratio of these two acids is not necessary to diagnose ICP [38].

Other possible laboratory findings include:

Serum Aminotransferase (AST) and Alanine Aminotransferase (ALT)

Serum aminotransferases (AST) and alanine aminotransferase (ALT) increases in 60% of cases. These increases are usually less than two times the upper limit of normal, but may reach levels over 1000 unit/L which should prompt evaluation of viral hepatitis [32].

Bilirubin

25% of ICP cases have increases in total and direct bilirubin concentrations. However, total bilirubin levels do not generally increase greater than 6mg/dL.

Gamma-glutamyl transpeptidase (GGT)

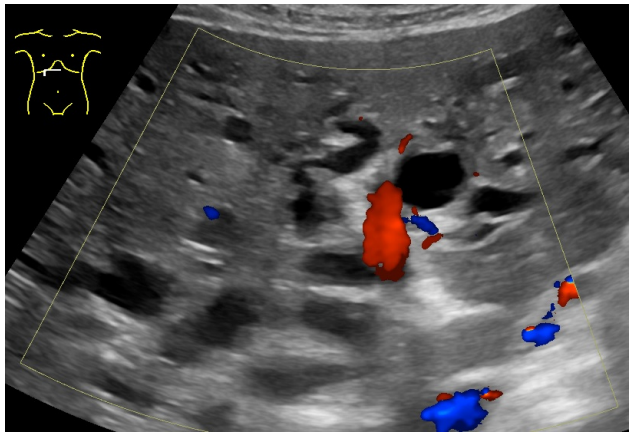
Gamma-glutamyl transpeptidase (GGT) is normal or mildly increased in 30% of ICP cases. GGT levels align with other cholestatic markers in other forms of cholestatic liver disease helping to make the diagnosis of ICP or other causes for the increase.

Click on the rectangles for more information

Hepatic Ultrasound

Ultrasonography is not necessary in diagnosing ICP.

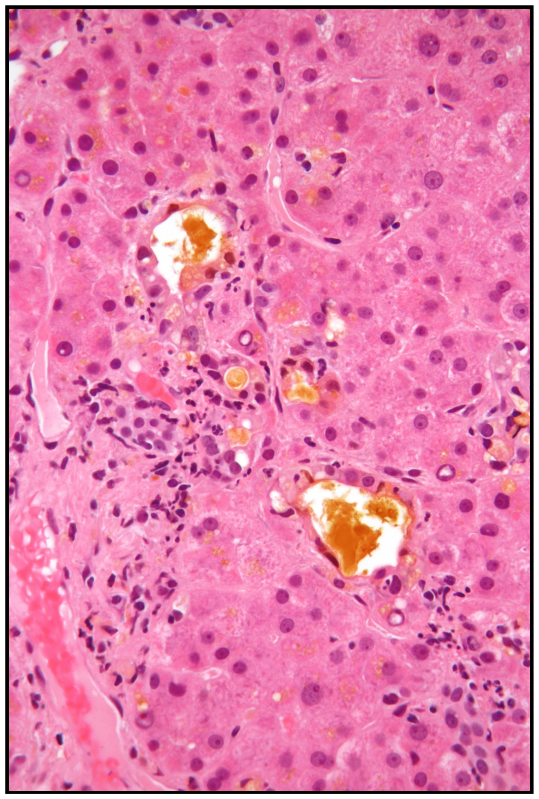
- Women with ICP do not have abnormal findings on hepatic ultrasound.
- Biliary ducts are not dilated.
- Hepatic parenchyma appears normal.
- Hepatic ultrasound can be considered to rule out any underlying liver conditions in women with early onset or severe cholestasis.



Ultrasound of dilated bile ducts

ICP Pathology

Histopathology is rarely available as liver biopsy is not necessary for diagnosis of ICP.



Cholestasis 2 - High Magnification

Differential Diagnosis of Liver Dysfunction

Pregnancy specific causes of hepatic impairment:

- Acute fatty liver of pregnancy
- Hemolysis, elevated liver enzymes and low platelets syndrome (HELLP)
- Hyperemesis gravidarum
- Primary biliary cirrhosis (shown above) or primary sclerosing cholangitis
- Viral hepatitis
- Autoimmune hepatitis
- Drug-induced liver injury
- Biliary obstruction
- Venoocclusive disease

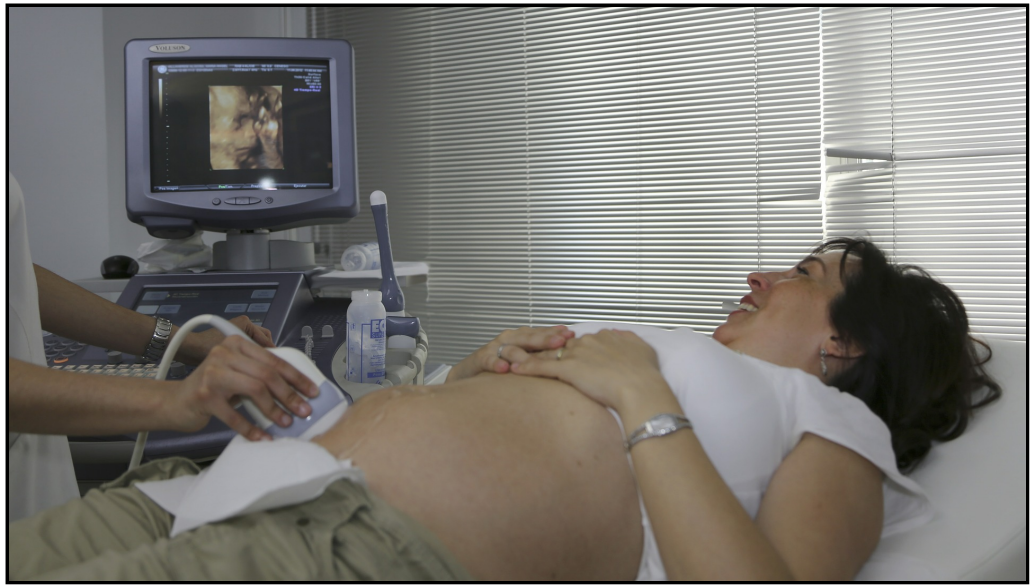
Differential Diagnosis of Pruritis

Pruritus and hepatic dysfunction possible causes:

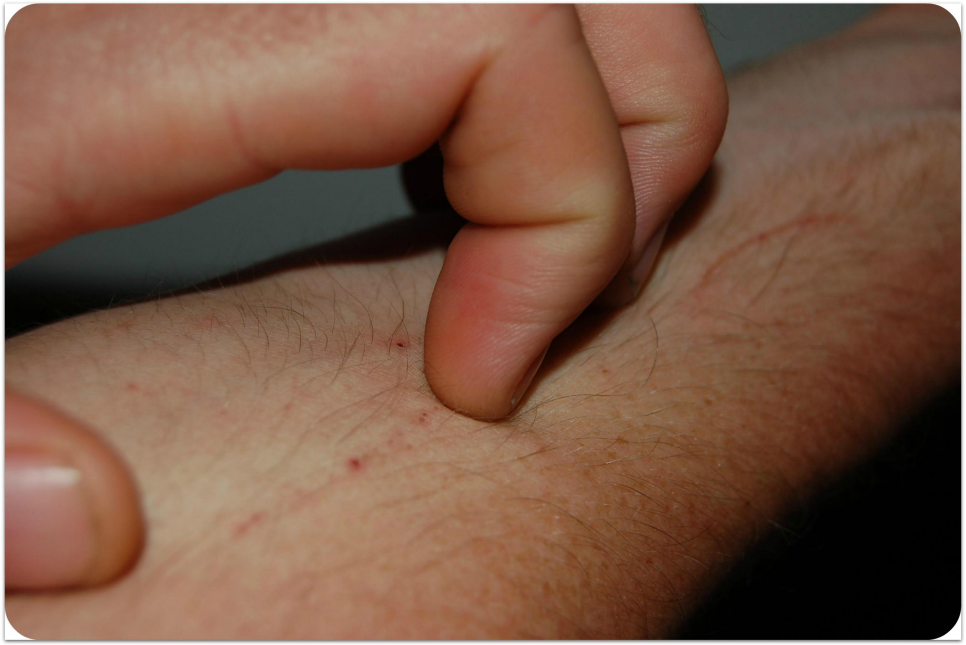
- Pruritus gravidarum
- Atopic eruption of pregnancy
- Polymorphic eruption of pregnancy
- Pemphigoid gestationis
- Prurigo of pregnancy
- Pruritic folliculitis of pregnancy

- Atopic dermatitis
- Allergic or drug reaction
- Systemic disease

- Atopic dermatitis
- Allergic or drug reaction
- Systemic disease



Differential Diagnosis

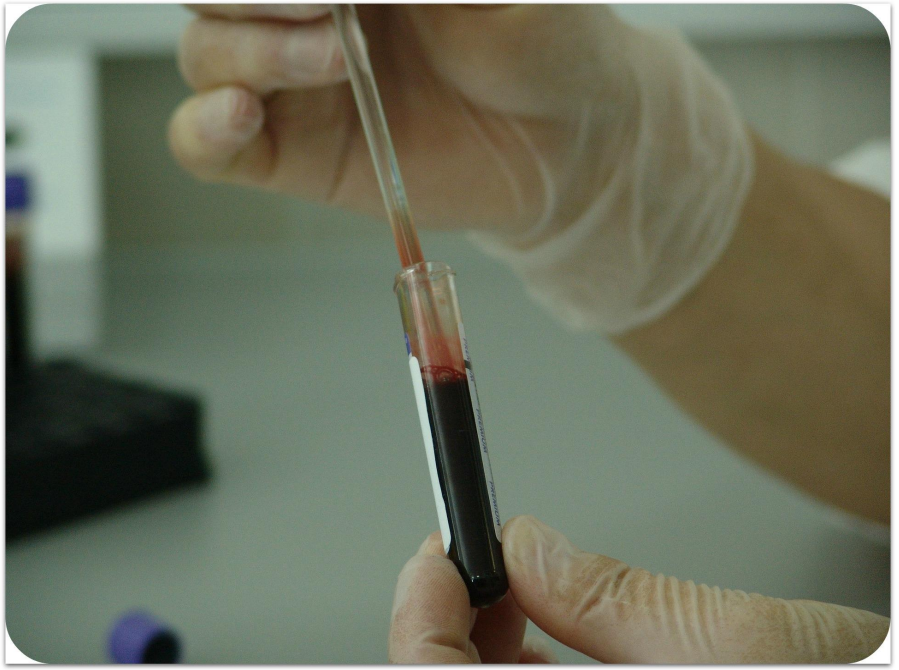


- Pruritus is the cardinal sign of ICP is not typically present in:
  - HELLP syndrome
  - Preeclampsia with severe features
  - Acute fatty liver of pregnancy
- Pruritus occurs in 23% of pregnancies [81].
- ICP does not present with primary skin lesions which helps distinguish it from:
  - Pregnancy-specific pruritic dermatoses
  - Skin conditions unrelated to pregnancy

ICP Diagnosis

Diagnosis is based upon [84]:

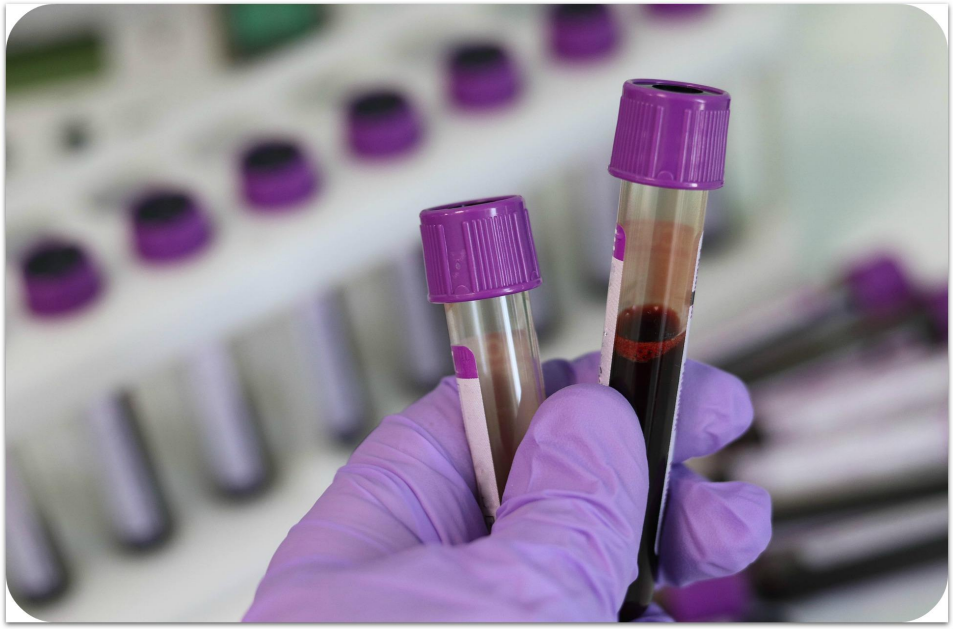
- Pruritus
- Elevated bile acids



ICP Diagnosis

- A total serum bile acid level of >10 umol/L is typically used to diagnose ICP
- There is some variance in laboratory reference ranges, which results in different values for the upper limit of normal
- Any bile acid value above the upper limit of normal is diagnostic of ICP
- Elevated transaminases can sometimes be seen in ICP; however, they are not diagnostic
- If a woman presents with new onset pruritis at term and elevated transaminases are noted; it is not necessary to await confirmation of the diagnosis with bile acids [75].

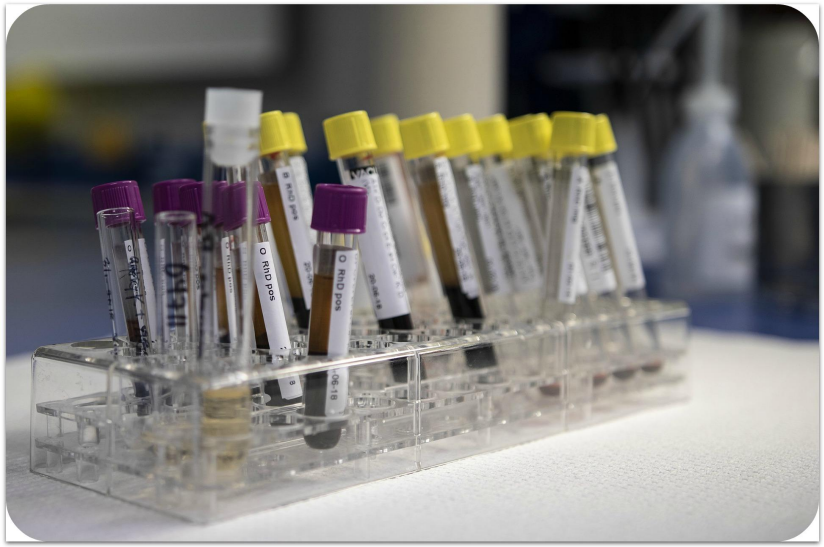
ICP Diagnosis



- Trimester specific reference ranges for Total Serum Bile Acid (TSBA) should be used to determine if elevated.
- If trimester specific ranges are not available in the lab, then general population values are used.

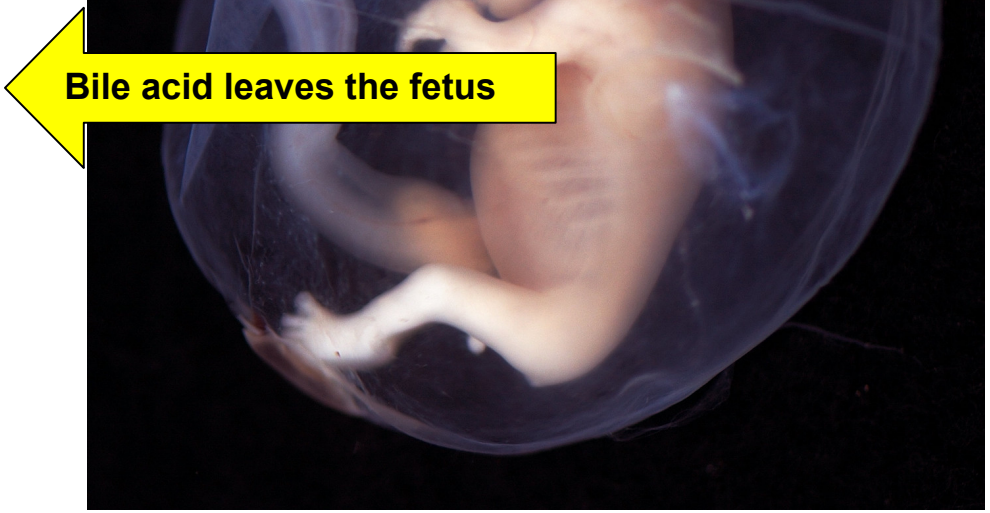
ICP Diagnosis

- TSBA ranges vary due to laboratory methods and are dependent on fasting levels. Bile acids are typically slightly higher in a non-fasting state [39, 40].
- It is recommended to repeat laboratory tests weekly if total bile acid and aminotransferase levels are initially normal because pruritus can precede the rise in serum bile acids by many weeks.
- Given this lag in laboratory confirmation, it is not recommended to start ursodoxycholic acid until the diagnosis is confirmed.



ICP Fetal Complications

Transplacental gradients facilitate fetal clearance of bile acids in normal pregnancies [25, 42].



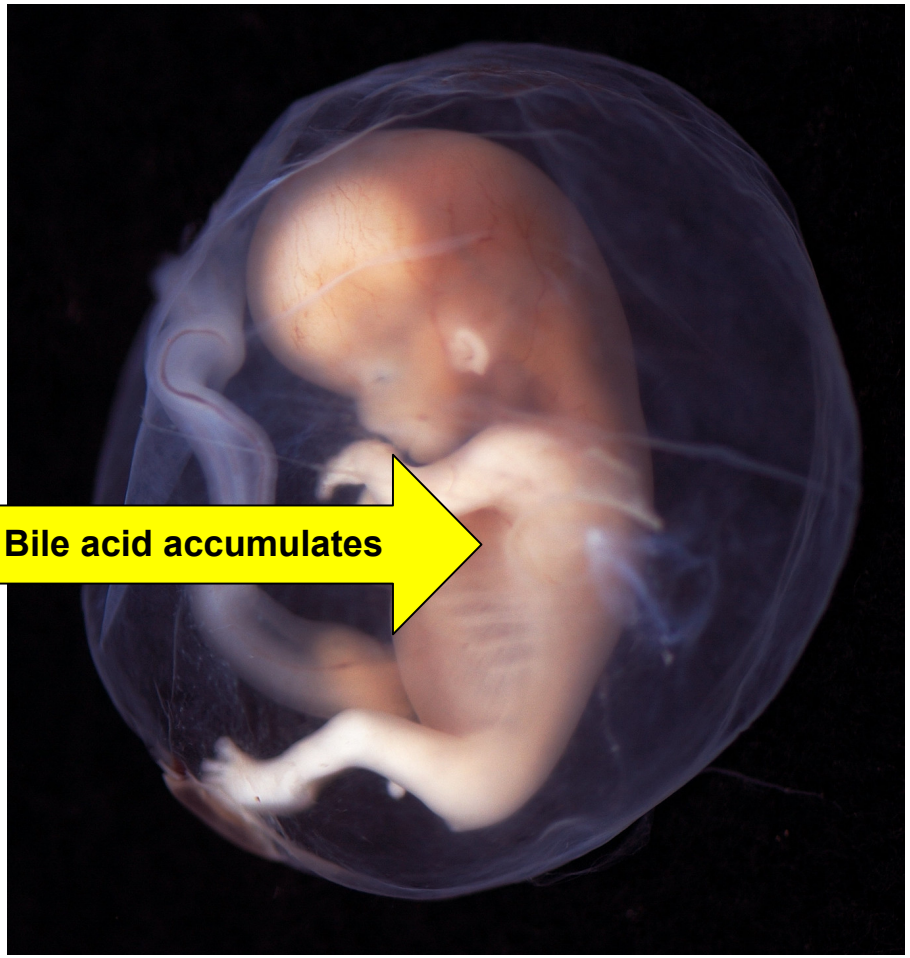
ICP Fetal Complications

Transplacental gradients facilitate fetal clearance of bile acids in normal pregnancies [25, 42].

In pregnancies affected by ICP, the transplacental gradient is reversed and an accumulation of bile acids occurs in the amniotic fluid and fetus [43].

ICP is associated with increased risk of [83,44]:

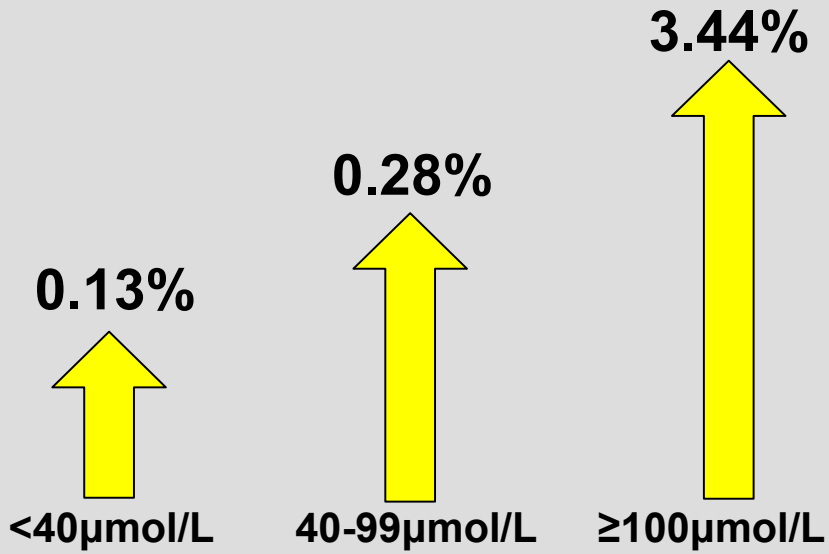
- Intrauterine fetal demise (IUFD)
- Meconium-stained amniotic fluid
- Spontaneous preterm birth
- Iatrogenic preterm birth
- Neonatal respiratory distress syndrome (RDS)
- Neonatal intensive care unit (NICU) admissions



ICP Fetal Complications

Fetal demise increases when the maternal bile acid level is higher, particularly when ≥100µmol/L.

The arrows point to the risk of fetal demise based upon bile acid levels.



ICP Fetal Complications

- The rate of stillbirth after 37 weeks gestation is estimated at 1.2%.

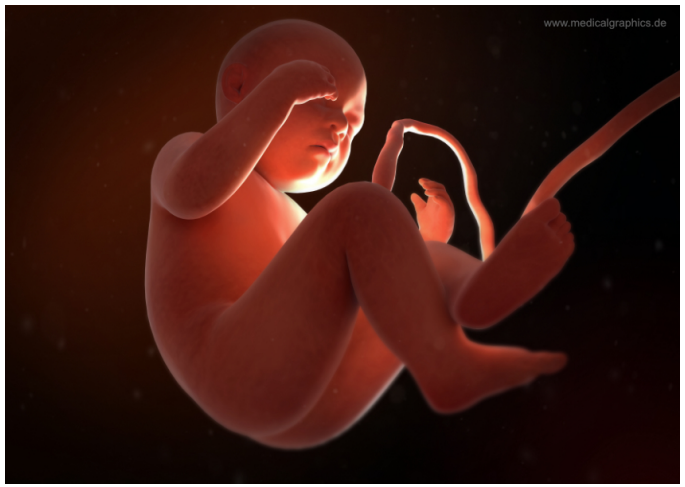
ICP Fetal Complications

Please note that these outcomes occurred due to early delivery and from ursodiol treatment. The women from this study were actively managed by ICP treatment guidelines. These would certainly NOT be the rates if women with ICP were not treated and completed 40 weeks of gestation. The fetal death rate would be terrorizing to all of us in healthcare in this later situation.

ICP Fetal Complications

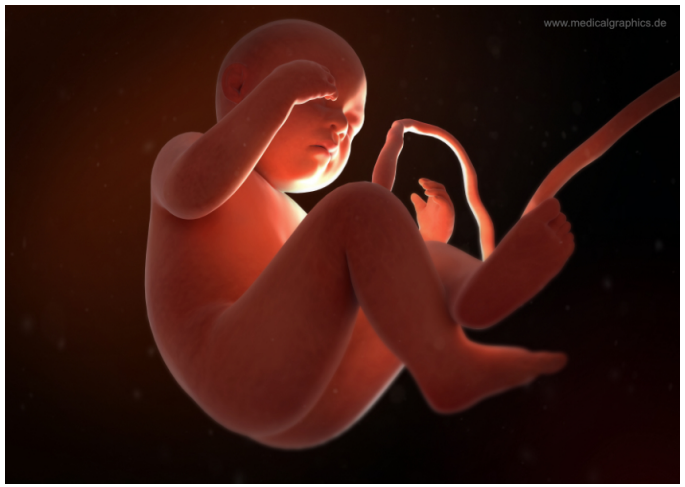
Fetal death in ICP is NOT clearly understood but is believed to be induced by high levels of bile acids causing:

- Sudden development of fetal arrhythmia [45]
- Vasospasm of the placental chorionic surface vessels [46]
- Concurrent pregnancy complications such as gestational diabetes or preeclampsia [47]



ICP Fetal Complications

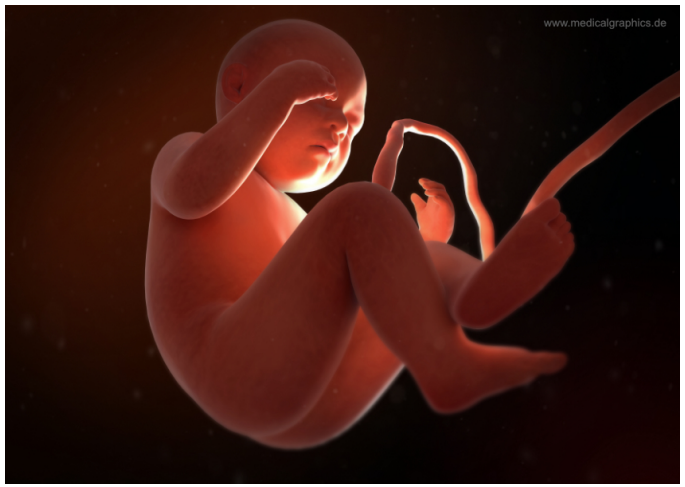
Bile acids increase expression of myometrial oxytocin receptors, which is believed to be associated with spontaneous preterm labor. Pregnancies complicated by ICP and preterm labor tend to have an earlier onset of pruritis [48, 49, 50].



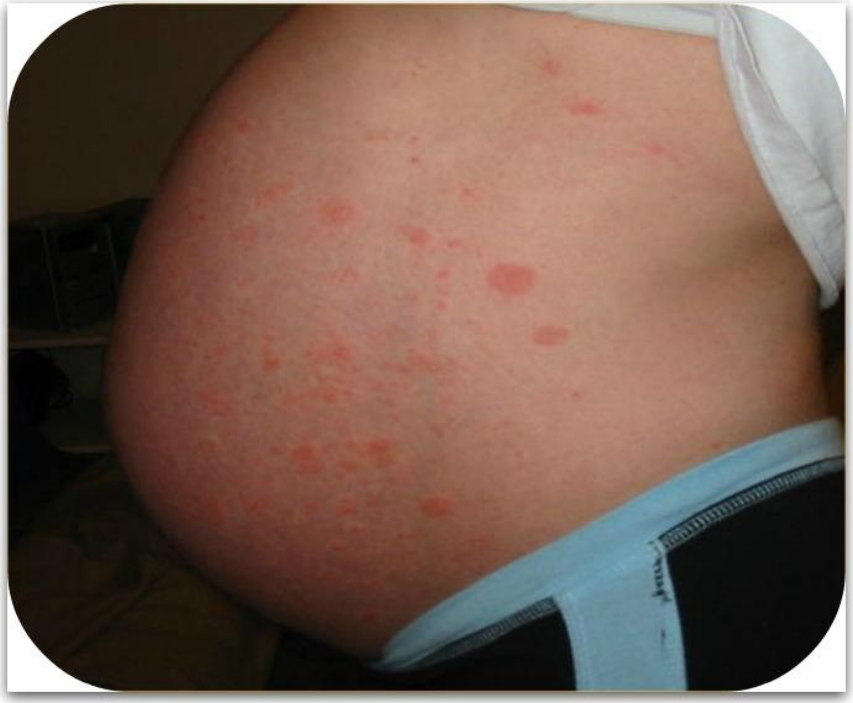
ICP Fetal Complications

Features not associated with ICP [25]

- Oligohydramnios
- Fetal growth restriction

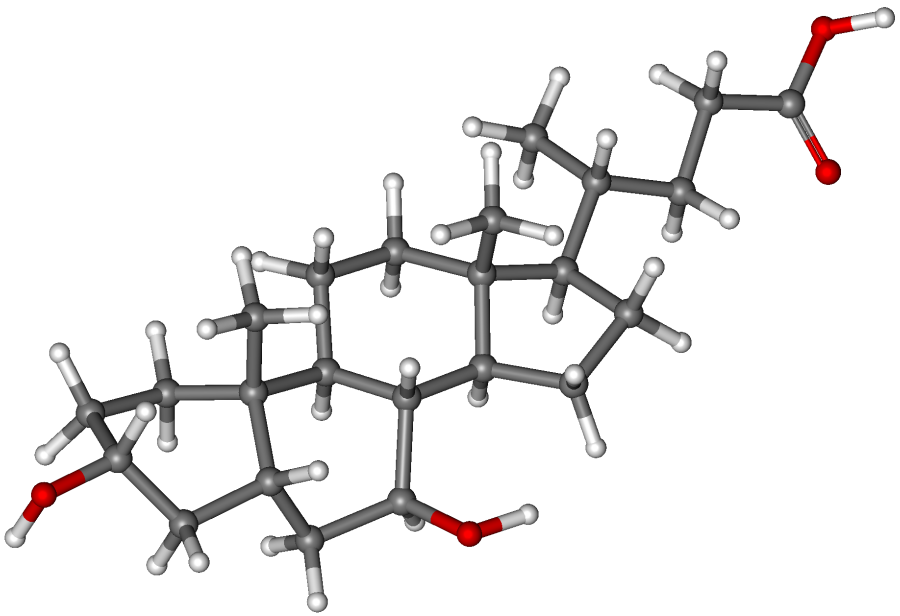


ICP Treatment



- Treatment is indicated to reduce maternal symptoms of pruritis and potentially to improve pregnancy outcomes.
- Treatment should not be initiated until the diagnosis is confirmed.

ICP Treatment



The preferred medication for treatment of maternal pruritus due to ICP is Ursodeoxycholic acid (UDCA) *(Shown on the left)* [51]. No additional lab testing is needed prior to initiating UDCA other than those drawn for diagnosis of ICP.

Pruritis is generally decreased in 1 to 2 weeks after initiation of UDCA.

ICP Treatment

- Typical initial doses include [80]:
  - 10-15 mg/kg per day, divided into 2 or 3 doses
  - 300 mg BID or TID
  - 500 mg BID
- If pruritus is not decreased in 2 weeks of starting UDCA, the dose can be increased to a maximum of 21mg/kg per day [52,53,54,55].

ICP Treatment

- UDCA is tolerated well by most women; however, 25% of women may develop mild nausea and dizziness.
- Following the initiation of UDCA, maternal bile acid levels should be monitored because significantly increased risk of stillbirth is noted when maternal concentrations ≥100µmole/L [44].
- Improvement in lab results is seen in 3 to 4 weeks.
- UDCA can be discontinued when labor begins if used for management of ICP symptoms.

ICP Treatment

If the woman continues to have symptoms despite treatment with UDCA, additional therapy can include [60,61]:

- S-adenosyl-methionine
- Cholestyramine
- Rifampin
- Hydroxyzine
- Diphenhydramine

These medications are not as effective as UDCA, but can be considered for patients who cannot take UDCA or whose symptoms are refractory to treatment.

ICP Treatment if UDCA Alone is Ineffective

S-adenosyl-methionine (SAMe):

- SAMe is a glutathione precursor and influences the composition and fluidity of hepatocyte plasma membranes. In addition, SAMe increases the methylation and biliary excretion of hormone metabolites [56].
- In a meta-analysis of five randomized trials of 311 pregnant women, UDCA at a dose of 450 to 1000mg/day decreased the pruritus score, total bile acids, and alanine aminotransferase levels more effectively than SAMe 800 to 1000mg/day [57].
- SAMe is administered intravenously (IV) which is inconvenient when used for long term therapy. SAMe 1600mg/day orally has been used to treat cholestasis in nonpregnant patients [58].

SAMe

ICP Treatment if UDCA Alone is Ineffective

Cholestyramine

- Cholestyramine decreases ileal absorption of bile salts which increases their fecal excretion.
- Cholestyramine effect of pruritus in ICP is limited.
- Side effects of medication:
  - Constipation
  - Abdominal discomfort
  - Malabsorption of fat and fat soluble vitamins especially at doses >4 grams per day
- Administration begins with 2 to 4 grams per day in divided doses, gradually increasing to a maximum daily dose of 16 grams as needed for symptom relief [59].

Cholestyramine

ICP Treatment if UDCA Alone is Ineffective

Rifampin

- Strong agonist of the pregnane X receptor (PXR), which mediates many detoxification and hepatobiliary processes.
- Relieves pruritus in nonpregnant patients when pruritis is associated with cholestasis.

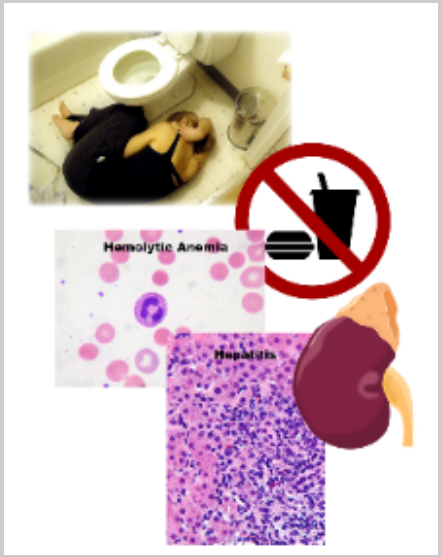
Click through the screens for more details on Rifamprin

1 of 3 ›

ICP Treatment if UDCA Alone is Ineffective

Medication side effects include:

- Nausea
- Decreased appetite
- Hemolytic anemia
- Renal failure
- Hepatitis



Click through the screens for more details on Rifamprin

Rifampin

ICP Treatment if UDCA Alone is Ineffective

A total daily dose range from 300 to 1200mg orally administered in divided doses has been demonstrated to improve pruritis.

Click through the screens for more details on Rifamprin

3 of 3

To move on with the lesson, use the arrows below.

ICP Treatment if UDCA Alone is Ineffective

Hydroxyzine

25mg orally every 6 to 8 hours can help with pruritis.

Click through the screens for more details on other treatments

Hydrazine and Chlorpheniramine

ICP Treatment if UDCA Alone is Ineffective

Chlorpheniramine

Oral administration at 4mg every 4 to 6 hours to treat pruritus with minimal efficacy, but causes sedation for sleep.

Click through the screens for more details on other treatments

ICP Treatment if UDCA Alone is Ineffective

Calamine lotion or aqueous cream with 2% menthol may be used for pruritus.

Click through the screens for more details on other treatments

Hydrazine and Chlorpheniramine

ICP Treatment if UDCA Alone is Ineffective

Dexamethasone 12mg per day did not relieve pruritus or improve serum aminotransferase levels in 130 women of a randomized trial, and was less effective than UDCA 1000mg/day at reducing bile acids and bilirubin [62].

Phenobarbital, charcoal, ultraviolet light, and herbal remedies have been used with uncertain efficacy.

Click through the screens for more details on other treatments

To move on with the lesson, use the arrows below.

ICP Pregnancy Management - Antepartum

- There is no proven efficacy of antepartum fetal testing to reduce the risk of stillbirth; however, it is still typically performed.
- It is hypothesized that antepartum fetal testing is not useful because the mechanism of stillbirth is thought to be sudden event rather than a chronic placental vascular process.
- Antepartum fetal testing should be initiated at a gestational age at which delivery would be performed in response to abnormal fetal testing results.
- The optimal mode of testing or frequency of testing is unknown [1, 67, 68].

Click through the screens for more information.

1 of 2

ICP Pregnancy Management - Antepartum

Either NSTs or biophysical profiles can be performed [63]. Other studies reported intrauterine fetal demise occurred within a few days of a reactive NST [64-70].

Click through the screens for more information.

2 of 2

To move on with the lesson, use the arrows below.

ICP Timing of Delivery

The timing of delivery should be individualized based on patient-specific factors including total bile acid levels:

- If total bile acids are >100 umol/L, delivery is recommended at 36 weeks
- If total bile acids are <100 umol/L, delivery is recommended at 36-37 weeks
- Recent data suggests that delivery can even be further delayed if bile acids are <40 umol/L

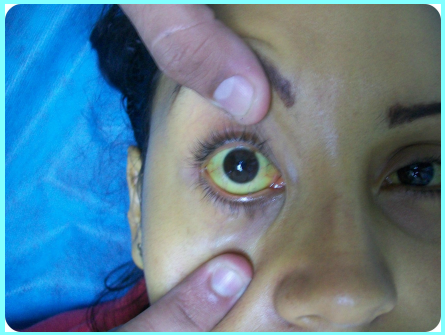
Click through the screens for more information.

1 of 2

ICP Timing of Delivery

Delivery should be considered prior to 36 weeks in women with ICP, total bile acids >100 umol/L and any of the following:

- Excruciating and unremitting maternal pruritis
- History of stillbirth prior to 36 weeks due to ICP
- Pre-existing or acute hepatic disease with worsening hepatic function [44, 71, 93].



Click through the screens for more information.

2 of 2

Use the arrows below to move forward with the lesson.

ICP Pregnancy Management

Counseling prior to a preterm delivery:

- All women who electively deliver prior to 36 weeks should be counseled about absence of definitive evidence that the maternal and fetal benefits of delivery outweigh the potential morbidity of prematurity.
- If preterm delivery is planned, the woman should receive a course of antenatal corticosteroids prior to delivery.

ICP Guidelines from Professional Organizations

The American College of Obstetricians and Gynecologists
Recommends delivery at 36+0 to 37+0 weeks of gestation or at diagnosis if diagnosed at term [77].

The Royal College of Obstetricians and Gynecologists
Recommends offering women induction of labor after 37+0 week of gestation, especially those with severe laboratory abnormalities [74].

ICP Guidelines from Professional Organizations

The Society for Maternal-Fetal Medicine(SMFM) has made recommendations for delivery based upon bile acid levels [75]:

- Bile acids under 40: delivery is recommended at 36 0/7-39 0/7 weeks gestation.
- Bile acids 40-99: delivery is recommended at 36 0/7-39 0/7 weeks gestation with a recommendation for delivery in the earlier portion of this window. For these pregnancies, delivery timing will be similar to ACOG recommendations.
- Bile acids over 100: Delivery is recommended at 36 0/7 weeks gestation. There is recommendation for delivery between 34-36 weeks gestation in these pregnancies with unrelieved itching, a prior stillbirth or worsening liver disease.
- SMFM acknowledges that delivery planning should be an individualized decision.

Healthcare provider microlearning video

https://youtu.be/cYhexEvcJeo

To move on with the lesson, use the arrows below.

ICP Delivery Recommendations

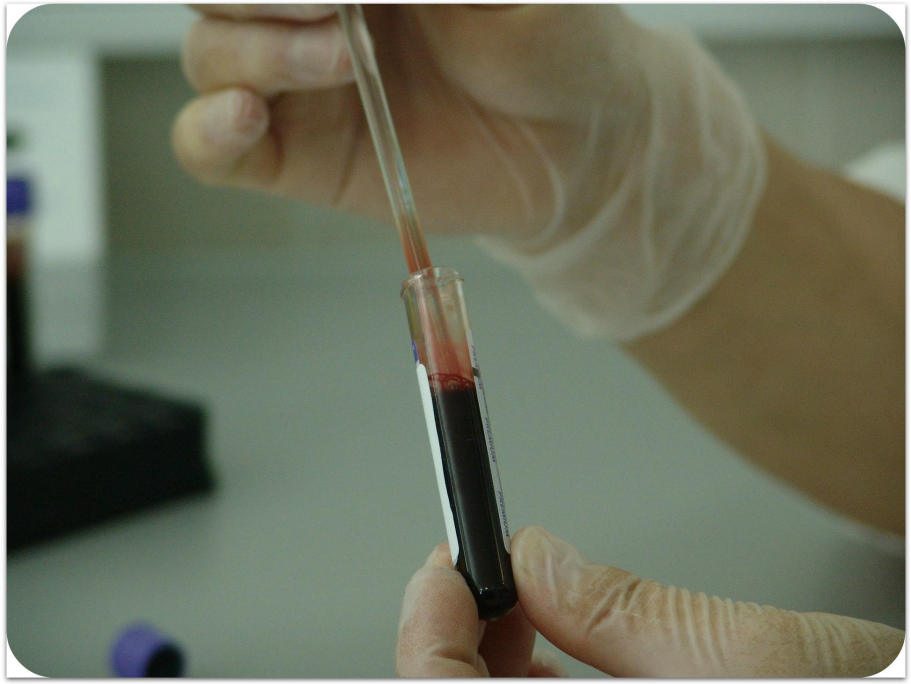
- No specific or special recommendations are considered related to delivery in a woman with ICP.
- During labor, continuous fetal monitoring is indicated related to increased occurrence of fetal death and non-fatal asphyxia events [76, 78].
- Increased cesarean delivery rates are not noted with induction of labor compared with expectant management.

ICP Postpartum Maternal Management

Postpartum Maternal Management

- Pruritus generally resolves in a few days following delivery.
- Serum bile acid concentrations and liver function tests are normalized in the first few days following delivery.
- Women with ICP can breastfeed without complications. UDCA is noted in low levels in breast milk; therefore, small amounts will be ingested by the infant but not expected to cause adverse effects in the infant [79].

ICP Postpartum Monitoring



Six to eight weeks following delivery, total bile acid concentration and transaminases are rechecked.

If either blood test does not return to normal, referral to a hepatologist is recommended to evaluate for hepatobiliary diseases.

ICP Postpartum Contraception

- Nonhormonal contraception may be used without complications.
- If a woman had a history of cholestasis related to use of estrogen-progestin contraception then non-estrogen contraception is preferred.
- Combination contraception, estrogen-progestin methods, rarely is associated with recurrent cholestasis.
- Centers for Disease Control and Prevention (CDC) considers estrogen-progestin contraception an acceptable choice for women with a history of ICP since the benefits outweigh the risks [82].
- Estrogen-progestin contraception may be initiated after liver function tests (LFT) are evaluated and normal.
  - LFT should be rechecked 3 to 6 months after imitation of estrogen-progestin contraception.
- A woman who has had ICP and uses estrogen-progestin contraception should be educated to promptly discontinue use if she develops pruritus or cholestasis.

Postpartum Contraception

ICP Planning and Prevention

ICP recurs in approximately 60 to 70% of women.

Severity of disease is variable in subsequent pregnancies compared to the first occurrence.

ICP Summary and Recommendations

- ICP is characterized with pruritus and elevated serum bile acid levels.
  - Pruritus is generalized but predominates on the palms of the hands and soles of the feet and is worse at night.
- ICP generally develops in the 2nd and/or 3rd trimester.
- ICP rapidly resolves following delivery.
- Diagnosis is based upon pruritus associated with elevated serum bile acid levels.
  - Twenty percent of cases of ICP are severe with a serum bile acids are >40µmole/L
- Pruritus can occur several weeks prior to lab abnormalities being noted.
- UDCA should not be started prior to a confirmed diagnosis.

ICP Summary and Recommendations

- The differential diagnosis of symptoms must be considered.
  - The lack of primary skin lesions in ICP helps to differentiate ICP from other skin conditions unrelated to pregnancy.
- The major complications of ICP include increased risk of intrauterine demise, meconium-stained amniotic fluid, preterm delivery, neonatal respiratory distress syndrome (RDS) due to association of bile acids entering the fetal lungs.
- Serum total bile acid level ≥100µmole/L is associated with higher risk for stillbirth.
  - Bile acid levels are monitored in all women with ICP.
  - Management is based upon the highest total serum bile concentration level.

ICP Summary and Recommendations

- The goal is to decrease maternal pruritis and possibly prevent fetal complications.
- Initiate treatment if pregnancy <37 weeks gestation.
- Treatment is with urosodeoxycholic acid; ursodiol or UDCA which are synthetic bile acids.
- UDCA reduces or relieves pruritis, has no known fetal toxicity, and is well tolerated by women. The optimal dose has not been determined; however, 300mg orally 2 to 3 times daily is reasonable. Discontinue medication when at the time of delivery.
- Delivery if pregnancy ≥37 weeks gestation.

ICP Summary and Recommendations

- The goal is to deliver women with ICP according to the bile acid level
  - Bile acids under 40: delivery is recommended at 36 0/7-39 0/7 weeks gestation.
  - Bile acids 40-99: delivery is recommended at 36 0/7-39 0/7 weeks gestation.
  - Bile acids over 100: is recommended at 36 0/7 weeks gestation. There is recommendation for delivery between 34-36 weeks gestation in these pregnancies with unrelieved itching, a prior stillbirth or worsening liver disease.
- Serum bile acids and liver function levels are checked six to eight weeks following delivery.
  - If recheck blood testing is not normal, referral to a hepatobiliary specialist is recommended.
- ICP recurs 60-70% of the time in subsequent pregnancies.
- Breastfeeding is considered safe when a pregnancy has been complicated with ICP.

ICP CARE

fight the itch. save a life.

To learn more about ICP, please review at https://icpcare.org/
Like the Facebook page https://www.facebook.com/ICPcare

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