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Review Article

Threatened Abortion and its Burden

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Abstract:

Threatened Abortion is the most common cause of first trimester bleeding and is the most common reason for general practitioner's emergency gynaecology referral. First-trimester bleeding may indicate an underlying placental dysfunction. This may manifest later in pregnancy causing adverse outcome affecting both mother and the baby and most commonly associated with abortion, pre-maturity, low birth weight, respiratory distress syndrome and intra uterine growth retardation. Vaginal bleeding in early pregnancy is a common condition that adds stress and anxiety to pregnant women. Therefore, obstetricians are regularly dealing with such cases whether it is in an out-patient clinic or emergency setting. So pregnancies complicated by threatened abortion constitute a risk group requiring careful obstetric and perinatal supervision and follow-up.

Key word: Threatened Abortion

Introduction

Threatened abortion is a clinical terminology that applies to women who are under 20 weeks gestation having vaginal spotting or bleeding, a closed cervical os and potentially mild uterine contraction with ensuing ultrasound scan confirming fetal cardiovascular movement.[1,2] Bleeding per vaginum in the first trimester is one of the most common obstetric problems. It is also one of the commonest causes for the majority of the emergency admissions to the obstetrics department.[3] Most of these pregnancies continue to term with or without treatment.[4] First-trimester vaginal bleeding is an independent risk factor for adverse obstetric outcome that is directly proportional to the amount of bleeding.[5] The scientific literature regarding threatened abortion is relatively limited on the subject of outcomes and viability at term. Small number of patients and significantly biased data collection has limited studies that were complicated by threatened abortion.[6] Many studies suggest that first-trimester vaginal bleeding is associated with a worse outcome.[7,8] However, there have been few studies that evaluated outcomes other than viability at term, after the documentation of a living embryo. In general, the incidence of spontaneous abortion after first-trimester bleeding is quoted to be 50% before sonographic evaluation for fetal viability.[9] Most of the time bleeding is small amount, but sometimes it may be more serious and severe. About 50% of cases of threatened abortion terminate in complete abortion and lost of pregnancy. If pregnancy continues, the sub optimal events have been reported more; like preterm delivery and preeclampsia.[10] If a viable fetus is noted at ultrasound examination after first- trimester vaginal bleeding, 95% to 98% of such pregnancies will still continue beyond 20 weeks of gestation.[11]

Incidence

True incidence of threatened abortion is difficult to estimate because many patients are treated in an outpatient setting where events are not tracked and national surveillance data on threatened abortion have not been updated. Threatened abortion is a common complication affecting about 20% of pregnancies.[12,13] Vaginal bleeding occurs in 12%-40% of confirmed pregnancies during the first 20 weeks of gestation as reported by many authors.[14,15] Various authors have reported a significant association between early bleeding in pregnancy and poor or sub-optimal pregnancy outcome.[16,17]

Etiology and Risk factors

The risk factors for the progression of a normal pregnancy to a complete abortion in the first trimester are fairly well established. Common risk factors for threatened abortion include increased maternal age, high pre-pregnancy body mass index and low serum progesterone levels.[18,19] In multigravida, low lying placenta, placenta previa, placental abruption had increased risk of threatened abortion.[20] An increased risk for low lying placenta among patients with threatened abortion.[21] Placental abruption was seen in mothers with threatened abortion and 4.1% developed intra uterine death.[22] There is increased risk of pre-eclampsia, preterm delivery, placental abruption

and cesarean delivery for patients who reported light bleeding.[23] It was found significant feffect on risk of abortion; those women with early vaginal bleeding who had a history of previous abortion had more risk to miscarry in comparison to women who did not have any previous miscarriages.[24] Maternal medical illness, especially endocrinopathies, which are confounding factors for adverse pregnancy outcome in general, can contribute to abortion. It was also found that increased rate of foetal loss in women with high serum thyroid antibody concentration.[25] A pregnant women with a medical history of epilepsy or thyroid disease and had early vaginal bleeding will have more risk of abortion than those with no medical illnesses.[24]

More recently, lifestyle factors such as caffeine intake, exercise, stress, exposure to cigarette smoke and alcohol consumption have also been implicated as risk factors.[26-30] Some studies have documented the proportion of women who had experienced a threatened abortion who subsequently go on to experience a complete abortion.[31,32]

Surprisingly, however, little is known about the risk factors for the progression of a threatened abortion to a complete abortion. It is through the understanding of such risk factors that obstetricians would be better able to manage and advice women who are at high risk. Although the mechanisms of threatened abortion are not fully understood, it might be related to failure to establish the maternal and fetal connection or communication during the pregnancy. Among these, placental implantation is a critical step for successful pregnancy.[33] Approximately, half of abortion are due to chromosomal abnormalities in the fetus. Maternal factors can also play a role in threatened abortion. Maternal infection can increase the chances of threatened abortion. Chronic illness such as diabetes and thyroid disease can also increase the risk. Extremes of weight are associated with increased abortion risks. Maternal life style choices including alcohol, tobacco, and illicit drug use have also been linked to threatened abortions.[34-37]

Among these maternal risk factors, maternal age is the most important predictor in the risk of abortion; and in addition, other maternal factors include prior obstetrical history, thrombophilia, antiphospholipid antibody syndrome, extremes of maternal weight, hypertension, cigarette smoking, large amounts of caffeine use, trauma, and malnutrition.[38,39]

The abortion rate was higher in the age group from 33 to 37 years old in comparison to the younger age groups.[24] Advancing maternal age is an important risk factor for abortion in general, primarily due to decline in oocyte quality. Changes in uterine and hormonal function may also play a role and also found increased risk of threatened abortion with increasing gravida. Possible reasons for this association include 1) reproductive compensation behavior (i.e. A behavior pattern in which couples make repetitive attempts to bear children after abortion and 2) short inter-pregnancy intervals in multigravida women.

Imbalance of essential trace elements that is lower levels of zinc (Zn), ferrum (Fe), magnesium (Mg), and manganese and an increase of toxic heavy metals like significantly higher levels of copper (Cu), cadmium (Cd), and lead might be an important diagnostic and prognostic factor for threatened abortion.[40] They found that malnutrition (deficiency of essential trace elements) and environmental toxicity (heavy metal intoxication) will disrupt physiological function, such as proper activity of biochemical and enzymatic reactions, and cell division and growth in humans during pregnancy. Since trace elements and toxic heavy metals directly involve many biochemical processes in development, growth, and homeostasis, it is reasonable to believe that any imbalance of these macro or microelements might disrupt the success of the implantation and further function.

Signs and Symptoms

A threatened abortion occurs before 20 weeks of gestation, presents with vaginal bleeding. The cervical os is closed on pelvic examination. The patient may also experience abdominal cramping and pain. Vaginal bleeding usually begins first followed by cramping abdominal pain hours to days later. Bleeding is the most predictive risk factor for pregnancy loss. More than half of threatened abortions will abort. The risk of spontaneous abortion, in a patient with a threatened abortion, is less if fetal cardiac activity is present.[41] Women with a threatened abortion but with no nausea, were found to be at a higher risk for a complete abortion than those who had experienced nausea. Nausea in the first trimester of pregnancy is associated with increased levels of beta human chorionic gonadotropin,[42] and higher levels of beta human chorionic gonadotropin have been shown to be associated with a decreased risk of abortion in normal pregnancy.[43]

Evaluation

The diagnosis of threatened abortion is frequently made in clinical practice as a result of taking a history of vaginal spotting and the finding of a closed cervix at subsequent vaginal examination. A definitive diagnosis of threatened abortion should be made following ultrasonographic examination confirming the presence of fetal heart activity in an intrauterine pregnancy.[44] CA-125 (cancer antigen 125, carcinoma antigen 125, or carbohydrate antigen 125) is cell surface high molecular weight glycoprotein present in tissue derived from embryonic coelomic. CA-125 can be used as a predictive marker for subsequent outcome of pregnancy.[45] During pregnancy, disruption of the epithelial basement membrane of the fetal membrane or disruption of the decidua could theoretically lead to rise in maternal CA 125 level, thus can be used as a predictor of subsequent spontaneous abortion. Its levels are increased in early pregnancy and immediately after birth,[46] thus implicating the disintegration of the maternal decidua i.e. blastocyst implantation and placental separation as a possible source of the tumor marker elevation.[47] Therefore the elevated serum CA 125 levels in women with threatened abortion implicate poor outcome in future. This test is rather sensitive in determining the progression to the pregnancy loss.

A beta-hCG level of 1500 IU/mL to 2000 IU/mL is associated with a gestational sac on ultrasound. A beta-hCG doubles in 48 hours in 85% of intrauterine pregnancies. Beta-hCG is usually detectable the first nine to eleven days following ovulation and reaches 200 IU/mL at the expected time of menses. Rh factor need to be determines if RhoGam should be administered to prevent hemolytic disease of the newborn in this pregnancy and subsequent pregnancies. A hemoglobin and hematocrit are helpful in monitoring the degree of bleeding. A urine analysis can also be obtained. Urinary tract infection (UTI) has been associated with abortions. During the pelvic exam, suction may be needed to remove blood and products of conception to allow for better visualization of the cervix. Ringed forceps can also be used to remove tissue that may be protruding from the cervical os. All tissue must be examined to determine if it is clot or products of conception.[41]

Maternal and fetal outcome

Fetal outcome

The fetal outcome of the pregnancy was categorized as

- Termination of pregnancy before 20 weeks
  - (a) Spontaneous or induced termination,
  - (b) Congenital malformations which was terminated before 20 weeks,
- Continuation of pregnancy beyond 20 weeks
  - (a) Preterm delivery,
  - (b) Low birth weight (<2500kg),
  - (c) Intra uterine growth retardation,
  - (d) Perinatal death,
  - (e) NICU admission and
  - (f) Full term live birth with healthy fetus.

The maternal outcome (only for those patients in which pregnancy continued beyond 20 weeks) are[3]

- (a) Pregnancy induced hypertension,
- (b) Anemia (pallor and Hb<10gm% at the time of inclusion in the study),
- (c) Amniotic membrane rupture <37 weeks of gestation,
- (d) Placental abruption,
- (e) Placenta previa,
- (f) Post-partum hemorrhage,
- (g) No complications.

Threatened abortion was associated with an increased incidence of adverse pregnancy outcomes and most commonly associated with abortion, pre-maturity, low birth weight, respiratory distress syndrome and intra uterine growth retardation.[20] Williams et al[48] reported that patients with bleeding had double the risk of preterm delivery compared with patients with no bleeding. Mustafa et al[16] found 23.4% babies were born with low birth weight with threatened abortion. Haddow et al[49] reported an increased risk for low birth in pregnancies that were complicated by vaginal bleeding.

Since preterm delivery was associated with threatened abortion, identifying women who was at high risk for preterm labour was important. Perera et al[22] found 8.2% intra uterine growth retardation in their study.

Home care

To improve the chance of keeping pregnancy, following measures can be given:

1) Bed rest has not been shown to improve outcomes but commonly is recommended.

2) Physical activity precautions and abstinence from sexual intercourse are also commonly advised.
3) Use sanitary napkins instead of tampons.
4) Don't douche.
5) Don't take aspirin, ibuprofen or naproxen.
6) Don't have alcoholic or caffeinated beverages or smoke.
7) Return hospital if they experience increased pain or fever.

When to seek medical advice

1) Vaginal bleeding or pain that lasts for more than 3 days.
2) Heavy bleeding is defined as more than one pad soaking per hour for six hours.
3) Fever or 100.40F (38 0C) or higher or as directed by your healthcare provider.
4) Pain in your lower belly (abdomen) that gets worse.
5) Weakness or dizziness.
6) Rapid heart rate.
7) Difficulty breathing.

Treatment

Patient with threatened abortion should be managed expectantly until their symptoms resolve. Patient should be monitored for progression to an inevitable, incomplete, or complete abortion. Analgesia will help relieve pain form cramping. Treatment with progestogens (Dydrogesterone) is the most promising treatment for threatened abortion and is supported by good number of meta-analysis studies, which also showed its significant effect on improving pregnancy outcome and baby birth weight.[50]

Progesteron modulates the immune response of the mother to prevent rejection of the embryo, and it enhances uterine quiescence and suppresses uterine contrations.[51] Many abortions are caused by genetic abnormalities in the conceptus, and in this case, it is unlikely that progestogen supplementation could prevent it.[52] Women with threatened abortion (Thrombophillia, anti-phospholipid syndrome), continuation of low-molecular weight heparin indicated to prevent recurrent pregnancy loss was negatively associated with live birth rates. All patients with vaginal bleeding who are Rh-negative should be treated with RhoGam. Because the total fetal blood volume in less than 4.2ml at 12 weeks, the likelihood of fetal blood mixture is small in first trimester. A smaller RhoGam dose can be considered in the first trimester. A dose of 50 micrograms to 150 micrograms has been recommended. RhoGam should ideally be administered before discharge. However, it can also be administered by the patient's obstetrician within 72 hours if the vaginal bleeding has been present for several days or weeks.[53]

Prevention

There is no clear way to prevent threatened abortion, to increase chance of a healthy pregnancy, everyone should have: 1) Regular prenatal care. 2) Avoid alcohol, cigarettes and drugs. 3) Limit caffeine intake. 4) Control any long-term conditions that may have, such as diabetes or a thyroid disorder. 5) Consult with doctor before taking any medication. 6) Avoid contact with toxins.[54,55]

Conclusion

Uterine bleeding during pregnancy represents a definite threat to the developing embryo and is often followed shortly by termination of the gestation.

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