Topic Overview: Assessment and Management of the patient presenting to the Emergency Department with bleeding in the first trimester of pregnancy

Module Obstetrics Module 1

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Topic overview (Handout)

Introduction

Vaginal bleeding in the first trimester occurs in 20 – 40% of pregnancies. The most common cause of bleeding in early pregnancy is miscarriage, which occurs in 10 - 20% of clinical pregnancies. An ectopic pregnancy is potentially life threatening and should be assessed for in all presentations of bleeding in early pregnancy. Other causes of bleeding include implantation of the pregnancy and causes of vaginal bleeding incidental to pregnancy, such as uterine polyps, infection, and gynaecologial malignancy.

Ectopic pregnancy affects approximately 1 in 80 pregnancies. The classic symptoms of ectopic pregnancy are abdominal pain, amenorrhoea and vaginal bleeding, though these are not universal. A ruptured ectopic pregnancy may cause haemodynamic instability, which is a medical emergency. For the patient who been diagnosed with an ectopic pregnancy and is haemodynamically stable, treatment is often provided on an outpatient basis after consultation with the gynaecology service.

Assessment

Assessment of the patient who is bleeding in early pregnancy focuses on establishing the diagnosis of pregnancy, the location of the pregnancy and the haemodynamic stability of the patient. This assessment involves taking a focused history, clinical examination and appropriate investigations to create a differential diagnosis and perform a risk assessment of the clinical condition of the individual patient. Management of early bleeding in pregnancy is dependent on the diagnosis and the stability of the patient, matched to the available resources.

A focused history considers establishing pregnancy including the last menstrual period date and a description of the menstrual cycle. Other pregnancy related history, such as previous children and pregnancies should be ascertained. Investigations already performed to establish the diagnosis of pregnancy are to be reviewed. A consideration of other causes of bleeding, pain or other symptoms must be included in the assessment process, and the interaction of co-morbidities will affect the ongoing management.

Bleeding and abdominal pain require specific attention during the history taking process. The extent of bleeding should be elicited as this influences the need for urgent resuscitation. The presence of large clots, multiple, frequent sanitary pads soaked through every 1 – 2 hours and/or the presence of light headedness or syncope are suggestive significant bleeding. Abdominal pain located in either illiac fossae or shoulder tip pain are symptoms suggestive of en ectopic pregnancy. However, the absence of pain does not exclude this diagnosis. Midline pain may be associated with a miscarriage and may be cramping in nature.

A previous medical history of pelvic inflammatory disease, adnexal surgery, previous ectopic pregnancy, assisted reproductive technology, intra uterine contraceptive device in situ, use of emergency contraception or documented tubal pathology all increase the likelihood of ectopic. A history of two or more consecutive miscarriages or conditions such as anti-phospholipid syndrome and uterine anomaly can suggest bleeding may be related to a miscarriage.

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Examination

The physical examination includes a set of vital signs such as heart rate, blood pressure and respiratory rate. Tachycardia and hypotension or orthostatic changes such as a postural drop raises the suspicion of a haemodynamically unstable patient requiring urgent fluid resuscitation. Presentation with hypotension and bradycardia may be due to cervical stimulation with products of conception in the cervical canal causing a vagal response. Removal of the products of conception can rapidly improve the clinical condition.

In early pregnancy (less than 12 weeks gestation), the uterus is not palpable abdominally, as it will not be above the pelvic brim. The location of tenderness and presence of peritonism, may indicate rupture in the case of an ectopic pregnancy. Speculum and bimanual examination should be used to assess the exact amount of bleeding present, the state of the cervical os, whether open or closed, the size of the uterus and for adenexal or cervical excitation. Speculum examination can also reveal other sources of bleeding such as vaginal lacerations, gynaecological malignancies, warts or cervical polyps.

The accuracy of the initial clinical history and examination is less than 50%. Additional investigations are frequently required to locate the pregnancy and its viability or otherwise.

Investigations

HCG (human chorionic gonadotrophin) is synthesised by the cells of the placenta to maintain the corpus luteum during pregnancy, the beta sub-unit is tested for in pregnancy. Modern monoclonal antibody based kits can detect BhCG at 25 iu/l, a level reached nine days post conception (day 23 of a 28-day cycle). This level increases exponentially for the first 8 to 10 weeks following the last menstrual cycle. A single BhCG level does not diagnose the location of the pregnancy.. Serial measurements of BHCG every 48 hours are helpful during the first 6 weeks of pregnancy if USS is not diagnostic. A falling BHCG would be consistent with a non viable pregnancy. BHCG levels plateauing (not rising more than 1.66 in 48 hours) suggest an ectopic pregnancy whereas an appropriately rising BHCG are most consistent with a viable pregnancy.

The concept of combining ultrasound with measurement of the serum BHCG using a discriminatory zone has been well described.. Above a serum BHCG 1500 iu/l, an intrauterine pregnancy will usually be visualised with transvaginal ultrasonography (TVS). However, it should be noted that the discriminatory zone may vary among institutions due to different types of equipment, level of experience of the operator and assay techniques. Therefore, the absence of an intrauterine pregnancy on TVS with a BhCG >1500iu/L may suggest an abnormal or ectopic pregnancy. At levels below 1000 iu/L, pregnancy of unknown location and miscarriage are both possible outcomes.

TVS will be required in the majority of women to determine the location of the pregnancy. Most who are haemoynamically stable are referred to an outpatient clinic to arrange this. TVS performed at more than 5.5 weeks has a sensitivity of 73-93%, although is operator dependent. The TVS can also be used to determine the pregnancy if intrauterine is viable (foetal cardiac activity present) or non viable. This is possible after approximately 6 weeks gestation. Ultrasound assessment is particularly reliable in confirming the diagnosis of complete miscarriage (positive predictive value 98%). It is important to recognise that even with expert use of TVS using agreed criteria, it may not be possible to confirm if a pregnancy is intrauterine or extra uterine in 8 – 31% of cases in the first visit. These patients should be classified as having a 'pregnancy of unknown location' and should have close gynaecological follow up.

When ultrasound findings suggest pregnancy of unknown location, serum progesterone levels below 25 nmol/l are associated with pregnancies subsequently confirmed to be non-viable In the presence of pregnancy of unknown location, a serum progesterone less than 20 nmol/l predicts spontaneous pregnancy resolution with a sensitivity of 93% and specificity of 94%.

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A group and hold red blood cell antibody screen should be performed to determine if the patient will need anti-D immunoglobulins to protect against Rh(D) isoimmunisation and, in cases of severe bleeding, will provide cross matched blood for any transfusion required. There are Australian National Blood Authority guidelines for the prophylactic use of Rh D immunoglobulin for unsensitised Rh negative women up to and including 12 weeks gestational age. The recommended dose of Rh D immunoglobulin is 250 IU (50 µg), except for multiple pregnancy, where the dose is 625 IU (125µg). The indications for Rh D immunoglobulin administration are for complete or incomplete miscarriage, with or without curettage (ie includes missed miscarriage, blighted ovum, curettage for retained products of conception), ectopic pregnancy or termination of pregnancy. This does not include threatened miscarriage with a viable fetus. After 12 weeks, a dose of 625 IU (125µg) be used for a sensitizing event. Rh D immunoglobulin should be administered as soon as possible after the sensitising event, within 72 hours for protection. If Rh D immunoglobulin has not been offered within 72 hours, a dose offered within 9–10 days may provide some protection. Blood should be taken from the mother before administration of the Rh D immunoglobulin to assess the magnitude of feto-maternal haemorrhage.

Management of bleeding in early pregnancy

The ABCDE structured approach is used to evaluate all patients with bleeding in early pregnancy. Assessment of haemodynamic stability will determine the need for acute resuscitation of the patient.

In the haemodynamically unstable patient, the immediate management will depend on the cause of the haemodynamic instability. The patient must be managed in an area with cardiac and respiratory monitoring. Two large bore cannulas should be inserted and bloods sent for FBC, BhCG, coagulations studies and cross match.

Hypotension and tachycardia as a result of extreme blood loss should be treated with a bolus of normal saline 20ml per kg aiming SBP>90. Cross-matched blood products should be commenced if the bleeding is severe and any coagulopathy should be reversed.

In the unstable patient with hypotension and bradycardia, it is important to exclude cervical shock due to products of conception in the cervical os. A vaginal speculum examination will reveal the products of conception protruding through the external cervical os, which can be carefully removed with Rampley sponge holding forceps. This will reverse the vagal response. Any tissue removed during the examination should be sent for histopathological examination.

There are several options for management of the haemodynamically stable patient with vaginal bleeding in early pregnancy. These options can be offered in consultation with the obstetrics and gynaecology team.

The options for treatment of miscarriage include expectant management, medical management and/or surgical uterine evacuation. Ideally, the patient should be given the choice of treatment option. Expectant management of an incomplete miscarriage is as effective as surgical evacuation of the uterus. However, success rate of expectant management for a missed miscarriage is much lower compared to surgical management. It is important that all women undergoing expectant management have direct telephone access to staff for advice and support. This is because vaginal bleeding may increase significantly, and so the patient may need to present to hospital. Hospital beds must be available should admission be required. Complete resolution may take several weeks and this should be carefully explained. Medical management using prostaglandin analogues (misoprostol or gemeprost) with or without anti-progesterone priming (mifepristone) is an alternative option, if available at the hospital. Surgical uterine evacuation is indicated if vital signs are unstable or in the presence of retained infected tissue.

Patients may undergo expectant, medical or surgical treatment for an ectopic pregnancy. Expectant management of an ectopic pregnancy is an option in the case of a falling BHCG with serum BHCG<100Iu/L, tubal mass <3cm with no signs of tubal rupture or haemoperitoneum on transvaginal ultrasound and haemodynamic stability. Medical management involves a single intramuscular dose of methotrexate 50mg/, which is as anti-metabolite. It prevents the growth of rapidly dividing cells by interfering with DNA synthesis. Indications for medical management may include a baseline serum BHCG <5,000IU/L, an ectopic pregnancy <3cm diameter on TVS, the

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absence of foetal heart motion on TVS, no significant haemoperitoneum and readily accessible follow up and emergency care. The indications for surgical therapy include haemodynamic instability, impending or ongoing ectopic mass rupture, or the patient being not able or willing to comply with medical therapy post-treatment follow-up.

The negative psychological impact of early pregnancy loss can be severe and protracted, affecting women and their families. Information on miscarriage should be made available, and appropriate assistance and referral should be offered to facilitate the grieving process. The opportunity for follow up should be offered to all women after pregnancy loss, whether it be with their general practitioner, early pregnancy assessment service or outpatient clinic.

References

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