Ectopic Pregnancy (Extrauterine Pregnancy) — Symptoms and Treatment

Eccyesis or tubal pregnancy refers to the implantation of the blastocyst outside the uterine cavity. Thereby, affected patients suffer from acute abdominal pain. Eccyesis or tubal pregnancy can be quickly diagnosed by means of an ultrasound and laboratory analysis. In severe cases, in the case of rupture and hemorrhage, the fastest possible action is required. Surgery should be considered as a therapeutical approach.

Definition of Ectopic Pregnancy

Eccyesis or tubal pregnancy as ectopic pregnancy

In the case of ectopic pregnancy, the implantation of a blastocyst outside the uterine cavity (cavum uteri) takes place.
Epidemiology of Ectopic Pregnancy

Cases of ectopic pregnancies have increased worldwide and have nearly doubled in the last ten years. This increase is attributed, among other things, to improved diagnosis. Secondly, intrauterine devices, ascending genital infections and infertility treatments also carry a high risk for ectopic pregnancy.

Etiology of Ectopic Pregnancy

Causes of ectopic pregnancy

The most common location of for ectopic pregnancy is the fallopian tubes (= tubal pregnancy). The uterine tube is divided into such parts as: ampulla, isthmus and intramural. The ampulla portion is affected more often. The isthmic and intramural portions are affected less often.

Approximately 1 % of ectopic pregnancies can affect the uterus, ovary, peritoneum (= abdominal pregnancy) or the cervix.

Pathogenesis of Ectopic Pregnancy

Origin and development of ectopic pregnancy

The tubal mucosa is similar to the endometrium of the uterus in its ability to convert decidually, though not to a comparable extent. When a fertilized egg on the 5th or 6th day is not yet in the uterine cavity it settles at the corresponding location of nidation. This is usually the tube.

The reasons may be disorders connected with the ovulation mechanism and tubal passage. The tube passage may be blocked by congenital anomalies or acquired obstacles. In addition, functional impairment is possible in terms of disruption of ciliar
activity or tube motility.

Frequently, adhesions are the cause for a blockage of transport from the fimbriated funnel to the uterine cavity. This can happen due to inflammation as for example in the case of adnexitis. Adhesions can also be caused by endometriosis implants, surgical interventions (for example scarring) or previous ectopic pregnancies.

Women with an intrauterine device (= IUD) are more often affected by ectopic pregnancy than women without IUDs. A decreased peristalsis might be the reason.

Clinic

Symptoms of ectopic pregnancy

Ectopic pregnancy is an important differential diagnosis in cases of acute abdomen. Here, the symptoms vary greatly. It depends on the localization of the ectopic pregnancy, the condition of the product of conception (the embryo may be intact or already dead) and the age of the pregnancy. Thus, asymptomatic processes or very painful symptoms, up to circulatory shock, are possible. In addition, classical symptoms and signs of pregnancy may be present. These include breast tenderness and morning sickness.

Initially, secondary amenorrhea is usually present. After about 5 weeks, unilateral pain appears in the adnexal region. This may also be accompanied by spotting. This bleeding usually corresponds to a hormonal withdrawal bleeding and less to the bleeding directly from the tube.

Pain symptoms in the shoulder area may arise, if the tube has been already ruptured (often the result of an ectopic pregnancy at the isthmus), and the case has already come to intra-abdominal bleeding. This is caused by an irritation of the phrenic nerve.

Diagnosis of Ectopic Pregnancy

A clinical examination is indicated in addition to anamnestically described abdominal pain symptoms and secondary amenorrhea. Upon palpation of the lower abdomen, pain to pressure and pain on the movement of cervix are present. Subsequently, a
laboratory analysis must be initiated. An increased \textit{serum beta-HCG concentration} would be still detectable even with a negative pregnancy test. Thus, beta-HCG plays an important role in the diagnosis.

![Ectopic pregnancy in ultrasound](https://example.com/ectopic_pregnancy_ultrasound.png)  

Furthermore, an \textit{ultrasound examination} is performed. In this case, an \textit{empty uterine cavity} without amniotic sac is detected. Often a pseudo gestational sac is visible. This is caused by accumulation of fluid in the endometrium and looks similar to the fetal sac. You may also see an enlargement of the tube with the amniotic sac. Frequently, the tube has already ruptured, and the examiner may observe \textit{free fluid (blood)} in the pouch of Douglas. The diagnosis of ectopic pregnancy is suspected when all findings are compiled. However, the diagnosis must be confirmed by laparoscopy (or pelviscopy).

![Schematic drawing of a rupture of the Fallopian tube in case of a ectopic pregnancy.](https://example.com/ectopic_pregnancy_schematic.png)  
\textit{Image: “Schematic drawing of a rupture of the Fallopian tube in case of a ectopic pregnancy.” by Hic et nunc. License: CC BY-SA 3.0}

\section*{Differential Diagnosis}

\section*{Diseases similar to ectopic pregnancy}

Other reasons for an acute abdomen must be ruled out, in addition to gynecological causes. These include the \textit{sigmoid diverticulitis} or \textit{appendicitis}.

Other gynecological differential diagnoses include \textit{endometriosis}, \textit{acute adnexitis}, \textit{abortion}, \textit{ovarian torsion} and \textit{urological colic}.
One must remember that none of the above differential diagnoses cause hemorrhagic shock and that any cause of hemorrhagic shock is a surgical emergency.

Therapy of Ectopic Pregnancy

Treatment of ectopic pregnancy

Therapeutically the diagnostic-therapeutic pelviscopy is used. Depending on the desire to have children the radical nature of the treatment may come into question. With an existing desire to have children a conservative organ-preserving procedure is applied. However, again this increases the risk of recurrence of an ectopic pregnancy.

A salpingostomy as a surgical incision into a fallopian tube is performed. This means that a longitudinal incision is made, and the gestational sac is removed from the tube. If there are no more children to be desired, the affected tube is radically removed (salpingectomy).

In the early stages of ectopic pregnancy, a conservative action is also possible. It is characterized by drug therapy. In the case of a local treatment, prostaglandins or methotrexate can be injected. Likewise, a systemic drug therapy is possible with the intramuscular methotrexate administration. This medication causes death of the embryo. This conservative treatment is applied if there is no evidence of bleeding or rupture.

In the course of treatment, beta-HCG is regularly checked.

Prognosis of Ectopic Pregnancy

Recurrence probability of ectopic pregnancy

The recurrence probability is very high. It compounds 5 % – 20 % of all the affected.

Review Questions

Correct answers can be found below the references.

1. Which of the following diseases are not in the scope of the differential
1. Diagnosis of an ectopic pregnancy?
   A. Acute appendicitis
   B. Renal cyst on the right kidney
   C. Acute pelvic inflammatory disease
   D. Stone in the left kidney
   E. Imminent abortion

2. What is not a part of the diagnosis of an ectopic pregnancy?
   A. Medical history
   B. Clinical examination of motor function of the lower extremities
   C. Beta-HCG determination in serum
   D. Ultrasound examination of the uterus and appendages on both the sides
   E. Abdominal palpation

3. In which zone is ectopic pregnancy manifested most frequently?
   A. Tubes
   B. Cervix uteri
   C. Abdominal
   D. Vulva
   E. Vagina

References
Duale Reihe - Stauber, Weyerstah: Gynäkologie und Geburtshilfe, 2. Auflage

Correct answers: 1B, 2B, 3A

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