

Pathology of the Pregnancy

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Pathology of the Pregnancy (overview)

Pathology of the Placenta and the Umbilical Cord

Gestational Trophoblastic Disease

Ectopic Pregnancy

Toxemia of Pregnancy (*preeclampsia, eclampsia*)

Pathology of the Placenta

Placental Shape Abberations

- **extrachorial types of placenta** (20%)
(membranous chorion does not extend to the placental edge)
 - **circumvallate placenta**
(central chorionic ring with the wall of thickened amnion and chorion)
 - **circummarginate placenta**
(central attachment of membranes only)

Placental Shape Abberations

Abberations of Placental Insertion

- **accessory types of placenta**

- bilobar, trilobar placenta

- succenturiate placenta

- (an accessory part of placenta with vascular connections to the main placenta)*

- annular placenta *(ring shaped)*

- **placenta previa**

- (implantation of the placenta into the lower uterine segment and covering of the internal cervical os)*

- complete, partial, marginal, vasa previa

Abnormalities of Placental Adherence

- **placental abruption**

(premature separation of the placenta from the uterine wall)

- major complication: ***concealed or external bleeding***

- **placental retention**

- complications: ***bleeding, infection, inflammation***

Abnormalities of Placental Adherence

- **placenta accreta**
 - noninvasive placental villi attached to the myometrium
- **placenta increta**
 - deep invasion into the myometrium
- **placenta percreta**
 - placental tissue perforates through the myometrium

Intraplacental Lesions

- **placental infarcts**
 - focal ischemic necrosis, frequent finding, usually asymptomatic, in severe involvement **placental insufficiency** may develop
 - occur frequently in *preeclampsia* and *eclampsia*
- **intravillous thrombosis**
 - complication of fetal bleeding into the intervillous space
 - increased incidence with Rh incompatibility
- **subchorionic hematomas**
- **chorioangioma**
 - benign angiomatous tumor of the chorion
 - usually asymptomatic
 - fetal circulatory disorders may occur when tumor is large

Placental infections and inflammations

- **ascending infection** (chorionitis, amnionitis, **chorioamnionitis**)
 - the most frequent type of placental infection
 - associated with premature rupture of membranes and premature birth
 - usually bacterial infection, purulent inflammation
 - complication: vasculitis of the umbilical cord (*funisitis*)
- **hematogenous infection**
 - affection of villi (*villitis*)
 - tuberculosis, syphilis, toxoplasmosis, listeriosis, rubella, CMV, HSV
- **puerperal sepsis**
 - severe form of septicemia affecting women after the birth or abortion
 - ascending infection with the high lethality (*putrid endometritis, purulent thrombophlebitis of uterine vessels*)
 - associated with unsuitable sanitary conditions

Pathology of the Umbilical Cord

- **abberations of umbilical cord insertion**
 - central insertion
 - paracentral insertion
 - marginal insertion
 - velamentous insertion (*into external membranes*)
- **umbilical cord knots**
 - true, pseudoknots
- **torsion of the umbilical cord**
- **vasa previa**
- **single umbilical artery**
 - asymptomatic or associated with other congenital anomalies

Gestational Trophoblastic Disease

Gestational Trophoblastic Disease

- tumors and tumor-like conditions characterized by proliferation of pregnancy-associated trophoblast with a malignant potential
- usually accompanied by elevated **beta-hCG** (*diagnosis, monitoring of the therapy*)
- **persistent trophoblastic invasion**
 - abnormally long persistency of trophoblastic myometrial invasion after the delivery or abortion
 - regression or risk of development choriocarcinoma
- **placental site trophoblastic tumor**
 - intermediate trophoblast deeply invading the myometrium
 - locally invasive and self-limited tumor (90%) or highly malignant (10%)

Gestational Trophoblastic Disease

Feature	Complete Mole	Partial Mole
Karyotype	46, XX 46, XY	Triploid
Villous edema	All villi	Some villi
Trophoblast proliferation	Diffuse Circumferential	Focal Slight
Atypia	Often present	Absent
Serum hCG	Elevated	Less elevated
hCG in tissue	++++	+
Chorio - carcinoma	2%	Rare

- **hydatidiform mole**
(complete and partial)
 - cystic swelling of the chorionic villi with trophoblastic proliferation
 - usually affects very young or older pregnant women
 - frequency 1:1000 – 1:2000 pregnancies (USA)
 - risk of development of choriocarcinoma
 - **abnormal uterine bleeding**
 - enlargement of the uterine body
 - curettage or hysterectomy

Gestational Trophoblastic Disease

- **invasive mole**
 - invasive growth, penetration through the uterine wall
 - locally destructive, may invade parametrial tissues and blood vessels
 - embolisation to distant sites (*not true metastases*)
 - bleeding from infiltrated tissues (*uterus*)
 - responds to chemotherapy
- **choriocarcinoma**
 - infiltrative growth, hematogenous dissemination, responds to chemotherapy
 - association with hydatidiform mole (50%), abortion (25%), normal pregnancy (22%), ectopic pregnancy, genital and extragenital teratomas

Ectopic Pregnancy

Ectopic pregnancy

= implantation of fertilized ovum outside the endometrium (0.6 - 1.0%)

- **tubal pregnancy**
- **ovarian pregnancy**
- **peritoneal (abdominal) pregnancy**
- **intramural (cornual) pregnancy**
- **predisposing factors:**
 - alteration of the passage of the ovum through the fallopian tubes (fibrous adhesions resulting from acute inflammation, chronic fibroproductive inflammation, endometriosis, uterine tumors – leiomyomas)

Ectopic pregnancy

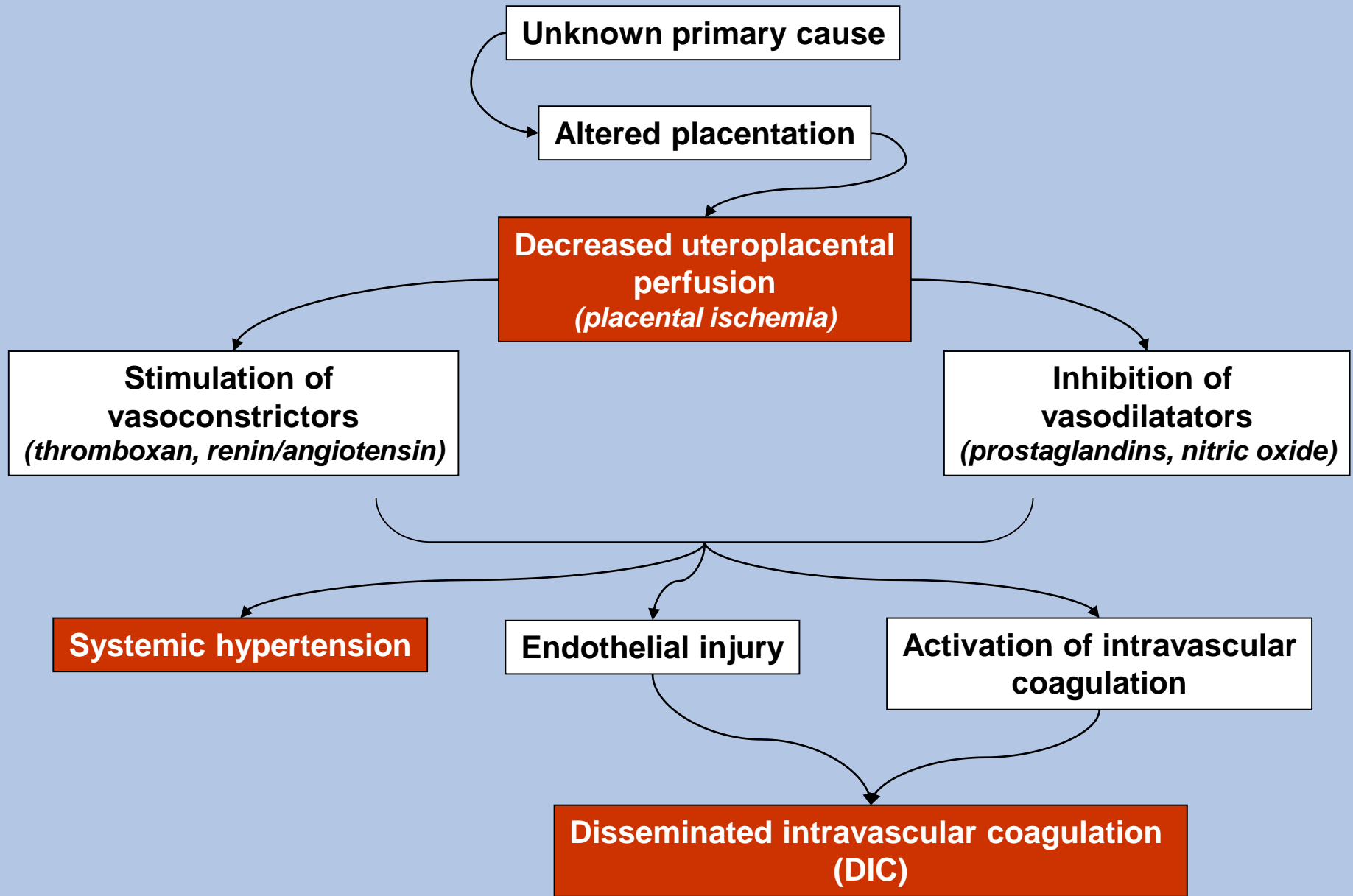
- **complications:**
 - asymptomatic in early stages (indistinguishable from the normal pregnancy – cessation of menstruation, production of placental hormones, secretory and decidual changes of endometrium)
 - invasive growth of trophoblast into the surrounding tissues
 - **bleeding** (*intratubal hematoma – hematosalpinx*)
 - **rupture** of the Fallopian tube (*intraperitoneal hemorrhage*)
- **clinical symptomatology:**
 - acute abdominal pain, shock
- **therapy:**
 - surgical resection

Toxemia of Pregnancy

(preeclampsia, eclampsia)

Toxemia of Pregnancy

- relatively frequent occurrence (6% of pregnant women, especially primiparas, third trimester)
- **preeclampsia**
 - *hypertension*
 - *proteinuria*
 - *edema*
- **eclampsia**
 - more severe form including *convulsions*
 - accompanied by *disseminated intravascular coagulation (DIC)* with organ damage



Toxemia of Pregnancy

- **histopathologic findings and clinical presentation:**
 - fibrin thrombi, hemorrhage and necrosis in **kidneys** (*proteinuria, decreased GFR*), **liver, heart, CNS** (*seizures, coma, headaches*), **anterior pituitary** and other organs
- **placental involvement**
 - placental **infarcts**
 - increased frequency of **retroplacental hematomas**
 - **villous ischemia** (*syncytial knots*)
 - **acute atherosclerosis** of vessels (*fibrinoid necrosis, intramural lipid deposition*)
- **therapy:**
 - antihypertensive agents
 - induction of the delivery