

Maternal death

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Definition and incidence

- death of women while pregnant or within 42 days of the end of the pregnancy (during pregnancy, childbirth, puerperium + abortion-related death)
- ČR 1-2 : 100,000 live births, rare (1999 – 10 : 100,000)
- subject to reporting - Ministry of Health (ÚZIS, 2017 – 2)
- Maternal Mortality Ratio USA 27, MMRate – 289,000 annually, worldwide (2013)

Legislation

- act ammendment no. 147/2016, of ZZS 372/2011 (Health Service Act) - Part VII., §79-92
- mandatory autopsy - (at least) pathological (if the death occurs in hospital), but most commonly clinical (§88 3)ZZS) or medico-legal (§115 Criminal Procedure Code) - if the death occurs outside hospital

Pregnancy is not a disease until ...

- necessary knowledge of physiology and pathology of pregnancy, childbirth and puerperium
- the beginning of pregnancy, duration (GW)
- the end of pregnancy = labour or abortion

Statistics (the Czech republic, 2015) – 113,000 live births, 420 stillbirths, 35,000 abortions

Maternal death

- SD (natural causes)

X

- violent (unnatural) death – NOT pregnancy-related (traumatic, intoxication ... homicide, suicide, accident)

Classification

1. direct maternal death – complications of pregnancy (labour = peripartum maternal death, puerperium) + interventions, omissions, incorrect treatment
2. indirect maternal death – death resulting from previous disease or disease developed during pregnancy but not due to direct obstetric cause
3. fortituous (coincidental) death - with no link to pregnancy

1. Direct maternal death

- bleeding
- sepsis (generalized infection – septic shock)
- embolism
- preeclampsia/eclampsia
- HELLP sy.

Bleeding

- ectopic gravidity rupture (GEU) – spontaneous/traumatic, acute abdomen (haemoperitoneum) – most often the 1st half of pregnancy
- miscarriage, abortion (legal/criminal) – abortion-related death
- childbirth – retroplacental haematoma (placenta abruption = premature separation of placenta), uterine atony, trauma, placental retention, thrombocytopenia ... PPH – postpartum haemorrhage (life-threatening, even fatal)

Sepsis

- most common agents: streptococcus, coliform bacteria (G- rod-shaped - Enterobacter, Escherichia, Klebsiella) , C.perfringens, stafylococcus
- intrauterine infection (endometritis, myometritis),
- finding: septic uterus – smell, pus, necrosis, oedema, congestion, peritoneum is dim, cloudy, septic spleen (mild splenomegaly, soft, congested, activated, pulp can be wiped off)

Embolism

- air – when air enters opened uteroplacental veins – criminal abortion, manual separation of placenta during childbirth
- amniotic fluid - AFE sy. - amniotic fluid embolism, amniotic fluid contains fetal epidermal cells, lanugo, vernix caseosa – fatty substance, meconium, chorion and amnion cells – DIC ... fatal ... histological dg. - fetal squamous cells found in lung capillaries

Preeclampsia/Eclampsia

preeclampsia = pregnancy conditioned hypertension and proteiuria + oedemas after 20th GW, red flags: BP over 140/90, high weight increase, hand/foot/ankle oedema, proteinuria, headache, vomiting, abdominal pain, visual impairment

eclampsia (7% pregnancies) – tonic-clonic epileptic-like seizures, generalized spasm – hypoxia – brain oedema

HELLP sy.

- severe complication of grave preeclampsia, the end of 2nd and 3rd trimester, 4-5/1000 labours
- MODS (multiple organ dysfunction syndrome), DIC (disseminated intravascular coagulopathy)

H hemolysis

EL elevated liver enzymes

LP low platelets

Other

- inferior vena cava syndrome = IVCS (pelvic congestion sy.)
- abrupt cervix dilation without anaesthesia
- anaesthesiological events during labour – vagal death, anaphylactic shock, vomit aspiration

2. Indirect maternal death

- underlying latent disease with lethal decompensation in pregnancy
- hypertonic intracerebral haemorrhage – undiagnosed pre-pregnancy aHT
- CNS tumor haemorrhage
- SAH - berry aneurysm rupture

PM signs of labour

- uterus (dimensions, weight, virgin x pregnant uterus)
- endometrium - furrowed, covered in blood clots, debris of decidual tissue, dilated vessels
- signs of placental bed (separation)
- tubal hypertrophy
- shortened cervical canal, appearance of external orifice
- histological examination of uterus

Varia

- perimortem CS
- postmortem delivery

"In 2007, a 23-year-old woman in India, over eight months pregnant, hanged herself after contractions had begun. A viable infant was spontaneously delivered unassisted from the woman's body, which was suspended by the neck. The healthy infant was found on the floor, still tethered to the body of the mother by the umbilical cord. The primary cause of the delivery was the otherwise normal contractions, which had begun before death, and was therefore not related to processes of decomposition. While this is not postmortem fetal extrusion, it may be referred to as a case of postmortem delivery, a term which is

Coffin birth

- postmortem fetal extrusion
 - a. fetal expulsion by intraabdominal putrid gases (3rd-4th day postmortem)
 - b. labour in cursu, finished after the maternal death by uterine PM rigor and pressure of putrid gases
 - c. the expectant mother (mother in labour) was not actually dead (history, apparent death)

Case study 1

- 38 yo primigravida, physiological pregnancy

GW 38+2, collapse at home in the morning

Causa mortis: AFE sy.

+ dead full-term female fetus 3400g

patogenesis: placenta abruption

Case study 2

- 48 yo woman dies at home with signs of worsening dyspnoea

Autopsy finding:

External: abdomen far above niveau of the chest, very stiff when palpated and gave the impression of „pregnant belly“

Internal: uterus of male-head size filling a great part of abdominal cavity

Causa mortis: massive bilateral thrombotic pulmonary

Issues with legal implications

- Did the woman give birth? When?
 - Is the woman pregnant? How far is she?
 - Was it a home-birth or a birth in hospital?
 - Was an adequate treatment/assistance provided?
Did medical malpractice occur?
- pretended (faked) pregnancy / childbirth – black-mailing, prison, child trafficking

After the fetus dies ...

1. miscarriage (spontaneous)
 2. autolysis and absorption
 3. missed abortion (dead fetus stays in situ) – softening and maceration = foetus sanguinolentus or mummification (f.papyraceus), very rarely adipocire in utero, rarely petrification of fetus and extraembryonic membranes (lithopedion)
- aseptic autolysis (late PM change)