

Immunity in pregnancy,  
ontogenesis of immunity

# Uterine mechanisms of fetus protection against mother's immune system

- Majority of cells does not cross placental barrier.
- No classical HLA- antigens are expressed on trophoblast.
- Non classical HLA-G antigens protect trophoblast cells from NK cells. Their presentation of antigens probably leads to suppression of specific immune response.
- CD46 on the surface of trophoblast cleaves C3b.

# Maternal mechanisms protection fetus from the immune system attack

- Mother is in Th2 predominance
- Possible immunosuppressive effects of HCG, high serum levels of progesterone, alfa-feto protein
- Partial block of lymph nodes draining the uterus

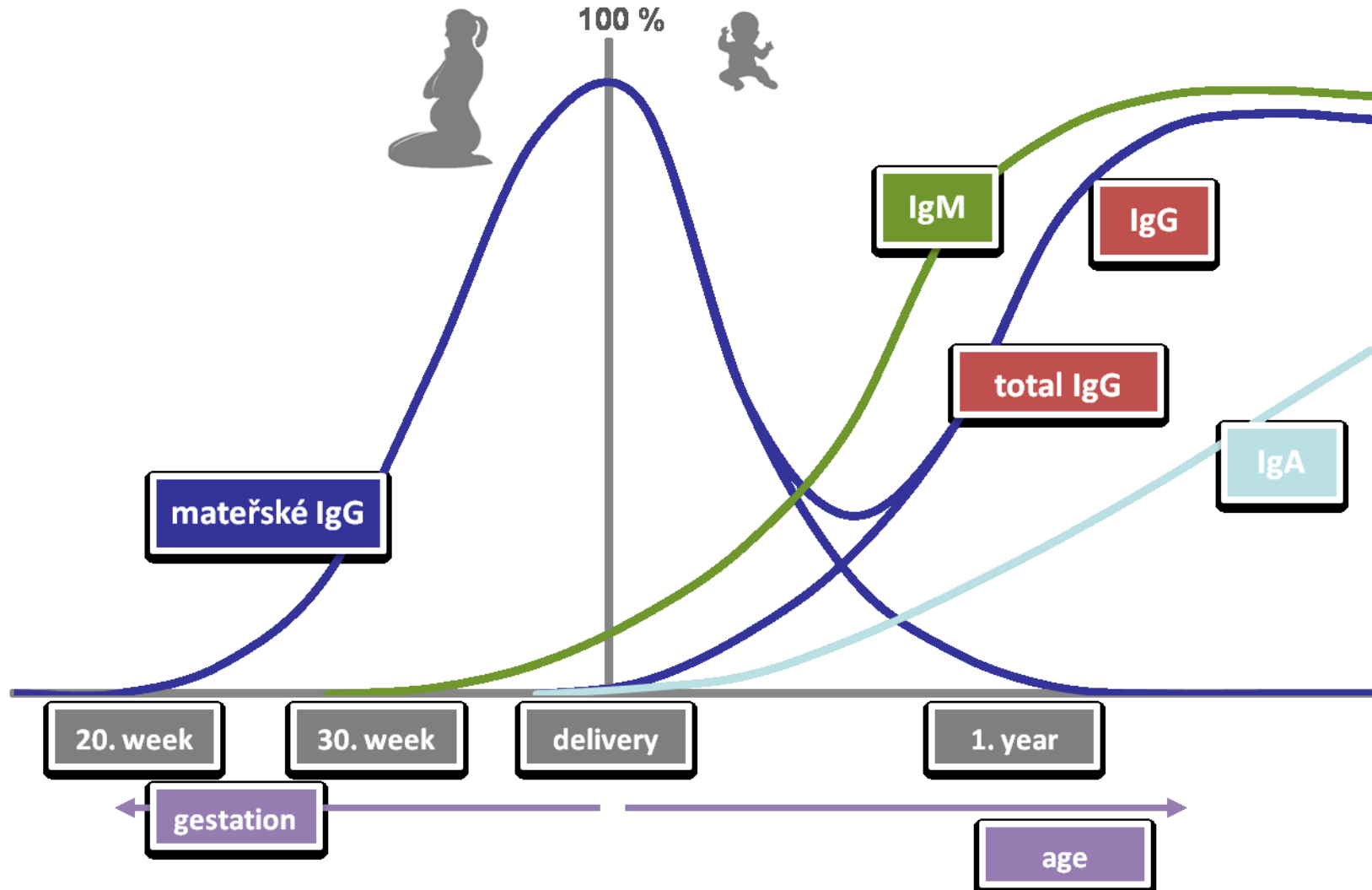
# Immunological causes of sterility and infertility

- In approximately in 10% of infertile couples immunopathological mechanisms play a significant role.
- Antibodies against various antigens of the gonadal system (sperms, corpus luteum) may play a role.
- Antiphospholipid syndrome causes abortions in the first trimester.

# Antiphospholipid syndrome

- It is the most common immunological disorder leading to recurrent miscarriages.
- Patients suffer from recurrent thrombosis (venous and arterial) leading to a variable clinical manifestation according to the affected organs.
- Thrombocytopenia may be present.
- Laboratory: antiphospholipid (anticardiolipin) antibodies, lupus anticoagulant.
- It may be a primary disease or accompany various systemic autoimmune diseases (eg. systemic lupus erythematosus).

# Serum immunoglobulin levels in pre- and postnatal period



# Immune system in infancy

- IgG is actively transferred through the placenta , protective IgG, but also autoantibodies. Gradual increase of own production of IgG
- IgM may be produced by the fetus in the late pregnancy, does not cross the placenta
- IgA produced by the newborn, in secretions in almost normal levels.
- T lymphocyte function – almost normal.
- Nonspecific immunity- function of granulocytes, complement system – mildly decreased in the first year of life.

# Immune system-related diseases in infancy and childhood

- Increased susceptibility to infectious diseases.
- Clinical course of infections is usually mild.
- Exception – severe course of infections caused by encapsulated bacteria during the first two years.
- Atopic diseases usually begin in early childhood.
- Autoimmune diseases are relatively rare.
- Many primary immunodeficiency diseases manifest in infancy or early childhood.



# Immune system-related diseases in adulthood

- Infectious diseases are infrequent, but may be severe in course.
- Autoimmune diseases typically begin in early adulthood.
- High prevalence of allergic diseases continues from childhood

# Immunity in seniors

- Weak primary immune response, secondary immune response is usually normal.
- Decrease in lymphocytes, mainly CD4+
- Serum immunoglobulin levels are usually increased.
- Immune response is generally decreased, clinical symptoms of infection are milder than in young persons.
- Disturbed regulation of the immune system leads to frequent positivity of autoantibodies and paraproteins, but this does not lead to clinical diseases.