

# Maternal factors affecting teratogenesis

In mammals, their embryonic development is strongly influenced by the maternal organism. In humans, lifestyle also plays a significant role, including dietary habits, smoking, excessive alcohol consumption, etc.

## Fetal alcohol syndrome

Chronic alcohol consumption during pregnancy can lead to the development of fetal alcohol syndrome, which is a serious fetal disability. The manifestations of the embryotoxic effects of alcohol are highly non-specific (intrauterine growth retardation, psychomotor dysfunction and craniofacial malformations). The diagnosis is therefore often made on the basis of information about the mother's alcoholism. The characteristic facial features of a child with fetal alcohol syndrome are a smooth philtrum, narrow upper lip, low nasal bridge, short nose, and a flat midface.



Child with FAS: Short nose with low arch, smooth philtrum, small head circumference, ptosis, thin upper lip...

## Smoking

Smoking is not associated with major congenital defects but contributes to intrauterine growth retardation. It may be a cause of preterm birth. Insufficient supply of nutrients and oxygen to the fetus occurs in smoking mothers. There is also evidence that it causes behavioral disorders.

## Diabetes mellitus

Disorders of sugar metabolism during pregnancy in diabetic women cause a higher incidence of preterm birth, more frequent malformations and higher neonatal mortality. Babies of diabetic women tend to have a higher birth weight. The risk of birth defects is three to four times higher compared to children of non-diabetic mothers. Heart, skeletal and CNS defects have been described. The incidence of malformations is strongly influenced by the seriousness and duration of the mother's disease.

## Phenylketonuria

Mothers with phenylketonuria, caused by a deficiency of the enzyme phenylalanine hydroxylase, have elevated serum phenylalanine concentrations, which puts them at risk for mental retardation, microcephaly and heart defects of their children. On a phenylalanine-free diet, the mental development of affected individuals is normal and the diet can be discontinued as the CNS matures.

## Nutritional deficiency

Persistent iodine deficiency in the mother's diet causes mental retardation in children, known as cretinism.

## Links

### Related articles

- Teratogenesis
- Fetal alcohol syndrome
- Gestational diabetes mellitus

### Literature

- NOVOTNÁ, Božena; MAREŠ, Jaroslav. *Vývojová biologie pro mediky*. Karolinum, Praha 2005
- SADLER, Thomas W. *Langmanova lékařská embryologie*. Grada Publishing, Praha 2011