

# Thermal injury during pregnancy

Thermal injury during pregnancy occurs sporadically, at least in terms of situations in our conditions. If this injury occurs, the pregnant woman is **treated at a specialized workplace** .

## Pathophysiology

- **The tolerable temperature** for humans is **43.5 degrees Celsius** - higher temperatures mean gradual reversible to irreversible skin changes
- Temperature above 55 degrees Celsius - irreversible damage in the skin dermis
- Temperature above 60 degrees Celsius - protein denaturation

## Etiology of burns

Factors determining serious burns include :

- **injury mechanism** (thermal, electric current, chemical, frostbite, ionizing radiation)
  - **depth** - individual degrees of skin damage are distinguished
1. Grade I = erythema, without damage to the skin
  2. II. grade = IIa upper, painful, covered with bullae / IIb deeper involvement, penetrates the dermis, whitish, small petechiae
  3. III. grade = the dermis is damaged in its entire width, the painless base of the skin turns white, brown to black in color, dry
- **range**
  - **localization** - the most serious burn injury sites are the face, respiratory tract, neck, hands, genitals, perineum and soles of the feet. In connection with a burn of the respiratory tract, inhalation trauma can occur - this is the result of inhaling hot gas or steam
  - **age** - is important along with other factors in determining anti-shock treatment
  - for pregnant women, **the trimester and course of pregnancy are also factors**

Based on the evaluation of these factors, pharmacological or surgical treatment of burns is then evaluated.

## Burn disease

It is **the body's response to a burn** and is divided into three periods.

### Burn shock

**Burn shock** involves **the first 24 to 72 hours** after the injury. Gradual alarm inflammatory and adrenergic reaction of the organism. Large movements and losses of fluid from the intravascular space, especially into the interstitium. Aggravation of capillary stasis and gradual obstruction of lymphatic channels. By increasing the viscosity of the blood, generalized edema develops and gradually hypovolemia , hypoproteinemia , and hemoconcentration occur . Tissue hypoxia develops.

**In a pregnant woman, after intensified procoagulant activity and increased blood viscosity , insufficient perfusion of the fetoplacental unit** occurs. **First aid** for burn shock is as fast as possible **fluid replacement** .

### Acute period

Starting with the period of **surgical procedures** for the treatment of burns, this period also includes **the healing of definitive skin covers** .

### Convalescence - rehabilitation

The last stage of the burn disease is convalescence - rehabilitation. However, even at the end of this phase, in the case of serious burns, the individual often suffers lifelong consequences.

## Indications for burns

- **Resuscitation is started with crystalloids**
- **Frozen plasma** - for extensive burns
- **Sympathomimetics** (noradrenaline) - only in severe forms of burns that do not respond to volume voltage

!!! Noradrenaline in pregnant women can cause a decrease in uteroplacental flow!!!

- **Low molecular weight heparin** - prophylaxis against thromboembolism

## Another indication

- Monitoring of the woman - hourly diuresis, pulse and respiratory rate, blood oxygen saturation, peripheral and central temperature
- Fetal monitoring - fetal vitality and position, amount of amniotic fluid and cardiotocographic examination
- Gynecological examination

## Contraindications for burns

**Diuretics** are a significant **contraindication** , not only in case of burn shock, but also throughout pregnancy.

Prolonging the state of burn shock can lead to:

- multiorgan dysfunction to failure
- **preeclampsia** to **eclampsia**
- **HELLP syndrome**
- hemolytic-uremic syndrome
- spontaneous fetal death ⇒ development of disseminated intravascular coagulopathy

## Aftercare

### Small and superficial burns

These types of injuries are treated gently without analgosedation or analgesics are indicated - paracetamol or single-use opiates. **Broad-spectrum antibiotics** are preferred in pregnant women .

### Extensive burns

In case of extensive burns, treatment is carried out under analgosedation. It is necessary to think about an important fact: !! The use of drugs in pregnancy needs a strict consideration of the indication of the given drugs!!

For example , **ketamine has a uterotonic effect** - that's why it is limited. For pregnant women, **regional anesthesia is preferable** to general anesthesia.

If, in the case of extensive burns, the edema causes oppression of the vessels and prevents sufficient and proper blood circulation, releasing incisions or necrotomies are performed. We also choose fasciotomy for electric shock. The entire cut must then be to the depth of the subcutaneous fat through the entire subcutaneous tissue.

## Links

### related articles

- Pregnancy
- Birth
- Caesarean section
- Burns
- Burn shock

### References

- PAŘÍZEK, Antonín, a kolektiv. *Kritické stavy v porodnictví*. 1. vydání edition. Praha : Mother- Care - Centrum Publishing, 2012. 285 pp. ISBN 978-80-7262-949-7.