

Crush syndrome

Crush syndrome is caused by **long-term compression** or **massive contusion** of soft tissues (mainly muscles) → their ischemia and damage occurs.

After the pressure is removed, myoglobin, acid metabolites and potassium are released from the damaged tissues ; fluid (plasma) transudates into the damaged tissue , causing edema . Loss of plasma intravascularly leads to the development of hypovolemic shock, shock kidney and acute renal insufficiency.

Signs

- **myoglobinuria, hypovolemia** → acute renal insufficiency to acute renal failure
- **hyperkalemia** → risk of arrhythmia
- **transudation** of fluid into tissues with subsequent swelling
- local **skin damage**

Form biochemical examinations, ↑ creatine kinase in the serum and myoglobin in the urine are typical.

Stages of crush syndrome

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1. **acute** (1-2 days) – hypovolemic shock, hyperkalemia, limb edema (vessel and nerve compression), skin damage
2. **subacute** (2 weeks) – acute renal failure (oliguria to anuria, hyperazotemia, hyperkalemia), demarcation of necrosis
3. **late** – recovery of kidney functions (polyuria, hyposthenuria)

Treatment

1. pain relief
2. infusion of alkalizing crystalloids, diuretics
3. treatment of hyperkalemia (CaCl_2 , NaCl, glucose with insulin, hemodialysis)
4. in case of severe limb injury – amputation
5. in the development of compartment syndrome – decompressive fasciotomy

Crush syndrome and compartment syndrome have some symptoms in common (result of muscle ischemia), but in **compartment syndrome** the symptoms are mainly *local* , in **crush syndrome** they are 'general'. Total muscle damage can occur with blast syndrome - blast injury

Perthes syndrome (blue mask syndrome) – a special type of burial injury, when chest compression restricts breathing movements, and at the same time, petechiae appear on the head and under the conjunctivae

Links

Related articles

- Injury
- Blast injury
- Compartment syndrome
- Compartment syndrome of the lower leg
- Rhabdomyolysis
- Hyperkalemia
- Hypovolemic shock

Source

- PASTOR, J. *Langenbeck's medical web page* [online]. [cit. 18. 1. 2010]. <<https://www.freewebs.com/langenbeck/>>.

References

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