

Liver injury

Liver injury is the second most common cause of hemoperitoneum. The liver is (along with the spleen) the most commonly injured organ of the abdominal cavity. The main mechanisms of liver injury are:

- **blunt abdominal injuries** (80-90% of cases in Europe) - caused by rupture (laceration) of the parenchyma or capsule during rapid deceleration or compression between the ribs and the spine
- **Penetrating abdominal injuries** (90% of cases in the USA, 70% in South Africa) - caused by stabbing or gunshot wounds

Division

Symptoms of injury depend on the extent of the injury, the mechanism of injury and the nature of other associated injuries. There are 6 types of liver injury:

Relatively light injuries

- **Type I:** sheath rupture penetrating to a depth of 1 cm or subscapular hematoma (less than 10% of liver surface area)
- **Type II:** fissures 1-3 cm deep (shorter than 10 cm) or subscapular haematoma of 10-50% of liver surface area or intraparenchymatous haematoma with a diameter of less than 10 cm

Severe injuries (with 80-100% mortality) - frequent bleeding at the scene or during transport

- **Type III:** lacerations deeper than 3 cm or subscapular haematoma (more than 50 % of the area) or intraparenchymatous haematoma greater than 10 cm in diameter
- **Type IV:** parenchymal tears affecting 25-75% of the parenchyma of one lobe
- **Type V:** involvement of more than 75% of parenchyma or vascular involvement - injury of hepatic veins, retrohepatic section of vena cava inferior, juxtahepatic veins
- **Type VI:** also vascular involvement - avulsion of the liver

Treatment

Treatment of liver injuries is either **conservative** or **operative**. In type I and II, it can be approached by careful and continuous monitoring of the patient's general health (conservative) and repeated CT scans. In types III to VI, urgent operative treatment is always indicated.

The goal of surgical treatment is *temporary* or *definitive* arrest of bleeding while resuscitating the circulation. Temporary arrest of bleeding is performed by the **Pringle manoeuvre** - compression of vascular structures in the hepatoduodenal ligament (maximum closure time is 20 min). Definitive arrest of bleeding is possible either by performing anatomical or extraanatomical liver resection or by ligation of bleeding vessels.

After surgical treatment, the possibility of secondary bleeding, sepsis, infection, circumscribed hematomas, bile leakage and biliary peritonitis and subsequent parenchymal necrosis must be considered. If liver failure (necrosis) occurs, the last resort is to place the patient on a transplantation programme.

References

- Blunt injuries of internal organs • Spleen injury
- Liver • Liver function • Biochemical examination of the liver • Diagnostic imaging methods in the examination of the pancreas, liver and spleen

Used literature

- POKORNÝ, Vladimír, et al. *Traumatologie*. 1. edition. Praha : Triton, 2002. 307 pp. ISBN 80-7254-277-X.
- VIŠŇA, Petr – HOCH, Jiří, et al. *Traumatologie dospělých : učebnice pro lékařské fakulty*. 1. edition. Praha : Maxdorf, 2004. 157 pp. ISBN 80-7345-034-8.

References



extensive rupture of liver

