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GENERAL INFORMATION

Non-surgical management after blunt traumatic liver injuries: A review article☆

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Abstract Hepatic trauma is a common cause for admissions in the Emergency Room. Currently, non-surgical management is the standard treatment in haemodynamically stable patients with a success rate of around 85–98%. This haemodynamic stability is the most important factor in selecting the appropriate patient. Adjuncts in non-surgical management are angioembolisation, image-guided drainage and endoscopic retrograde cholangiopancreatography. Failure in non-surgical management is relatively rare but potentially fatal, and needs to be recognised and aggressively treated as early as possible. The main cause of failure in non-surgical management is persistent haemorrhage.

The aim of this paper is to describe current evidence and guidelines that support non-surgical management of liver injuries in blunt trauma.
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PALABRAS CLAVE
Hígado;
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Guía clínica

Tratamiento no operatorio de las lesiones hepáticas por trauma no penetrante: artículo de revisión

Resumen El trauma hepático es una causa frecuente de admisión en la sala de urgencias. El manejo no operatorio es actualmente el tratamiento estándar en los pacientes hemodinámicamente estables, con buenos resultados en el 85 al 98% de los casos. La estabilidad hemodinámica es el factor más importante que influye en la elección del paciente apropiado. Los adyuvantes en el tratamiento no operatorio son: angioembolización, drenaje guiado por imagen y colangiopancreatografía retrógrada endoscópica, entre otros. La falla de tratamiento no operatorio es una complicación poco frecuente pero potencialmente mortal que requiere el reconocimiento temprano para establecer un manejo intensivo. La principal causa de falla de tratamiento no operatorio es la hemorragia persistente.

El objetivo del presente artículo es describir la evidencia existente y las guías clínicas que apoyan el manejo no operatorio del trauma hepático no penetrante.
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Background

Traumatic injuries are the main cause of death in Mexico of patients from the age of 1–44[1,2] and the third cause of death world-wide, with more than 5 million deaths each year.[3] In abdominal trauma, the liver is the most frequently affected organ due to its location and size.[4] Traumatic liver injuries are more common in men than women at a ratio of 3:1.[3] Falls from a height, motor vehicle accidents and firearm and knife wounds are the most frequent causes.[1,5] The right hepatic lobe is the main site for injuries in 41% of cases, while the left hepatic lobe is affected in 9% and the remainder are bilateral.[5] In northern Europe non-penetrating trauma is the most frequent cause in 92% of cases,[5] but in the continent of America, penetrating trauma is the most common cause of liver injury in hepatic trauma patients.[6]

Anatomical classification of liver trauma injuries

The segmentary anatomy of the liver bears little importance in trauma, except to describe the site of the injury.[7] In order to provide a common and unified language to facilitate clinical decision-making in cases of trauma, the American Association for Surgery of Trauma published their Organic Injury Scale system in 1994 (AAST-OIS), based on the degree of anatomic disruption of each organ; it describes 6 grades of injury: 1 minimal, 2 mild, 3 moderate, 4 severe, 5 massive and 6 lethal.[8,9]

The AAST-OIS classifies liver injuries as:

Grade I. Subcapsular haematoma < 0% not expansive of surface area or capsular laceration with no bleeding < 1 cm in depth.
Grade II. Subcapsular haematoma involving 10–50% not expansive of surface area, or capsular laceration with active bleeding 1–3 cm in depth.
Grade III. Subcapsular haematoma > 50% of surface area or laceration > 3 cm in depth.
Grade IV. Ruptured parenchymal haematoma with active bleeding, or laceration, or parenchymal haematoma involving 25–75% of a hepatic lobe or affecting 1–3 Couinaud segments.
Grade V. Parenchymal laceration involving > 75% of one hepatic lobe or more than 3 Couinaud segments in the same lobe. Vascular injury of the suprahepatic veins, retrohepatic vena cava or portal vein.
Grade VI. Hepatic avulsion.[6,8–10]

Grade IV and V (AAST-OIS) liver injuries are referred to as complex injuries.[11] Because AAST-OIS grade VI injuries are lethal, many authors suggest that they should not be taken into account for practical purposes in Emergency Room care, as all these patients die at the site of the accident and their diagnosis is confirmed at autopsy.[6] Non-complex AAST-OIS grade I–III hepatic injuries are the most common.[5,10]

Pathophysiology of traumatic liver injuries

Two types of mechanisms cause liver injury: penetrating trauma, and non-penetrating or blunt trauma.[6] A Brazilian study found a frequency of penetrating lesions of 61.6% of patients, and non-penetrating injuries occurred in 38.4%.[10] Penetrating trauma occurs because of the inverse proportional relationship of energy and applied surface area. The high levels of kinetic energy inflicted with an injuring object on a small area of distribution cause vascular or biliary intrahepatic transection forces, capsular rupture and parenchymal injury.[6] With blunt trauma, injuries occur due to deceleration forces and direct contusion. According to Newton's First Law or the law of inertia, bodies remain in a state of rest or uniform and rectilinear motion unless they have to change this state due to forces inflicted upon them. Thus, a patient who is travelling in a motor vehicle and is involved in a traffic accident with frontal impact,

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