**Introduction and Objectives:** Hepatic stellate cells (HSC) are responsible for the development of fibrosis during chronic liver disease. Cell death is among the most common cellular causes of increased tissue damage. From the different types of cell death, apoptosis and necrosis of hepatocytes are associated with the development of inflammation and the progression of liver disease. We aimed to assess cell death by apoptosis and necrosis in LX-2 hepatic stellate cells in an in vitro model of steatosis.

**Materials and methods:** LX-2 HSC were cultured under different conditions: control (C), mild steatosis (MS), severe steatosis (SS) and activation (TGF§). Cell death was identified by trypan blue staining. Apoptosis and necrosis were analyzed by flow cytometry at 24, 48 y 72h. Data: Mean±SD, analyzed by one-way ANOVA, p<0.05 was considered significant.

**Results:** Cell death was similar between HSC cultured under control or activation conditions at the different times studied. Increased cell death was observed in MS at 72h and in SS from 24h. Accordingly, percentage of apoptotic cells was significantly increased in MS at 72h compared with other conditions at that time (C24h=14.1±6.1, TGF72h=11.8±5.2, SS72h=3.8±2.7 %, p<0.05). In contrast, SS group showed its peak in apoptosis at 24h (C24h=27.4±2.8, TGF24h=21.7±7.5, SS24h=50.7±9.5 %, p<0.05), showing that apoptosis begins early at 24h but is evidenced by trypan blue up to 48h. Activation of HSC was not associated with changes in apoptosis. No differences were observed in necrosis.

**Conclusions:** Apoptosis in LX-2 HSC was associated with the severity of the steatogenic condition, the higher the amount of free fatty acids in the medium, the higher the mortality at short term. Apoptosis explained most of the mortality observed by trypan blue in HSC; however, other death processes, including pyroptosis or necroptosis, should not be discarded yet, since they might also contribute to HSC cell death during steatosis.

**Ethical statement**
The protocol was registered and approved by the Ethics Committee. The identity of the patients is protected. Consentment was obtained.

**Declaration of interests**
None

**Funding**
None

**Table 1.**
Number of physicians with antibodies against hepatitis A virus (HAV), hepatitis E virus (E) or a negative test (-).

![Table 1](https://doi.org/10.1016/j.aohep.2024.101461)