



Krajská nemocnice Liberec, a.s.
nemocnice Liberec nemocnice Turnov

pSWE v klinické praxi

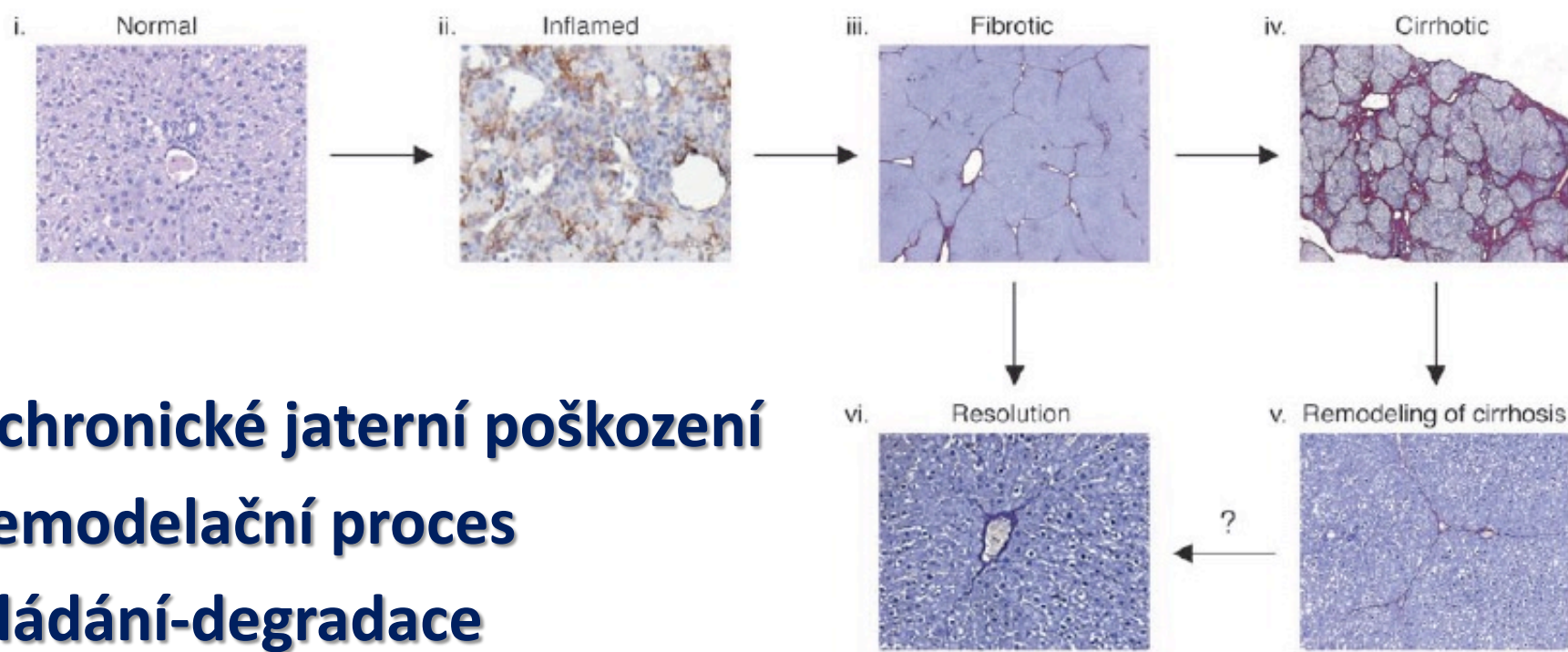
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jaterní fibróza



- odpověď na chronické jaterní poškození
- dynamický remodelační proces
- produkce-ukládání-degradace

Iredale, JCI 2007

umíme pomáhat



jaterní fibróza

akumulace vede k funkčním a strukturálním změnám – **cirhóze**

výrazná většina komplikací chronických jaterních chorob nastává u pacientů s cirhózou

kvantifikace pokročilosti jaterní fibrózy má **zásadní význam**



základní diagnostické nástroje

laboratorní vyšetření

zobrazovací metody

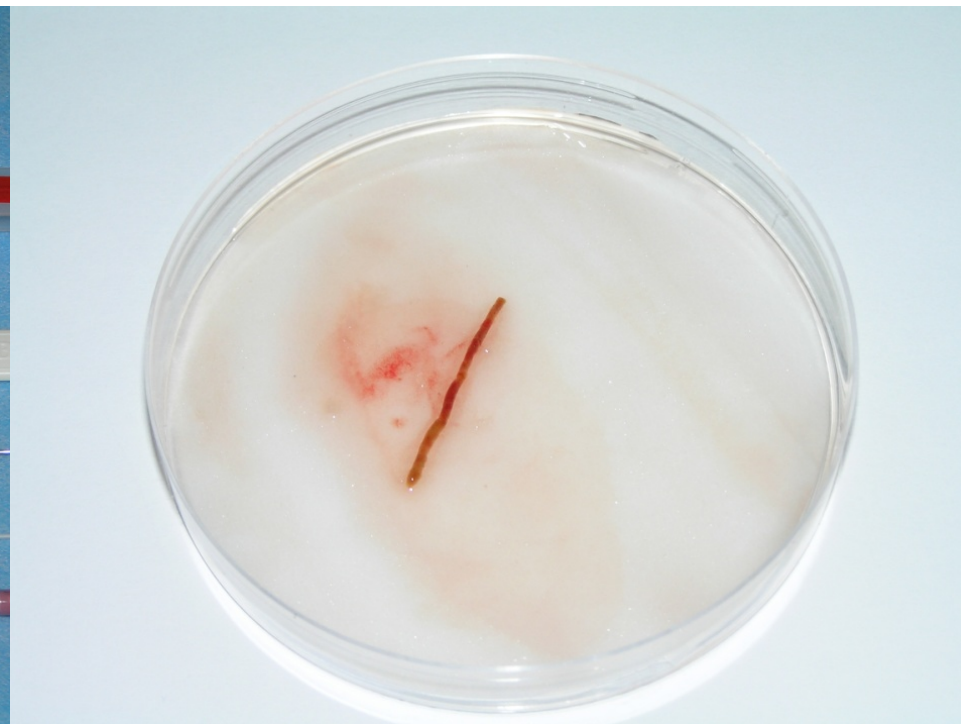
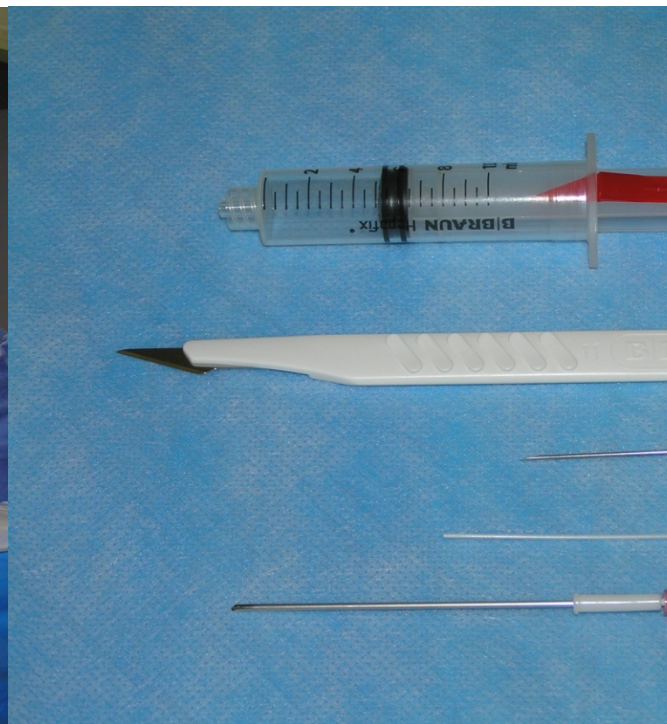
histologické vyšetření

měření tuhosti jaterní tkáně
biomarkery





jaterní biopsie



umíme pomáhat



jaterní biopsie

považována za referenční metodu

- malá část velkého orgánu

sampling error (výběrová chyba) pro fibrózu ≥ 1 METAVIR stupeň pro různé části jedné jater:

HCV>30%, NASH>40%, biliární>60%

Schuppan, Afdhal Lancet 2008

- souhlas (opakovaný)

- provedení/hodnocení

- komplikace

umíme pomáhat

EFSUMB Guidelines and Recommendations on the Clinical Use of Liver Ultrasound Elastography, Update 2017 (Short Version)

EFSUMB-Leitlinien und Empfehlungen zur klinischen Anwendung der Leberelastographie, Update 2017 (short version)

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pSWE elastografie – klinická praxe

- **1. správně provedené měření**
- **2. správná interpretace klinickém kontextu**



RECOMMENDATION 3

Measurement of liver stiffness by SWE should be performed through a right intercostal space in supine position, with the right arm in extension, during breath hold, avoiding deep inspiration prior to the breath hold (LoE 2b, GoR B) [1, 32]. Strong consensus (18/0/0, 100 %)

RECOMMENDATION 4

Measurement of liver stiffness by SWE should be performed by experienced operators (LoE 2b, GoR B) [1, 32]. Strong consensus (18/0/0, 100 %)

RECOMMENDATION 5

Measurement of liver stiffness by pSWE and 2D-SWE should be performed at least 10 mm below the liver capsule (LoE 1b, GoR A) [24 – 27, 32 – 35]. Strong consensus (18/0/0, 100 %)



RECOMMENDATION 6

Patients should fast for a minimum of 2 hours and rest for a minimum of 10 minutes before undergoing liver stiffness measurement with SWE (LoE 2b, GoR B) [1]. Majority consensus (13/2/3, 72 %)

RECOMMENDATION 7

The major potential confounding factors (liver inflammation indicated by AST and/or ALT elevation > 5 times the normal limits, obstructive cholestasis, liver congestion, acute hepatitis and infiltrative liver diseases) should be excluded before performing LSM with SWE, in order to avoid overestimation of liver fibrosis (LoE 2b, GoR B), and/or should be considered when interpreting the SWE results (LoE 1b, GoR B) [41 – 46, 49 – 51, 56 – 59]. Broad consensus (15/0/1, 94 %)



RECOMMENDATION 8

SWE within the normal range can rule out significant liver fibrosis when in agreement with the clinical and laboratory background (LoE 2A, GoR B) [60, 61]. Broad consensus (17/0/1, 94 %)

RECOMMENDATION 11

Adequate B-mode liver image is a prerequisite for pSWE and 2D-SWE measurements (LoE 5, GoR D). Strong consensus (18/0/0, 100 %)

RECOMMENDATION 12

The median value of at least 10 measurements should be used for liver elastography by pSWE (LoE 2b, GoR B) [102] Strong consensus (18/0/0, 100 %)

RECOMMENDATION 15

The results with the lowest variability in comparing different pSWE or 2D-SWE systems were obtained at a depth of 4 – 5 cm from the transducers (with convex transducers) (LoE 4, GoR C) [131]. Accordingly, this location is recommended if it is technically suitable. Broad consensus (17/0/1, 94 %)



RECOMMENDATION 17

pSWE as demonstrated with VTQ® can be used as the first-line assessment for the severity of liver fibrosis in patients with chronic viral hepatitis C. It performs best with regard to the ruling out of cirrhosis (LoE 2a, GoR B) [155]. Broad consensus (17/0/1, 94 %)

RECOMMENDATION 19

SWE is not recommended to monitor fibrosis changes during anti-HCV treatment (LoE 3, GOR D) [172, 173]. Strong consensus (18/0/0, 100 %)

RECOMMENDATION 20

LSM changes after successful anti-HCV treatment should not affect the management strategy (e. g. surveillance for HCC occurrence in patients at risk) (LoE 3, GOR D) [76]. Broad consensus (16/0/1, 94 %)

RECOMMENDATION 3: SWE is useful to exclude significant fibrosis and diagnose cirrhosis in patients with untreated chronic hepatitis B. (LoE 1a, GoR A) (10,0,0)

RECOMMENDATION 4: Liver stiffness usually decreases during antiviral treatment with analogues. Screening for hepatocellular carcinoma and portal hypertension should continue despite decrease liver stiffness in patients with advanced disease (LoE 1b, GoR A) (10,0,0)

RECOMMENDATION 25

LSM changes under HBV treatment should not affect the management strategy (e. g. surveillance for HCC occurrence in patients at risk) (LoE 2b, GOR B) [198, 199]. Strong consensus (16/0/0, 100 %)



RECOMMENDATION 7: SWE can be used for liver stiffness assessment in NAFLD patients to rule out advanced fibrosis and select patients for further assessment. (LoE 1a, GoR A) (10,0,0)

Recommendation 8: SWE can be used for liver stiffness assessment in patients with ALD to rule out advanced disease. Caution is needed in patients with ongoing alcohol abuse or with acute alcoholic hepatitis. (LoE 2a, GoE B) (10,0,0)



klinická interpretace

diagnóza =

- **1. ANAMNÉZA (nynější onemocnění, osobní anamnéza)**
- **2. fyzikální vyšetření (sonografie břicha)**
 - dilatace jaterních žil, pravostranné srd. selhání, slezina, kolaterály
- **3. laboratorní vyšetření**
- **4. elastografie**
- **5. invazivní metody**



klinicky relevantní cíle

- 1. potvrzení jaterní cirhózy
- 2. vyloučení signifikantní fibrózy

screening portální hypertenze
screening HCC



cut-off hodnoty

- m/s vs. kPa
- liší se v závislosti na etiologii
- HBV – ALD
- F $\geq$ 2 1,34 m/s (Se 79 % Sp 85 %)
- F $\geq$ 3 1,55 m/s (Se 86 % Sp 86 %)
- F 4 1,8 m/s (Se 92 % Sp 86 %)



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