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ORIGINAL PAPER

PATIENT WITH LIVER DISORDERS: EXPLORATION TOOLS AND TREATMENT

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Abstract. *The evaluation of the liver structure can be done through invasive and non-invasive imaging methods. Noninvasive methods include abdominal ultrasound, transient hepatic elastography (Fibroscan). biomarkers such as hyaluronic acid (HA), alpha-2 macroglobulin, laminin, fibronectin, Fibroindex or panels such as Fibrotest-actiTest. Liver biopsy, the most invasive method of assessing the structure of the liver and the lesions present, is still indicated in certain reserved cases, when the diagnosis remains uncertain despite all the investigations. Antiviral therapy in Romania for hepatitis B virus includes the administration of pegylated interferon alfa 2a and various nucleoside/nucleotide analogs (ANN): adefovir, entecavir, tenofovir, lamivudine. IFNα is the most effective antiviral treatment in children, regarding the seroconversion of Hbe Ag to anti Hbe Ac and the disappearance of Hbs Ag. Sustained response is defined as maintaining the response to treatment for at least 6 months after its discontinuation.*

Keywords: liver, investigation, treatment, non-invasive, invasive

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The patient with impaired liver function requires a multidisciplinary consultation and increased attention in the medical evaluation, considering the role of the liver in the regulation of numerous functions of the body such as the secretion of bile necessary for digestion, the metabolism of proteins, carbohydrates, lipids, the synthesis of coagulation factors blood but also detoxification by removing toxic ammonia from the body. The changes that can appear at the liver level, both in the pediatric patient and in the adult, are dictated by the use of anamnestic, clinical, biochemical data, by evaluating the liver function, virological or genetic, imaging and interventional.

Liver dysfunction has many characteristics:

- Hepatic cytolysis syndrome by increasing transaminases, TGP being the enzyme highly specific to the liver;
- Cholestasis syndrome by changing GGT, bilirubin, alkaline phosphatase and serum and urinary bile acids;

- Hepatic syndrome - coagulation factors, serum albumin;
- Non-specific inflammatory syndrome – VSH, Ig G immunoglobulins, gamma globulins.

The evaluation of the liver structure can be done by invasive and non-invasive imaging methods. We try as much as possible to use non-invasive methods such as abdominal ultrasound and transient liver elastography (Fibroscan). The latter is reliable for measuring the stiffness of the liver, extremely useful in the staging of fibrosis. The reference values for hepatitis are 7.1 kPa, and for cirrhosis they are 12.5 kPa, the results depending on the patient's weight (1).

Other non-invasive liver function staging tests are various biomarkers such as hyaluronic acid (HA), alpha-2 macroglobulin, laminin, fibronectin, Fibroindex or panels such as Fibrotest-actiTest that use as items age, sex, haptoglobin, alpha2-macroglobulin, GGT, bilirubin and apolipoprotein. FibroMax includes several tests for the evaluation of liver fibrosis: Fibrotest, ActiTest (inflammatory activity), SteatoTest (hepatic steatosis), NashTest (non-alcoholic steatohepatitis), AshTest (liver damage in alcoholic patients) (2).

Liver biopsy, the most invasive method of assessing the structure of the liver and the lesions present, is still indicated in certain cases, reserved, when the diagnosis remains uncertain despite all investigations, in the assessment of the severity of the liver pathology, or in the case of a liver transplant, when there is suspicion of rejection and recurrence of the disease (2).

The treatment depends on the etiology of the liver disease, the patient's comorbidities, his age and weight, and the degree of tolerance. In hepatitis/cirrhosis caused by viruses, therapy monitoring is coordinated by the following criteria:

- Biochemical: maintaining a normal level of transaminases;
- Virological:
  - decrease in viremia;
  - seroconversion in the Hbe/Hbs system;
  - elimination of Ag;
- Histological: absence/reduction of liver fibrosis progression;
- Prevention of progression to the stage of cirrhosis, hepatocarcinoma.

Antiviral therapy in Romania for hepatitis B virus includes the administration of pegylated interferon alfa 2a and various nucleoside/nucleotide analogs (ANN): adefovir, entecavir, tenofovir, lamivudine. IFNα is indicated from the age of 12 months in a dose of 5-10 milliU/m2 3x/week, subcutaneously, for a duration of 24 weeks; does not develop resistance. IFNα is the most effective antiviral treatment in children, regarding the seroconversion of Hbe Ag to anti Hbe Ac and the disappearance of Hbs Ag (3).

The sustained response is defined as maintaining the response to treatment at least 6 months after its interruption (4).

Lamivudine is administered starting from the age of 2 years, in a dose of 3mg/kg (max 100mg) once a day, per bone, the duration of treatment being more than 12 months; presents a low resistance barrier.

Adefovir dipivoxil is administered to children starting at the age of 12, 10mg/day, in a single dose, orally, for a duration >1 year, maximum 12 months after seroconversion in the Hbe system; presents a low resistance barrier.

Entecavir is administered to children aged at least 2 years, with liver damage in the compensated stage aged >/= 16 years in a single dose/day, 0.5 mg per bone, for a period >1 year, maximum 12 months after the onset of seroconversion in the Hbe system. In adults, in the decompensated stage of liver damage, 1mg/day is administered orally, in a single dose.

Tenofovir disoproxil fumarate is indicated for children aged >12 years, in a single dose, 300mg/day, orally, for a duration >1 year, maximum 12 months after the establishment of seroconversion in the Hbe system.

In patients with negative HbeAg hepatitis, the continuation of treatment with NUCs is recommended until the loss of HBsAg, in order to avoid relapse after stopping the treatment (5,6).

In the case of hepatitis C virus, interferon pegylate alfa 2b/2a is administered together with ribavirin for a period of 6-12 months depending on the evaluation of viremia. Sustained virological response is defined by undetectable viremia at 12 weeks and 24 weeks after the end of treatment (7).

In the case of autoimmune hepatitis, patients are treated with immunosuppressants, the standard therapy is prednisone/prednisolone with azathioprine to induce remission, followed by maintenance treatment for at least 3 years. Alternatives to standard therapy are tacrolimis, mycophenolate mofetil, budesonide, infliximab, or liver transplantation reserved for end-stage HAI or when there is no response to treatment. (8,9)

The diagnosis and the establishment of the treatment are the key to the evaluation and monitoring algorithm of the patient with liver dysfunction. A multidisciplinary team is needed to coordinate the case for a benign evolution and the prevention of progression to cirrhosis or hepatocarcinoma.

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