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„Analiza strategii eliminacji przewlekłego wirusowego zapalenia wątroby typu C w populacji pediatrycznej."

Streszczenie w języku angielskim

Analysis of elimination strategies for chronic hepatitis C in a pediatric population

The World Health Organization (WHO) Global Strategy aims to eliminate hepatitis as a public health problem by 2030. For hepatitis C, these goals include a 90% reduction in new infections, a 65% reduction in mortality associated with hepatitis C virus (HCV) infection, and an increase (to 80%) in treatment coverage.

HCV infection in the global pediatric population is an important medical problem, although its prevalence is much lower than in adults (0.13%, corresponding to 3.26 million infected children). The course of HCV infection in the initial phase is usually nonspecific or asymptomatic. The result of the chronic inflammatory process in the liver, induced by active HCV infection, is progressive fibrosis. Liver cirrhosis poses a risk of developing hepatocellular carcinoma (HCC). Early diagnosis of the infection in children makes it possible to quickly provide specialist care and treatment. Currently, antiviral therapy is the only way to reduce transmission and late sequelae of HCV infection, both on an individual and population level. Highly effective and safe Direct Acting Antivirals (DAAs) are recommended for all chronically infected HCV patients aged 3 years and older.

The aim of the presented series of publications (total Impact Factor: 7.493; MEiN score: 290) was to analyze strategies for elimination of chronic hepatitis C in the pediatric population.

The series opens with a review of the current state of knowledge on the epidemiology, diagnosis and treatment of HCV infection in the pediatric population. It emphasizes, among other things, the existence of significant differences in transmission routes depending on the prevalence of infection in the population of a given region and age group, pointing to the key role of vertical transmission in developed countries.

A prerequisite for diagnosing the child for infection and for minimizing exposure is awareness and recognition of the infection in the mother. The issues of epidemiology and detection of HCV infection among pregnant women were addressed in the second paper. The impact of a significant medical history on the likelihood of detecting HCV infection in 432 HCV-infected women was analyzed. In addition, the impact of screening in pregnant women on the detection of HCV infection was analyzed. Disclosure of risk factors for HCV infection or occupational exposure in obstetric history, as well as observed abnormalities in baseline biochemical tests and complaints reported by pregnant women were the main reasons for screening for HCV infection. The introduction of screening for anti-HCV antibodies into the standard of care for pregnant women in 2010 contributed to a significant increase in the detection of HCV infection among women with no history of HCV infection risk factors (9.9% of women screened before 2010 and 46.1% of women screened after 2010). This indicates a significant impact of mandatory testing on increasing HCV detection among women of reproductive age. Universal testing of pregnant women for hepatitis C allows for the identification of babies from vertical exposure.

The topic of treatment of chronic hepatitis C and optimization and individualization of standard therapy in children is dedicated to another original paper. This study was conducted under the Young

Scientists grant funded by the Medical University of Warsaw. The aim of the study was to develop a model of pre-therapeutic determinants of response to treatment with pegylated interferon and ribavirin (PEG-IFN+RBV) among children <12 years of age, for whom DAAs regimens were not available in Europe. Seventeen vertically infected, previously untreated children with chronic hepatitis C who received PEG-IFN+RBV therapy were included in the study. Patients' DNA samples were genotyped for the interleukin 28B rs12979860 (IL28B) single nucleotide polymorphism. The endpoint of the study was sustained virologic response (defined as undetectable HCV RNA 24 weeks after completion of therapy, or SVR). Currently, IFN-based combination therapy is not recommended. Confirmation of HCV genotype 3 and the favorable genetic variant of the IL28B- CC polymorphism before initiating PEG-IFN+RBV treatment and its continuation in patients achieving an early virologic response (defined as a ⩾2 log10 decrease in HCV RNA levels 12 weeks after treatment initiation, early virologic response – EVR) was clinically relevant, especially in countries with limited access to DAAs.

Another paper focuses on the challenges of achieving the Global Strategy for the elimination of hepatitis C and reasons why the pediatric population has been marginalized to date. The paper identifies existing gaps in the cascade of care for the HCV-infected pediatric population and details areas where efforts should be strengthened to achieve the goals of the WHO Strategy. The paper presents the current state of knowledge on new public health concepts, according to which micro-elimination, focusing on smaller groups of infected people, allows rapid and effective implementation of treatment procedures, increasing the chances for hepatitis C eradication at the national level and, ultimately, at the level of the whole population.

Advances in HCV treatment in recent years have revolutionized hepatitis C therapy. It has resulted in increased efficacy of antiviral therapy to nearly 100%. This change in the standard of treatment of chronic hepatitis C in children and adolescents is the subject of a recent paper presenting therapeutic options, taking into account in particular the circumstances in Poland. Although DAAs-based therapies remain unavailable to children as part of the reimbursement, elimination of HCV infection in the Polish pediatric population is being achieved. At the moment, providing access to safe and highly effective DAAs drugs takes place within the clinical trials.

In conclusion, the elimination strategy for chronic hepatitis C should target all elements of the epidemic chain and focus on micro-elimination. Intensifying efforts to identify HCVinfected children and adolescents and ensuring broad access to safe and highly effective DAAs should be among the most important actions taken to eradicate hepatitis C in the pediatric population.