

Medical Writers' Circle

a series of articles

written by medical
professionals about
the management
and treatment of

Hepatitis C

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Hepatitis C in Children

As compared to adults, our knowledge of hepatitis C virus (HCV) infection in children is limited.

This is because there are many fewer children than adults infected with HCV and children are less likely to have symptoms from their HCV infection.

It is estimated that the seroprevalence (evidence of HCV antibody in the blood) of anti-HCV is 0.2% in children younger than 12 years of age, and 0.4% in those between 12-19 years of age. Based on these figures, it is estimated that approximately 240,000 children are exposed or infected with HCV in the United States. While the number of new HCV infections in adults is declining, new infections in children continue to occur as a result of maternal-neonatal transmission. Prior to 1992, a sizeable number of children acquired HCV via blood and blood products. This group of adolescents has had HCV infection from 1-20 years. Vertical transmission, or infection transmitted from mother to newborn, accounts for another sizeable group of children with HCV infection. Horizontal transmission, either from adult to child in a household, or child to child at home or at school does not

seem to be an important risk factor. Unfortunately, many children with HCV infection remain unidentified.

Acute HCV infection in children is rarely observed unless there are special circumstances such as a transfusion associated outbreak. Fulminant hepatic failure from HCV has not been described in children. Most chronically infected children with HCV are asymptomatic (without complaints) or have non-specific fatigue and/or abdominal pain. Most children with HCV infection have normal or mildly abnormal serum transaminase levels.

Natural history studies in children are few, and it is difficult to separate the effects of age and mode of acquisition. Further, depending upon the underlying disease that required a transfusion, the natural history of transfusion associated HCV infection may differ. In one study, children who were transfused at the time of surgery for congenital heart disease both cleared the infection or developed chronic hepatitis. Children with thalassemia and HCV infection may have more severe hepatic injury and less response to therapy the result of secondary hemochromatosis (iron storage in the liver). Children treated for

leukemia prior to 1990 have a high rate of HCV infection, but in follow-up (13-27 years) did not appear to have significant liver disease. In another study of children with cancer, HCV infection was more significant with one child dying from liver disease and two children dying from hepatocellular carcinoma and 9% of cases developing cirrhosis (9-27 years after cancer diagnosis).

Whether maternal-neonatal transmission of HCV is different than transfusion acquired HCV is unclear. Initially, these children have elevated serum transaminase levels for a few years that subsequently become normal. If these children undergo a liver biopsy, there is evidence of chronic hepatitis. While in the majority of children with perinatal transmission of HCV there is mild liver disease in the first decade of life, in others the disease is more aggressive leading to cirrhosis and end-stage liver disease requiring transplantation. The factors responsible for these differences remain unknown.

There are no reports of treatment of acute HCV infection in children. No large, multicenter, randomized, controlled trial of therapy has been performed in children with

chronic HCV infection. Studies to date performed in children are usually uncontrolled, include a small number of patients, and often include select patients such as children with thalassemia or hemophiliacs.

A review of the use of interferon as monotherapy in children demonstrates a

months. The use of pegylated interferon therapy in children has not been published. Preliminary studies in children suggest safety and efficacy in a recently completed phase 1 trial. A randomized controlled trial of combination therapy of pegylated interferon and ribavirin is planned.

to prevent transmission of HCV infection to adolescents and to newborns. ■ ■ ■

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sustained virologic response (SVR) of 33-45 percent. This is significantly better than the sustained virologic response rate for interferon monotherapy observed for adults. When the data is further scrutinized, the SVR for genotype 1 is 26% and 70% for other genotypes. The higher response rate observed in children might be the result of the earlier stage of the disease, higher relative interferon dosage, or lack of comorbid conditions. Or, very possibly, this could be a statistical artifact due to small study size. Since combination therapy (interferon and ribavirin) in adults appears superior to monotherapy, it is unlikely that a randomized, controlled trial of interferon monotherapy in children will occur.

The results of the use of combination therapy in children are only recently beginning to be described. An abstract reported use of interferon 3 MU/m² three times a week and 8, 12, or 15 mg/kg of ribavirin daily. The combination therapy was well tolerated and the pharmacokinetics were similar to those in adults. The results are expected in the coming

Prevention remains the key for HCV education. Older children require education about high-risk behaviors. Tattooing and piercing might be associated with HCV acquisition especially if self applied, as may sharing straws or implements for intranasal cocaine administration. Transmission of HCV infection in intravenous drug users is appreciated, as is sexual transmission.

Prevention of perinatal transmission should also be targeted. Universal testing of pregnant women for HCV infection is not recommended. Post-exposure immune globulin does not prevent infection. There are no medications available for decreasing maternal viral loads in pregnant women (both interferon and ribavirin are contraindicated during pregnancy).

In summary, HCV infection occurs in children and is frequently unrecognized. Compared to adults, the disease is frequently less severe or more prolonged. Children might have a better response rate to therapy, but this is based upon very small and uncontrolled studies. Education is important

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Medical Writers' Circle

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