Hepatitis C in Children

September 11, 2017 By Alan Franciscus

Introduction

In this article, I will discuss the various aspects of hepatitis C (HCV) in children including what we know and what we don't know! The topics I will cover are mother-to-child transmission, hepatitis C transmission among children, HCV disease progression in children, which tests to monitor children with hepatitis C, and the newly approved medications to treat children. The outlook for children with hepatitis C is looking better now that we have direct-acting antiviral medications to treat children with hepatitis C but we first have to identify, manage and treat them.

Prevalence

The prevalence of hepatitis C (HCV) in children is estimated at .05% to 0.36%. This number is likely an underestimate for several reasons:

- Screening of pregnant women for hepatitis C is based on risk factor assessment so it's likely we may be missing some children with hepatitis C.
- The current opioid crisis in America is among young female and male injection drug users. The most frequent age of the people who are affected by the recent opioid crisis are ages 20 YO to 29 YO and equally female and male. Women in this age group are in their childbearing years.
- Women who are pregnant are not routinely tested for hepatitis C. Pregnant women must acknowledge a risk factor such as injection drug use before they are tested for hepatitis C. This is a problem because once they acknowledge their drug use, they face stigma and more importantly, the state may take their baby away from them.

We do know that some of the rates among pregnant women in the rural and Appalachian counties have reached a record high. In West Virginia, 1 in 50 newborns were exposed to the hepatitis C virus. In 2014, Tennessee had the highest rate with 10.1 hepatitis C infections per 1,000 live births. The increased rates of mother-to child transmission reached a 15-year high across the U.S. Yet, we do not really have a handle on the true rate of hepatitis C mother-to-child transmission since some states may not report it to the Centers for Disease Control and Prevention.

Mother-to-Child Transmission

The risk of mother-to-child transmission is approximately 4-6%. There are some factors that may increase the likelihood of transmission from mother to child such as fetal scalp monitoring, birth by caesarean, high viral load (HCV RNA), and coinfection with HIV. At this time there have not been any studies in hepatitis C direct-acting drugs that could prevent the transmission of hepatitis C from mother-to-child. Hopefully, future studies (without ribavirin) will be conducted to find out whether HCV treatment is safe and effective in preventing mother-to-child transmission of HCV.

Testing

A baby born to a mother who is hepatitis C positive will receive the mother's HCV antibodies. The HCV antibodies will remain in the infant's blood for a year or longer. For this reason, it is recommended that the baby should not be tested for HCV antibodies for at least 18 months. However, an HCV RNA (viral load) test can be given after two months, but the baby should be re-tested again 12 months later to confirm if the baby is still HCV positive. The reason for re-testing is that many infants naturally clear the virus out of their body—this is called spontaneous viral clearance. If the viral load comes back negative, the test is repeated twice—at least six months apart. Twenty-five percent to forty percent of babies will naturally clear HCV six months after birth.

Childhood Transmission and Prevention

The most common transmission of hepatitis C in children is injection drug use. Sexual transmission is another possible risk factor but is unlikely unless children are having unprotected sex with multiple sexual partners or having sex with trauma. Another possible route is getting a tattoo in an unlicensed tattoo parlor where attention to safety is not practiced.

Disease Progression

In general, most children have a slow disease progression during the acute phase and chronic phase of hepatitis C. In a minority of children chronic hepatitis C disease progression may be more aggressive. As a child ages, the disease progression process can accelerate. For this reason, all children with hepatitis C should be monitored on a regular basis. There are factors that increase the likelihood of a more serious disease progression such as coinfection with HIV, or hepatitis B, having cancer, or anemia.

To keep a child healthy and prevent liver disease progression in children, the same advice that is given to adults should be followed by children. This includes avoiding alcohol and recreational drugs, eating a healthy diet and regular exercise.

Children who do have a more serious case of disease progression should be evaluated for treatment. There may be some thought to treat children before disease progression occurs especially since we now have newer therapies available.

Disease Monitoring

Children should be monitored on a regular basis. It is recommended that they have yearly visits to their medical provider and consultations with a liver specialist.

Children should receive regular vaccinations including hepatitis A and B if not already immune.

Other childhood vaccines should be given as advised by a medical provider.

There are various tests to monitor the liver functioning such as the aminotransferase—a non-specific marker of liver inflammation. Another test is the Fibroscan—vibration-controlled transient elastography that can estimate the amount of scarring in the liver.

Treatment
Recently, two drugs by Gilead were approved by the Food and Drug Administration (FDA) to treat children aged 12 and over:

- Harvoni (ledipasvir plus sofosbuvir) for pediatric patients 12 years of age and older or weighing at least 35 kg (77.1618 lbs) to treat genotype 1, 4, 5, or 6 without cirrhosis or with compensated cirrhosis. The cure rates in the clinical trials were 98% to 100%,
- Sovaldi (sofosbuvir) for pediatric patients 12 years of age and older weighing at least 35 kg (77.1618 lbs) to treat genotype 2 or 3 chronic HCV infection without cirrhosis or with compensated cirrhosis in combination with ribavirin (dosed by weight). The cure rates in the clinical trials were 97% to 100%.

Conclusion
The hepatitis C epidemic is continuing in the general population because of a decade-long surge in injection drug use across the United States and among the Baby Boomer population. This now affects and will continue to affect children. I wrote that we have HCV treatment that is very effective for children who have HCV disease progression. But since we have highly effective direct-active antiviral medications with very few side effects maybe we should think about treating every child with hepatitis C.

As we work towards eliminating hepatitis C there should be no question that the first population that we aim to eradicate this disease should be our most vulnerable population—our children.

Sources:

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- Hepatitis C Virus Infection Among Reproductive-Aged Women and Children in the United States, 2006 to 2014—K N Ly et. al.
- MMWR - Hepatitis C Virus Infection Among Women Giving Birth— Tennessee and United States, 2009–2014 - Weekly / May 12, 2017 / 66(18);470–473 – S. Patrick at. al.

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