

Hepatitis C



Detecting a Silent Disease

When Nancy Tierney had her tonsils removed as a child, she had an excellent outcome and very bad luck. Although during the surgery she experienced hemorrhaging that necessitated a blood transfusion, she recovered fully from her tonsillectomy. And she also lived for the next 40 years with the silent infection of hepatitis C, apparently acquired with the transfusion at a time when no one knew for sure what the hepatitis C virus was or how to screen for it.

Hardly ever sick, Tierney married, bore four children and lived an active life in Littleton, Mass. It was only in the 1990s, in her 60s, that she began to experience symptoms of the liver damage that hepatitis C can cause — in her case, a temperature, vomiting and diarrhea. By the time she came to see Lahey Clinic hepatologist Fredric D. Gordon, MD, the scarring and other damage to her liver made a liver transplant her only hope for

survival. After two years on the waiting list for a traditional “cadaver” organ donation, she received a living-donor transplant from her son at Lahey last August, and is doing well today.

Tierney’s physical constitution and the randomness of chance could have sent her in other directions. Hepatitis C is an extremely slow-progressing virus that for most people takes at least 20 years and as long as 60 to develop into a meaningful liver disease. Of 100 people with the virus, 20 will simply be cleared of it by the body’s own, spontaneous processes, says Gordon. Forty will experience it as a benign fact of life that causes little or even no damage, but for another 40, given enough time, the virus will lead to cirrhosis of the liver, the scarring and destruction of liver tissue. Of this group, five will have what is called “compensated” disease — their livers won’t be healthy, but they won’t die of liver disease.

And 15, Gordon says, will progress to either liver failure or cancer, or will need a liver transplant.

Early detection is key

“Obviously,” Gordon says, “the earlier people can detect and deal with a hepatitis C infection, the better off they are. There are an estimated four million people in the United States with the hepatitis C virus, and two million of them don’t know it.

“That’s why it’s important for everyone with a risk factor in their background to be screened with a simple blood test,” he says.

There are more than a dozen identified risk factors for hepatitis C infection, but two predominate — having received a blood transfusion before 1992, and sharing needles for intravenous drug use. The fact that a dangerous virus existed was known for many years before it was identified in 1988, and it is estimated that, prior to that identification, as many as one in five transfusions was with infected blood.

A test to screen donated blood for hepatitis C was first developed in 1990, and today the risk of infected donations is placed at one in 100,000.

“Because hepatitis C is such a slow-acting virus, people who had transfusions decades ago are prime, at-risk candidates,” Gordon says. Other risk factors represent smaller exposures — factors such as a large number of sexual partners, tattoos and body piercing done in unsterile environments, a history of sexually transmitted diseases, and working in healthcare.

Evaluation and treatment

In his role at Lahey Clinic, Gordon is one of a handful of hepatologists — medical specialists in liver diseases — in the Boston area associated with a liver transplant program. Although he works closely with Lahey’s four liver transplant surgeons to care for patients awaiting or recovering from transplant procedures, his concern is evaluation and medical care of a wide range of liver patients, transplant candidates or not.

“There are three critical pieces of information I need to evaluate a patient with hepatitis C,” Gordon says, “and

Relieving the Organ Donor Shortage — and Helping Yourself

If 15 percent of the two million Americans who know they have the hepatitis C virus will need a liver transplant, Lahey hepatologist Fredric D. Gordon, MD, says, that amounts to 300,000 persons in need of donor organs. “There are about 4,000 liver transplants performed each year in the United States,” he notes, “so you see there is a tremendous need.”

The two most important things an individual can do, Gordon says, are:

Get tested. If you have been exposed to the hepatitis C virus, the earlier it’s detected through a simple blood test the greater the chances of dealing with it successfully — and eliminating the potential need for a transplant later. “Risk factors for hepatitis C are not something primary care providers are accustomed to asking about,” Gordon says, “and people need to bring the matter up with their doctors. Hepatitis C exposure should be tested for more often.”

Get and sign an organ donor card. You can obtain one by calling the New England Organ Bank at 1-800-446-NEOB, or by contacting it through its web page at www.neob.org. Make sure you discuss the subject with family members so that they understand your wishes to have organs donated in the event of death.



Living-donor liver transplant director Elizabeth A. Pomfret, MD, PhD, and hepatologist Fredric D. Gordon, MD, discuss a prospective case. Damage to the liver from hepatitis C infection is the most common reason for people to need a liver transplant.

invariably at least one is missing.” These are the “viral load” (or the density of the virus in the patient’s system), the “genotype” (a marker that indicates the rate of response to treatment that can be expected), and a liver biopsy (a sampling of liver tissue to indicate the progression of the virus and the damage to the liver).

While a favorable genotype and a low viral load represent a 60 to 70 percent chance of cure, in the United States, most people have the most adverse genotype — Type I — and a high viral load, representing a 25 to 30 percent cure rate, Gordon notes. For some patients, the markers may suggest 12 months of treatment with a 30 percent chance of cure; others may be able to expect a 60 percent chance of cure with six months of treatment.

The treatment today is an ongoing dose of two medications — interferon and ribavarin, often packaged as Rebetron. The downside is interferon’s side effects for about 50 percent of patients — flu-like symptoms of fever, achiness and loss of appetite. For some

patients, these symptoms last for the entire course of treatment, for some they occur only at the beginning, and for some they are mild or non-existent.

Reasonable decisions

“Those whose biopsy indicates little damage to the liver may reasonably conclude that no therapy is needed at all at this time,” Gordon says. “One reason is the slow progression of the disease, and another is that some people would rather wait for new and hopefully better drugs expected to be available within three to five years.”

Success in developing medications to treat the HIV virus has led to work on new drugs for the hepatitis C virus — protease and helicase inhibitors — using the same development model.

“For patients with little liver damage after 20 years, deciding to go ahead and take the treatment and get rid of an early stage disease can be a reasonable choice,” Gordon says. “But it can also be reasonable to put off treatment — about

25 percent of patients do this.

“And, obviously,” he adds, “for patients with advanced disease, aggressive treatments can be needed, up to and including organ transplantation.”

Prospects for preventing hepatitis C infections are still in the research stage. Lahey immunologist Vincent Agnello, MD, who has studied the hepatitis C virus extensively, recently published findings indicating for the first time that the virus gets into cells via the LDL receptor through which cholesterol enters cells. Agnello recently received grants totaling more than \$1 million for continuing research on several aspects of the disease.

For an appointment with a Lahey hepatologist call 781-744-5330.

For information about joining a hepatitis C support group, call 781-744-5335 or 781-744-5382.

Living-Donor Liver Transplants



During the donor's operation to remove a portion of liver for transplantation, the surgical team studies the liver's blood vessel anatomy using intraoperative ultrasound. In a living-donor procedure, the donor and the recipient have separate surgical teams focused on the specific needs of each.

Lahey Clinic liver transplant surgeon Elizabeth A. Pomfret, MD, PhD, uses the case of recent hepatitis C patient Nancy Tierney to sum up the importance of the adult living-donor liver transplantation option:

"She had been on the waiting list for a transplant for two years, and she was so far down the waiting list that it seemed it would be at least another year before she had a chance to receive a liver. She could well have fallen into the 25 percent of patients who die waiting for a liver to become available, and, in another year, it might have been questionable as to whether she would have been medically in shape to receive one."

Living-donor liver transplant procedures will never replace the need for traditional transplants, in which patients receive "cadaver" organs from persons killed in accidents or other trauma, Pomfret says.

"But," she says, "living-donor transplantation does give patients a chance to escape from the quandary that there are far more people in need of transplants than there are organs available through the traditional 'cadaver' donation pool."

"Nancy's son Sean was insistent that she receive a liver donation from him while she was relatively healthy. And by doing so, she not only helped herself, but eased the pressure for cadaver livers for others."

Lahey's liver transplantation team has the most extensive record

in New England for traditional "cadaver" transplants — more than 600 — and for adult living-donor transplants — more than a dozen, notes Pomfret, the team's director of living-donor transplantation.

While adult-to-child living-donor transplants have been performed for about 10 years, adult-to-adult procedures have been done only for about two — and capabilities are still growing. Last fall, the Lahey team performed the first ever adult living-donor double liver and kidney transplant — taking a portion of liver from one of the recipient's nieces and a kidney from another niece.

Living-donor liver transplants are feasible due to a singular fact: even when as much as 65 percent of a liver is removed, both sections will regenerate back to full size within several months. "For the recipient," Pomfret says, "recovery is the same as for any traditional liver recipient —

immunosuppressant drugs, careful monitoring and follow-up." (See the fall 1999 *Lahey Clinic Health Magazine*.)

"The donor normally will spend seven to 10 days in the hospital and will fully recover in six to eight weeks," she says. "This is a major operation for the donor, and someone who says they want to be a living donor is evaluated intensively, both physically and emotionally. In the operating room, the donor has his or her own surgical team. Living-donor transplants can be a lifesaver for very sick people, but our first responsibility in this equation is to ensure the safety and welfare of the donor."

For an appointment with Lahey's liver transplant team, call 781-744-2500.

For more information, see the Liver Transplant Program web page: www.lahey.org/livertransplant/.

Domino Transplants

Earlier this year, Lahey's liver transplant team performed one of the first "domino" transplants in New England — transplanting a cadaver liver into a 28-year-old woman whose own liver had a life-threatening genetic defect, and then transferring her still-functional liver to a 65-year-old man who otherwise would not have been eligible for a transplant. In such cases, although the liver still carries the defect, symptoms are unlikely to appear for more than a decade. A week later, the team did a second domino procedure in an entirely different case. "Only about 35 domino procedures have been done, mostly in Europe," says Lahey liver transplant co-director W. David Lewis, MD. "In these cases, two patients can be aided with just one cadaver liver."