Rise in Fatty Liver Disease Tied to Obesity Epidemic

The prevalence of non-alcoholic fatty liver disease (NAFLD) is growing in direct proportion to the obesity epidemic in the United States, further increasing the burden on the health care system.

Several population-based studies indicate that the prevalence of simple steatosis (fatty liver) can be as high as 90 percent in obese individuals and almost 100 percent in the morbidly obese. Non-alcoholic steatohepatitis (NASH), the progressive form of NAFLD that can lead to cirrhosis, has become more prevalent over the past few years, affecting 25 percent of obese individuals and more than 50 percent of the morbidly obese patients.

In 2008, medical care costs related to obesity for U.S. adults were estimated to be as high as $147 billion. A study published that same year in *Gastroenterology* showed that patients with fatty liver disease had 26 percent higher overall health care costs than other patients after five years. Obesity and diabetes are perhaps the major factors contributing to rising health care costs in the United States.

“The health care costs of obesity are extraordinary, and to a great extent this is due to the impact of the increasing number of patients with fatty liver disease,” said Carmen Landaverde, M.D., a hepatologist on the medical staff at Baylor University Medical Center at Dallas. “In the next 10 years or so, NASH-related cirrhosis is expected to surpass hepatitis C as the leading indication for liver transplantation.”

NAFLD represents a spectrum of hepatic pathology that encompasses simple steatosis or simple fat accumulation in the liver, non-alcoholic steatohepatitis (NASH), and cirrhosis. The main underlying cause is insulin resistance, which is worsened by central obesity. Insulin resistance promotes fat accumulation in the liver that then induces lipotoxicity. This culminates in chronic inflammation that leads to liver injury in the form of progression of fibrosis and cirrhosis.

“It was initially believed that simple steatosis was benign,” Dr. Landaverde said. “We’re now learning that in patients with at least one feature of metabolic syndrome, steatosis alone is not so benign. It has been reported in the literature that some of these individuals eventually do develop NASH, a more progressive disease.”

For the majority of patients, weight loss is the most effective way to reverse the symptoms and effects of fatty liver disease, Dr. Landaverde said. Significant and sustained weight loss as a result of diet and exercise can decrease both the inflammatory and fibrosis components of the disease. Even moderate weight loss—7 to 10 percent of a patient’s current weight in a year—can induce a great improvement in liver injury and insulin sensitivity.

“Depending on the ability of the patient to lose weight and the extent of obesity, bariatric surgery may be recommended,” she said. “For example, if a patient has a BMI over 35 and diabetes, and is unable to safely lose weight in an appropriate time frame, we may encourage bariatric surgery, especially if there is evidence of NASH or early cirrhosis.”
Physician Profile: Giuliano Testa, M.D., FACS, MBA

While a fellow in abdominal organ transplantation at Baylor University Medical Center at Dallas from 1996 to 1998, Dr. Giuliano Testa determined that something must be done to bridge the enormous discrepancy between the number of patients who need a liver transplant and the availability of deceased donor livers.

Living donor liver transplantation had been performed successfully in pediatric patients since 1989. Dr. Testa believed that similar techniques could be applied to the adult population, thereby increasing the number of patients who have an opportunity to have a transplant. Upon completion of his fellowship, Dr. Testa accepted a position at the University of Essen in Germany, where he helped start the first European living donor program.

Dr. Testa was recently named surgical director of living donor liver transplantation at Baylor University Medical Center at Dallas. Before joining Baylor Annette C. and Harold C. Simmons Transplant Institute, Dr. Testa was director of the living donor liver transplant program at the University of Illinois and then director of liver transplant and hepatobiliary surgery at the University of Chicago. Baylor Dallas is one of only two transplant programs in Texas that offers living donor transplantation.

“Baylor has a very strong foundation on which to build a living donor program,” Dr. Testa said. “In the transplant institute, we have the advantages of experience, volume and quality. My goal is to perform at least one or two living donor transplants a month in the first six months and then between two and three such transplants per month.”

Making sure the donor has the best experience possible is a priority for Dr. Testa. “We make a smaller incision than we did in the past. We’ve also learned more about how to control pain, limit complications and make sure the donor’s recovery is as short as possible.”

In the past decade, Dr. Testa said they’ve learned to decrease the risks to the donor through a strict and meticulous evaluation process. “We can’t make the risk zero, but we’ve done an incredible amount of work to make sure the donor is protected,” he said.

Dr. Testa said he is very happy to be back in Dallas, despite having moved back during one of the area’s hottest summers. He spends his leisure time with his wife and 3-year-old daughter.

Baylor has a very strong foundation on which to build a living donor program.

Giuliano Testa, M.D.

1. What is included in the MELD score?
   A. Bilirubin, albumin and creatinine
   B. Bilirubin, creatinine, AST and ALT
   C. Bilirubin, creatinine and INR

2. What is the most common complication after liver transplantation?
   A. Hepatic artery thrombosis
   B. Primary non function
   C. Biliary anastomosis stricture

3. What is the maximum amount of liver that can be donated by a living donor?
   A. 80%
   B. 50%
   C. 70%

4. The ratio between liver weight and body weight is?
   A. 4%
   B. 2%
   C. 8%

5. The liver regenerates to full volume after >50 percent resection in?
   A. 2–3 weeks
   B. 3 months
   C. Does not regenerate
Managing Refractory Ascites and Hyponatremia

The combination of ascites and hyponatremia—a sign of severe liver disease—is one of the most common reasons patients with cirrhosis are admitted to the hospital. Because of the fluid accumulation in the abdominal cavity, patients have difficulty breathing, eating, sleeping and moving. They also are at risk of developing an infection, spontaneous bacterial peritonitis. More importantly, patients with ascites have a 50-percent five-year mortality rate, and those with refractory ascites have a 50-percent one- to two-year mortality rate.

“As the patient population ages and has more associated renal dysfunction, we’re seeing this problem more frequently,” said James Trotter, M.D., medical director of liver transplantation and physician on the medical staff at Baylor University Medical Center at Dallas.

The first line of treatment is sodium and water restriction, which tends to be ineffective in most patients with refractory ascites and hyponatremia. The next step is the use of diuretics. A new diuretic called tolvaptan can be used in selected patients with hyponatremia.

To remove abdominal fluid and relieve pressure or pain, paracentesis may be performed. At Baylor Dallas, three to four patients a day undergo this procedure, in which fluid is withdrawn using a long, thin needle, Dr. Trotter said.

Selected patients with refractory or treatment-resistant ascites with preserved liver function may receive a transjugular intrahepatic portosystemic shunt, or TIPS. In the TIPS procedure, a radiologist decompresses the liver with the placement of a stent-shunt from the hepatic to the portal vein. The stent is then expanded using balloon angioplasty. The shunt bypasses the liver, reducing pressure in the portal vein and often reducing or eliminating the ascites. With the use of the new covered stents, the occlusion rate is very low, and the efficacy of TIPS is even higher.

“We also use chronic intermittent albumin infusions in selected patients, especially in patients who are not candidates for TIPS,” Dr. Trotter said. “There are randomized trials that show this reduces hospitalizations and may improve survival. We use every treatment method available to treat these patients.”

“We use every treatment method available to treat these patients.”

James Trotter, M.D.
Liver Disease Quiz Answers

1. C
2. C
3. C
4. B
5. A

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