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- 11:00 – 3:00pm
- Hilton Hotel, Knoxville

March 8th: Celi-ACT Support Group Meeting
- 6:00pm
- ETCH, Meschendorf Conference Room in Koppel Plaza

*See our websites for more details: www.celi-act.com or www.giforkids.com

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Friends and Colleagues,

Fatty liver disease, also known as nonalcoholic fatty liver disease (NAFLD), is emerging as the most common liver disorder in developed countries. In addition to other underlying factors, this is possibly due to the changing dietary and physical activity habits of the people and their children. The significance of this disorder is it's possible silent progression to cirrhosis of the liver. Since many of the factors related to NAFLD are behavior and lifestyle based along with other underlying medical conditions, the disorder requires a multi-disciplinary approach to both its prevention and management. Our practices' physicians, dieticians, psychologist, and exercise specialist have written articles in this newsletter to help you help your at-risk patients. Prevention is the key, and in this tough economical and medical environment we need to work together to help the children in our area combat this serious health problem.

Our practice is always available to help you and your patients. Our psychologists and dieticians take outside referrals for a wide variety of medical diseases in addition to gastrointestinal-related conditions.

My best,

Youhanna Al-Tawil, M.D.
Medical Director

Strategies to Engage Patients in Lifestyle Modifications

By: Dr. Regina Hummel

"When having a smackerel of something with a friend,
don't eat so much that you get stuck in the doorway trying to get out."
-Winnie the Pooh

Helping our kids embrace moderation in their diets is incredibly difficult as our friend Pooh points out so eloquently. As we work with our patients who are at risk for developing fatty liver disease or who are struggling with this condition, we must keep focused on the task we have laid before them. Change is always difficult. As providers, it is essential that we emphasize the role of family and a social support network in assisting with the lifestyle changes necessary to treat fatty liver disease.

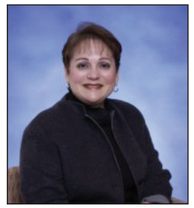
To address this diagnosis, we need to help form a team of support around these kids. As a pediatrician, you should consider yourself "coach". Families need guidance and support to be team players as they move forward in treatment. You are in the unique position of knowing your families better than any other provider they see, because you manage their entire healthcare. The following guidelines have been suggested in motivating children and families to change.

- Communicate empathetically
- Examine the variables maintaining the problematic behavior
- Support self-efficacy
- Evaluate the pros and cons to change
- Explain treatment
- Be sensitive to stigma against obese individuals

Bellentani S - Hepatology - 01-FEB-2008; 47(2): 746-54.

Fatty Liver Disease

By: Dr. Clarisa E. Cuevas



Nonalcoholic fatty liver disease (NAFLD) is increasingly recognized as a cause of liver disease worldwide. It is now regarded a public health issue and, therefore, there is increased attention to the prevention, diagnosis, and management to prevent the manifestation or the progression of the disease. NAFLD includes an entire spectrum of liver disease, from simple steatosis to nonalcoholic steatohepatitis (NASH).

How prevalent is this disease? Studies to determine this have been difficult because of limited availability of liver tissue that helps in determining the fat content, which is 5 to 10% by weight in patients with NAFLD. The specificity and sensitivity of liver enzymes is low and ultrasound diagnosis has limited sensitivity with low levels of steatosis. Proton- magnetic resonance spectroscopy represents the best noninvasive quantitative method to measure hepatic triglyceride content. This method is costly and does not provide a distinction between simple steatosis and fibrosis. The studies suggest a general prevalence rate in the USA of 31%. It is higher in patients with type 2 diabetes, older population, and Hispanic and Asian Indian males.

In children, the prevalence seems to be 1%. This percentage will like increase as we standarize ways to recognize patients at risk. The presentation seems to mimic that of the adult patient: increased BMI and central adiposity, insulin resistance and hyperinsulinemia, glucose intolerance or defect in uric acid metabolism and clearance. The pediatric patient often shows dyslipidemia, hypertension and signs of cytokine and adipokine production as well as signs of oxidative stress (increased CRP,PAI-1,fibrinogen).

Fatty liver disease is the accumulation of triglycerides and other fats in the liver cells. This can result in hepatic inflammation and cell death. The mechanisms of damage include:

1) Decreased mitochondrial fatty and beta-oxidation.
2) Increased endogenous fatty acid synthesis or enhanced delivery of fatty acids.
3) Deficient incorporation or export of triglycerides and very low density lipoproteins.

Most patients with fatty liver disease are asymptomatic. Approximately 50% of patients have some history of fatigue, malaise and upper abdominal pains. The most common physical finding is hepatomegaly. Splenomegaly is rare unless there is steatohepatitis. Advancement to NASH can present with ascites, edema and signs of portal hypertension. Other non-specific physical signs include spider angiomas, gynecomastia and menstrual disorder.

The most common association with NAFLD is metabolic syndrome. Diagnosis includes type II diabetes, obesity, and hypertriglyceridemia. Other factors are medications (i.e. methotrexate), alcohol use and metabolic disorders(Celiac disease, Wilson's disease, galactosemia, homocystinuria and glycogen storage diseases).

No specific laboratory or radiologic study can help in the definite diagnosis of NASH. The most common laboratory findings are an elevation of the AST and ALT levels. Hyperlipidemia is common, particularly increased triglycerides. Elevations of serum ferritin, iron and decreased transferrin saturation can occur. Fasting insulin and glucose levels are often elevated. Non-specific findings include a positive ANA and presence of autoimmune markers.
A liver biopsy is required for diagnosis and determination of the extent of disease. Findings include macro or microvesicular steatosis, lack of neutrophilic and/or mononuclear inflammation, balloon degeneration and fibrosis.

At present there is no single therapeutic regimen available for NASH. Recent studies on the role of physical activity seemed to suggest that physical activity of at least 150 minutes per week results in the greatest improvement of liver enzymes and other metabolic markers. This benefit was noted independent of weight loss. It is likely that increased cardiorespiratory fitness improves mitochondrial function with an end result of improved hepatic lipid metabolism.

The recommended diet for children is a low- glycemic index diet. Increased polyunsaturated fats (fish and flax seed oil) help alter insulin sensitivity and prostaglandin metabolism. This in turn might help promote lipid peroxidation.

Drug therapy is aimed at use of agents that might be cytoprotective. Ursodiol, anti-oxidant agents, vitamin E, iron reduction therapy, antidiabetic agents (Metformin) and probiotics all show some promise. The aim: downregulation of hepatic glucogenesis, diversion of fatty acids from triglyceride production and anti-oxidant regulation.

For children: BEE FIT, use behavior modification strategies, help the family help themselves.

*Multiple journal articles were used for this article. References available upon request.

Nutrition Therapy for Fatty Liver Disease

By: Sandy Altizer, RD, LDN

Nutrition therapy can reverse malnutrition and improve clinical outcomes. Early satiety, nausea, vomiting, dysgeusia and anorexia due to inadequate oral intake are all major contributors to malnutrition. Optimizing nutritional status and promoting normal growth is the ultimate goal of nutrition therapy.
Energy requirements vary in pediatric patients. If adequate energy is consumed, muscle mass and fat stores should be preserved while promoting adequate growth. Energy needs for infants may range from 120 to 200 kcal/kg/day depending on the severity of damage. Energy requirements in older children and adolescents can be adjusted for age.

Protein metabolism is frequently impaired and increased catabolism from excessive protein intake can lead to increased ammonia production. Protein should not be restricted in order to limit muscle wasting and malnutrition unless there is clinical evidence of protein intolerance.

Fat malabsorption may not be present in all forms of liver disease. A 72-hour stool sample can be collected to determine the extent of fat malabsorption. The results can help determine how much total fat and medium-chain fatty acids will need to be added to the diet.

Carbohydrate metabolism is the liver's primary role and determining the needs can be challenging. Hypoglycemia can be problematic and adequate carbohydrate intake is necessary for adequate energy.

Vitamin (fat-soluble) and mineral deficiencies can be common due to malabsorption and increased losses may require supplementation. Because over-supplementation of the vitamins can result in toxic side effects, it is recommended to monitor intakes and laboratory data every three months. A standard multivitamin should be recommended.

For enterally fed patients, supplementation with a MCT-containing formula would be best with suspected malabsorption. Glucose polymers and/or additional fat can be added to a standard 30 kcal/oz formula if additional calories are needed. Varying the amount of water added to infant formulas can help better meet nutrient needs in children less than 12 months old.

Once the basics of nutrition therapy have been reviewed it is important to review other extenuating circumstances that may be contributing to liver disease. People tend to develop fatty liver if they have certain other conditions, such as obesity, diabetes, or high triglycerides. Since being overweight is by far the most critical factor, weight loss is the key to ridding the liver of fat. Eating excess calories causes fat to build up in the liver. When the liver does not process and break down fats, as it normally should, too much fat will accumulate.

So what can you do?

- Lose weight – safely! That usually means losing no more than one or two pounds a week.
- Lower your triglycerides through diet. Lowering your intake of saturated/trans fats and concentrated sweets are good places to begin.
- Control your diabetes, if you have it.
- Eat a balanced, healthy diet. Diets heavy in high-glycemic carbohydrates (such as concentrated sugar, white rice, white bread and many prepared breakfast cereals), which get quickly digested, may lead to fatty liver disease.
- Increase your physical activity.

**Multiple sources were used in this article. References are available upon request.*

Meet Our New Providers

Lisa M. Baez, PA-C

Education:

Master's of Health Science in Physician Assistant Studies:
December 2009 from South College in Knoxville, TN

Bachelor of Science in Human Ecology, Community Health Education: May 2005 from University of Tennessee in Knoxville, TN

Associate of Science in Nursing
May 1998 from Lincoln Memorial University in Harrogate, TN

Board Certification:
January 2010- Certified Physician Assistant by National Commission on Certification of Physician Assistants (NCCPA)

Certifications:
Pediatric Advanced Life Support (PALS)
Basic Life Support for Healthcare Providers (BLS)
Advanced Cardiovascular Life Support (ACLS)
Core Disaster Life Support

Professional Memberships:
American Academy of Physician Assistants (AAPA)
Tennessee Academy of Physician Assistants (TAPA)
The Association of Pediatric Gastroenterology and Nutrition Nurses (APGNN)
Society of Physician Assistants in Pediatrics (SPAP)

Winter and Inside Physical Activity

By: Kathy F. Butcher, MPH

One of the main treatment steps for fatty liver disease is to lose any excess weight. A good, healthy goal is to lose 1-2 pounds each week. One way to lose the extra weight is to increase your daily physical activity by moving more throughout the day. During the winter months when it is cold and the days are short it can be difficult to be physically active each and every day. Below are a few tips on incorporating more physical activity into your day when the weather is cold and you have to stay inside:

- Park 5 spaces further away from the door than you normally would in every parking lot you go to.
- Walk the perimeter of the store before you begin your shop ping. Great places to do this are the grocery store, Wal-Mart, Target, and the mall.
- Walk up and down every aisle of the grocery store, Wal-Mart, or Target.
- Carry one bag into the house at a time and if you have stairs, carry one item up the stairs at a time.
- When you are watching TV, do a different exercise during each commercial break. Exercises can include crunches, push-ups, or jumping jacks.
- Add extra movement into cleaning the house by turning on some music and dancing while you clean.
- Invest in a mini trampoline for the house. It is a great cardiovascular workout you can do in small space while watching television.
- Wear a pedometer each day. It will show you exactly how much you have moved (or didn't move) that day. You can set a step goal for each day or each week. A good goal is to increase your daily step total by 10-20% each week until you reach 10,000 steps per day.

Meet Our New Providers

Janice M. Mills, CPNP-AC

Education:

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Board Certification: September 2009
Certified Pediatric Nurse Practitioner – Acute Care, PNCB

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Honors:
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