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Exercise as the Best Treatment Option for NAFLD

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Abstract
Nonalcoholic fatty liver disease (NAFLD) is an advancing disease in children and adults that has the potential to be reversed. This disease is emerging in the population due to an increase in processed foods in the diet, increase in glucose intake in diet or liquid form, and lack of exercise. It is a growing epidemic in children that may progress into adulthood. The purpose of the literature review is to determine if the addition of daily exercise will decrease the amount of NAFLD and reverse the disease. The review of literature explored studies that are related to increasing exercise into the lives of adults with NAFLD. It is anticipated that an increase in exercise, whether it be sustained cardio exercise like walking or jogging, or high intensity interval training for 30 minutes, will significantly decrease the incidence of fatty liver. The increased awareness of health care providers to the benefit of exercise has upon NAFLD will encourage additional patient education about the disease. It is anticipated that the reduction of fatty liver disease will decrease the incidence of Type II Diabetes Mellitus and metabolic syndrome, decreased liver enzymes and glucose, and decreased anthropometric measurements. One study concluded that the reduction of NAFLD in a specific exercising population was 21% decreased. No study was able to determine the exact amount or type of exercise that was needed to reduce NAFLD, just that exercise itself was a reducer.

Introduction
Nonalcoholic fatty liver disease (NAFLD) is the most common cause of liver disease in the United States. NAFLD is not caused by alcohol consumption but by poor dietary food and beverage choices and lack of exercise. Combining this with obesity and metabolic syndrome, there could be over 100 million people in the United States afflicted with this disorder. NAFLD can progress to nonalcoholic steatohepatitis which is life threatening.

Statement of the Problem
NAFLD is a growing concern in well developed countries. It is an increasing diagnosis in primary care along with the development of diabetes mellitus, metabolic syndrome, and obesity.

Research Question
In the adult population with nonalcoholic fatty liver disease, would increasing daily exercise without a change in diet be enough to reverse the syndrome?

Literature Review
Michelle T. Long and et al used information from the Third Generation Cohort of FHS track physical activity. Each individual had about 30 minutes a day of moderate to vigorous physical activity or 14.5 minutes of moderate to vigorous physical activity. The study discovered that the more activity a person participated in the lower amount of hepatic fat and visceral adipose tissue. The study indicated that if the participants were at the national standards of 150 minutes a week of physical activity there odds were lower to have NAFLD. Saran and et al focused on three different levels of exercise and a placebo group to visualize the effects on liver fat and visceral adipose tissue. The results indicated a decrease in liver fat and visceral abdominal fat. This was measured by MRI prior and post study. The researchers found that the MRI measurements are the most accurate and known. But, it is difficult to get a large number of study participants due to the cost of MRI scanning and the time for imaging.

Jinkyung Cho et al in Japan conducted a study with mice. The mice were fed two different types of diets for 16 weeks. One was a standard mouse pellet diet and the other was a high fat pellet diet that is similar to the traditional American diet that an obese person would eat. Goal of the study was to prove that the actual intensity of the activity not the time spent doing it was the reducer of fat in the liver. The mice had treadmill and were subjected to specific workouts five days a week. The vigorous training consisted 46 minutes of specific exercises. The moderate intensity consisted of 55 minutes of specific exercise.

The results showed that a vigorous exercise regimen was more likely to protect the liver from steatosis than a moderate intensity regimen. Both though of them had a significant decrease in NAFLD and as well as a reduction in BMI, glucose, ALT, and other laboratory data.

Discussion
The benefits of regular exercise whether it is cardio based or intensity training have a benefit for the human body. Reduces free fatty acids that are responsible for the increase in free radicals. Free radicals increase the amount of intrahepatic fat. Exercise is known to decrease insulin resistance in the muscles. Within those muscles fatty acids and get absorbed and then are minimized when the individual exercises (Long, et al., 2015). All of the studies that were reviewed did discover that with an increase or addition of exercise especially at the recommended amount of greater than 150 minutes a week there was a decrease in the amount of fat found in the liver. The decrease in fat was found to be independent of weight loss. Some of the studies did use diet as a lifestyle modification as well. Exercise on the other hand without a change in diet is associated with lower amounts of fat in the abdomen and in the liver.

There are a set of international guideline recommendations for intervention of NAFLD and treatment. These recommendations include:
- Dietary and physical activity as lifestyle modifications
- Dietary interventions are to decrease overall caloric intake, reduction in saturated fatty acids, and decrease fructose intake of polyunsaturated fats
- Natural antioxidants
- Probiotics
- Physical activity, behavioral therapy, and even possibly surgery for extremely obese individuals (Hernandez-Rodas, Valenzuela, & Videa, 2015).

Applicability to Clinical Practice
NAFLD is becoming a primary care problem. Patient’s are having increases in liver enzymes and prediabetes. NAFLD is a disease that does not have symptoms. It tends to be found on screening laboratory data with increased LFT’s. Most of these patient’s have elevated fasting plasma glucose, increases waist ratio, and elevated BMI.

Primary care is having to explain to these patients that cirrhosis is a risk if they continue on their current path. Most people did not know that choosing a poor diet, higher fructose beverages, obesity, and a sedentary lifestyle could put them at risk for development of end stage liver disease.

References

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