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Optimizing Nutrition in Patients with Chronic Liver Disease

Dr. Buch:
This is *GI Insights* on ReachMD. I'm Dr. Peter Buch, and today I'm joined by Dr. Ashwani Singal to discuss nutrition in liver disease. Dr. Singal is Professor of Medicine at the University of Louisville School of Medicine. He is deeply involved studying liver disease and is the lead author of "ACG Clinical Guideline: Malnutrition and Nutritional Recommendations in Liver Disease," which was published in the *American Journal of Gastroenterology* in May 2025.

Welcome to the program, Dr. Singal.

Dr. Singal:
Thank you, Dr. Buch, for having me here today.

Dr. Buch:
It's our pleasure. Dr. Singal, as an introduction to malnutrition and liver disease, what should we know about sarcopenia?

Dr. Singal:
So that's a good question. Sarcopenia is loss of muscle mass, and that's the major body composition change in patients with liver disease, and it does not matter whether the liver disease starts with alcohol or MASH or any other etiology. Once they get to the end-stage liver disease of cirrhosis and decompensation, muscle loss and sarcopenia is a major composition change or nutritional change in the body. Having said that, there are two components of sarcopenia. One, obviously, is the muscle mass, and two, is the muscle function, so I think both are important in terms of what happens to the clinical phenotype of patients in terms of risk of falls, hepatic encephalopathy, and bone fractures and changes. So I think not only from academic and research perspectives, sarcopenia has a huge role in terms of what happens to the patient, and obviously, one of the factors in determining the outcome of hospitalized patients and the transplant evaluation and transplant eligibility, so it's an important component in the natural history of the disease process.

Dr. Buch:
And just thinking about it, if we're to reverse sarcopenia, what would you suggest is the best possible way other than staying away from alcohol for those patients who have alcohol-induced liver disease?

Dr. Singal:
Right. That's another great question, and, typically I can break this answer into an outpatient management and an inpatient management. So for the outpatient practice, one of the pieces of advice we give to our patients is don't restrict proteins, and that applies to the inpatients also, even those patients who have hepatic encephalopathy. So the proteins should not be restricted because that builds your muscle mass. And typically, we would say about one to 1.5 grams per kilo body weight, so ideally, in a standard body weight, about 100 grams of proteins per day. Two, the protein intake should come more from a vegetable source, or if the animal sources are included, then the white meat over the red meat is chosen because that's less toxic to the liver in terms of ammonia buildup and risk of a hepatic encephalopathy. Three, especially in the outpatient setting, we tell patients to, as you all know, all of us in practice, is to eat small, frequent meals and avoid prolonged fasting more than four hours because when you have liver disease and cirrhosis you lose some of the metabolic functions, and one of the main metabolic functions of the liver is to generate glucose from glycolysis which gets impaired in cirrhosis patients. And therefore they should avoid prolonged fasting beyond four hours. That also hooks into taking a nighttime snack anywhere between 7:00 p.m. to 11:00 p.m.

Dr. Buch:
Thank you. And moving on, what are the main causes of malnutrition in liver disease?

Dr. Singal:
So I would say they can be multifactorial. One, obviously patients may lose their appetite as the liver disease happens. Two, when we put restrictions on the patients—for example people with hyponatremia are put on fluid restriction, people with ascites and edema are put on low sodium diet—those kind of restrictions make the food become less palatable or less tasty. Then that may be one factor putting in too. And then bloating could be one because of gastroparesis, and a couple of studies shown that GI motility is reduced in patients with cirrhosis by itself so reduced motility, gastroparesis, and bloating from ascites or distension reduces their appetite and puts them at risk of nausea, vomiting, and GI symptoms that leads to malnutrition also. Then people who are encephalopathic or have frequent hospitalizations, this also leads to or complicates this process. And then we as physicians also put these patients in the hospital. When they are in the hospital, you stay fasting, and then their endoscopy is scheduled and that's something we should take into account, is that anybody who's at risk of malnutrition should have their procedures done early in the morning so that they're not fasting the whole day. So I think those are some of the issues which could be related to their malnutrition.

Dr. Buch:
And moving on from there, what nutritional treatments or interventions are necessary in patients with liver disease?

Dr. Singal:
We typically practice a low-sodium diet in patients with ascites and when I reviewed the literature, there was hardly any randomized controlled trial comparing two gram versus four or four gram versus six, hardly any literature—so I did not understand where this two gram sodium diet came from. So in the document, if you see, we have not gone far and against a two-gram sodium diet as a recommendation.

Then in a general way, I would say hospitalized patients, especially with liver disease who are in the hospital, should have their calorie count. It could be done bedside by talking to the patient or the family, just a snapshot of the last 24 to 48 hours of what they have taken so you can have a vague idea of about how much the patient is eating. We made a recommendation. Anybody eating less than 21.6 kilo calories per kilo per body weight per day is at risk of worse outcomes while hospitalized, so make sure they're eating and getting their nutrition more with those calories, and that comes from a randomized controlled trial we cited and which was published 10 years ago specifically in alcohol-associated hepatitis. That can be translated in general to any liver disease decompensated patient that they should have standard body weight. If we take 60 kilos, at least 100.

So that's our practice bedside, and I think most physicians do that. If the patient is eating 1,200 or more calories per day, then you are relatively safer that the patient will have an okay outcome, but if they're having less than that amount, then you need to have supplementation preferably through internal route, putting a Dobhoff tube down and feeding the patient through Dobhoff tube to build their nutritional status while they're hospitalized. And sometimes we send these patients home on a Dobhoff tube and teach the family how to feed this patient at home.

Dr. Buch:
Thank you. For those just tuning in, you're listening to *GI Insights* on ReachMD. I'm Dr. Peter Buch, and I'm speaking with Dr. Ashwani Singal about nutrition in liver disease.

So, Dr. Singal, why do you recommend vitamin E in patients with metabolic dysfunction-associated steatohepatitis, or MASH?

Dr. Singal:
I think before I answer that question, I may go back to the previous question of nutritional recommendations and just align that in patients who seem malnourished—and we can talk about how to assess malnutrition or undernutrition—but those who are, then you should screen them for any vitamin or mineral deficiencies and replete them. So having said that, to just the completion of the previous question, coming to vitamin E in MASH my approach—and this is what we said in the document also and this is based on the *NEJM* article, a randomized controlled PIVENS trial in 2010 where there was a three-arm study, placebo, pioglitazone and vitamin E, and vitamin E was better than pioglitazone and placebo in improving fat and inflammation but not fibrosis. And that's why it never made to recommendation because the FDA wants to look at fibrosis improvement, which vitamin A in 96 weeks failed to improve, but it improved fatty liver and inflammation. The study published in that paper was nondiabetic histologically confirmed MASH. So typically, that's what we recommend. Vitamin E in patients who are nondiabetic and have MASH and who have not advanced to cirrhosis can be given as one of the therapies in patients with MASLD and MASH.

Dr. Buch:
Thank you. As we approach the last few minutes of our conversation, Dr. Singal, what should we know about coffee consumption in patients with chronic liver disease?

Dr. Singal:

So the data comes from more of observational studies and huge databases showing consumption of two or more cups of coffee per day is protective for hepatic fibrosis and reducing complications and hepatocellular carcinoma, so I think coffee has a hepatoprotective role if I can say, but there have been no randomized controlled trials. But the observational data is so strong that it has come into recommendation, and we suggest that coffee drinking should be promoted in these patients—not to the extent that if they don't like coffee that you say, "No, you have to go and drink coffee," but to somebody who likes to drink it, you can say, "Maybe take a little bit higher." And there's a dose response relationship with the benefits, so higher number of coffee—up to five or six cups a day—has a higher number of or correlation with the responses. The benefit is there. An important thing here—because high consumption of coffee can be linked with anxiety, heart issues, flutter, and things like that—is just to mention there that even decaffeinated coffee works. So it's not the caffeine, but other products in coffee or other contents in coffee that are making the benefit, so even a decaffeinated coffee has the same benefit as a caffeinated coffee.

Dr. Buch:
I want to thank my guest, Dr. Singal, for this wonderful update on nutrition and liver disease. Dr. Singal, it was a pleasure speaking with you today.

Dr. Singal:
Absolutely. It was my pleasure.

Dr. Buch:
For ReachMD, I'm Dr. Peter Buch. To access this and other episodes in this series, visit *GI Insights* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening, and looking forward to learning with you again very soon.