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Diabetes Management and Athletics

DIABETES MANAGEMENT IN ATHLETICS

Each month ReachMD XM 157 presents a special series. This month is Focus on Diabetes. Listen each hour at this time as we explore with American's top medical thought leaders for latest information on diabetes.

How do athletes manage diabetes? You're listening to ReachMD XM 157, The Channel for Medical Professionals. Welcome to the Clinician's Roundtable. I am Susan Dolan, your host, and with me is Dr. Anne Peters, Professor of Medicine and Director of the University of Southern California's Clinical Diabetes Program, and author of the book Conquering Diabetes. A Cutting-Edge Comprehensive Program for Prevention and Treatment.

MS. SUSAN DOLAN:

Dr. Peters, welcome to the Clinician's Roundtable.

DR. ANNE PETERS:

Excellent, thanks for having me.

MS. SUSAN DOLAN:

What led to your interest in diabetes?

DR. ANNE PETERS:

Well, I think I am a person who likes to sit around and think a lot and diabetes is the perfect disease for that because it's really the analysis of blood sugars and food and how a person's body reacts to a variety of different settings and it's also a disease in which one has long-term followup with patient, so I love knowing my patients over years and years and it lets me help them really achieve whatever it is they want to achieve.

MS. SUSAN DOLAN:

Describe the challenges diabetic athlete says.

DR. ANNE PETERS:

Well, the biggest challenge is hypoglycemia or low blood sugar because not only can low blood sugar reactions occur after exercise, they also can occur during exercise and it's really hard, I think, to balance the insulin, in particular, what people are eating and then exercise and partly it's because a lot of my patients use exercise as a means to lose weight, but then if their blood sugars go low and they have to consume more carbohydrates, then obviously that kind of defeats the purpose, so it's really balancing the insulin and the fuel source with the exercise to make it work right so the person's blood sugars are fine and their caloric intake is not increased.

MS. SUSAN DOLAN:

How should insulin dosing change before, during, and after exercise?

DR. ANNE PETERS:

Well, it depends on the intensity of the exercise as well as the duration of the exercise so if somebody is exercising very intensively, their going on an elliptical trainer at full speed for 45 minutes, their blood sugar actually will go up because of the catecholamine release after the intense exercise, and so those people might get discouraged because their sugars go up, but when somebody starts exercising and gets trained, that is, their muscles become more sensitive then their blood sugars will start to go down. So the way to adjust it at first is that the meal before the exercise and the best time for a person to exercise is 90 minutes after eating, I generally reduce the rapid acting insulin before the meal before the exercise by about 50%, now that's assuming moderate exercise for 30 to 60 minutes and then I have the person check their blood sugar when they first start half an hour into exercise to see what their sugar is and if it's going down then they need to consume carbohydrates, usually 15 to 30 g, but if not, then I have them continue the exercise then check after the exercise and then again before the next meal, so I have them start to give me a pattern of their blood sugars. Often the delayed hypoglycemia may be 8-10 hours later, so some of my patients reduce their long-acting insulin overnight so they don't go low at night after exercise, but a lot of this is trial and error based on the individual patient and having them test before, during, and after exercise, so I can start figuring out what they should do.

MS. SUSAN DOLAN:

What types of carbohydrates should be eaten?

DR. ANNE PETERS:

Well I usually have people have with them something that's quickly absorbed so little juice boxes are good, 4 ounces of juice is 15 g of carbs, but a lot of my patients like to get that "Go stuff," it comes, you know, like a gel which is what they sell at sporting goods stores and a lot of the sport drinks that have you know glucose in them are also helpful, but Go is easy to take when people are running and often it's easy to take because when you start eating the Go, it gets absorbed in the mucous membranes so the people don't get nauseated from drinking too much fluid and then the fluid is fine, the juices in sport drinks that have carbohydrates are fine.

MS. SUSAN DOLAN:

Are there special considerations for diabetic children, who are involved in sports?

DR. ANNE PETERS:

Well, one of the problems with children with diabetes in sports is that kids in general just eats more carbohydrates and run around and they have all those wonderful energy and you don't want them to go low during sports because, obviously, that's a problem in kids. You keep their blood sugars actually somewhat higher than in adults, so with kids doing sports, I tend to give more frequent snack, so I may not necessarily have them do as much complicated testing as an adult where they don't want to go low because they are afraid of extra calories, but might rather give a kid a snack after half an hour of exercise just to get their sugars levels at a good level so that they can run around and not worry about hypoglycemia. With kids, it's more about just maintaining their blood sugars at a good level and you know letting them go out and have fun.

MS. SUSAN DOLAN:

Dr. Peters, what are your thoughts about supplements for athletes with diabetes?

DR. ANNE PETERS:

Well, it's hard to know exactly what people should do because there is not a lot of proven evidence about supplements in any person, who has diabetes or not in terms of enhancing performance. Now, obviously banned substances, are banned substances and things like growth hormone and steroids are particularly bad in people with diabetes because it makes their sugars even higher, so I am not even talking about those, but the routine supplements that people take when they are exercising, there is a whole bunch of different ones that people adhere to and I don't see any contraindication, although I don't see any huge indication either. So in terms of supplement other than, you know, making sure that there is enough glucose and protein in the system to maintain normal blood sugar levels, people can do the supplements based on whatever their particular interest is, training is, whatever they want to do.

MS. SUSAN DOLAN:

Can the excitement of a competitive event cause blood sugar to spike?

DR. ANNE PETERS:

Well, yes, it can cause blood sugars to go way up because of the stress of competing and so I have completely different insulin regimen for patients on race days as opposed to training days, and I have an olympic swimmer I have helped, I've got triathletes that I help, I try to work with all sorts of athletes and each one is different, but in each case there is a difference and how they need to be treated on days they are competing, so it's just like everything, paying attention to detail and getting really careful logs, so what I'll do is if I have a patient who is training and running their first triathlon, I'll have them keep very careful records for that first one and then I'll use it to help coach them through the next one and then the next one so we can get it just right.

MS. SUSAN DOLAN:

What are the mechanics when diabetics run the marathon and triathlons?

DR. ANNE PETERS:

What I try to do is have capacity for the individual to test at transition, so if someone is doing a triathlon, they need to be able to test when they swim and then when they get out of the water and potentially while they are cycling and then when they get off the cycle and then before and after the running and what you don't want to do is to have somebody get so stressed that they become so resistant to insulin that they go into ketoacidosis at the end of the race, and I've had that happen on a couple of times when patients have gotten dehydrated while they were racing so hydration is vital through these events and then having tests, and occasionally somebody in the triathlon for instance, will need to take some insulin because otherwise they really will become just too hyperglycemic and so part of it is just making sure they have a little tiniest meter. Some of my patients who race now do continuous glucose monitoring and have a continuous readout of their blood sugars and then I have them, you know, dose insulin depending on what leg of the event they are in and whether or not they are going to need it in terms of maintaining a good blood sugar level.

MS. SUSAN DOLAN:

Are some of your patients running with the pumps?

DR. ANNE PETERS:

Oh yes, pumps are great for people who run. They are not so good for swimmers, although I have triathletes, who use pumps too, they just take the pumps off for swimming, but a pump is really easy because then you can give the little doses that you might need to overcome some of the hyperglycemia with racing and sometimes when training, people does take the pump off because they don't need it, but again, it really depends on how long someone is training for and what the event is, the intensity of the training.

MS. SUSAN DOLAN:

Who are some famous diabetic athletes?

DR. ANNE PETERS:

Well, Gary Hall, Jr., is winner of multiple gold medals, he is a sprinter, he is a swimmer, and he is an amazing athlete and developed type 1 diabetes in between the Athens Olympics and the Sydney Olympics, and I worked really hard with him to work out a regimen that would work and I went with him to Sydney, and then I went with him to Athens and in both cases he won gold medals in his event, which is the 50 m freestyle, but he is the one who taught me the most about sport and diabetes because we were so careful monitoring him both in the pool, and then you know when he was training and then when he was racing, so he just taught me everything. I know I think about physiology when it comes to diabetes.

MS. SUSAN DOLAN:

How old was he when he developed the disease.

DR. ANNE PETERS:

I think he got it when he was 26.

MS. SUSAN DOLAN:

And that's the new onset.

DR. ANNE PETERS:

New onset type 1 diabetes at age 26, yes, and it almost ruined his swimming career, but I was really really proud of his ability to overcome that as an obstacle.

MS. SUSAN DOLAN:

How common is that with older people developing a new onset, insulin dependent.

DR. ANNE PETERS:

Well, we used to think it was not very common, which is why we called type 1 juvenile onset, but we now know that it can happen at any age and part of why we know more now is because we have anti-GAD antibodies that we can measure to show whether someone has autoimmune type 1 or not and so what we found, at least the recent studies that I've read have shown is that about 50% of people with type 1 are diagnosed before the age of 20 and these days about 50% after the age of 20, and my oldest patient that I diagnosed with type 1 was 93 years old, so it can really happen at any age and people need to be aware of it because if someone is diagnosed with adult onset type 1 they need to start insulin much sooner than if somebody has type 2.

MS. SUSAN DOLAN:

And why the change over the years?

DR. ANNE PETERS:

Well, I think we've just become better at testing for it, we didn't have the antibody tests 5 years ago so we didn't know if somebody was a type 2 or a type 1 in adulthood, so part of it's just that we diagnose it better and it's also an autoimmune process and we know that in general autoimmune diseases are increasing in terms of their frequency and the population possibly because of environmental changes, you know we don't know why, but I think a lot of it's that we just didn't have the tools to diagnose it.

MS. SUSAN DOLAN:

Dr. Peters, thank you so much for joining us to discuss diabetes management in athletics.

DR. ANNE PETERS:

Thanks for having me.

MS. SUSAN DOLAN:

I am Susan Dolan. You've been listening to the Clinician's Roundtable on ReachMD XM 157, The Channel for Medical Professionals. Please visit our website at www.reachmd.com, which now features our entire library of on-demand podcasts or call us toll free with your comments and suggestions at triple-8 MD XM 157 (888-MD-XM-157). Thank you for listening.

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