



EPISODE 9: Case Study - Hyperthyroidism and Chronic Kidney Disease

Transcript

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I had just finished the dietetic internship and was excited to start studying for the RD exam. I mean that wholeheartedly. I like studying and learning but more than that, it was the last step, the last hurdle to jump over in order to become a Registered Dietitian I know you feel me on this one. If you listened to my journey so far as a dietitian, you know that I wasn't certain where I was gonna work. But finishing the internship was a great feeling and studying was the next and final step.

The way I've always studied best is to write things out. As I sat down to study, I noticed writing was suddenly challenging. My hand was shaking which never happened even when taking an Organic Chemistry exam. Remember those? At first I thought I was feeling nervous and a little anxious about all the stuff I had to study but as time went on, it didn't get better. It actually got worse. Naturally, I consulted with Dr. Google for some concrete scientific advice. And Dr. Google, like always, told me I was dying or at least had a horrible and debilitating condition. Everything listed didn't sound like much fun. I convinced myself out of the long list of possible conditions that I had Parkinsons Disease. I decided I better go to the doctor because I couldn't study without being able to write and writing became almost impossible - or at the very least, not legible. My doctor ran a series of tests and referred me to an endocrinologist. So off I went to the endo who was a lovely man but geez, he sure scared me. He said my thyroid levels were off. My TSH was so low it was undetected and my free T3 and T4 levels were very high. Free T3 and T4 are thyroid hormones. There were potentially several reasons for why my levels were off. One of the reasons being thyroid cancer. To be honest, I didn't hear the far less severe causes. They were lost to me. Once he said the "C" word, I heard nothing else. While waiting for my appointments for further testing, I continued to study and tried my best to shut down the narrative in my head. I wasn't always successful. I thought, "How is this happening. I finally got to the end of school, about to take my RD exam and start my career and now I potentially have cancer?"

I started working in public health which was a good distraction. Between work and studying, I had enough on my plate to distract myself and stay as focussed as possible. One foot in front of the other. Little did I know that this approach would help me down the road but that's for another day. I took the RD exam near the end of August. I had so many different emotions at that moment and really struggled to stay focused on the exam. My emotions hit me hard probably because I was so nervous. That was the last thing I needed to be doing at that time. It certainly didn't help that the girl sitting across from me, who was also taking the RD exam, was the noisiest test

taker. I swear she clicked the mouse with a sledge hammer. Fortunately, I got to the point once the test started where I could quiet my mind enough to finish and pass the exam. I was so happy. I forgot about how I was feeling and called all the important people in my life who had supported me along my journey to tell them the amazing news. Then I got home and started worrying. But now, I had nothing to distract me while I waited for my doctor to call with my results. Two weeks of painful waiting went by until I was called by my endocrinologist to say the results were ready. I called one of my closest friends who's like family to me and asked her if she could come with me. So we went to my appointment together and I was finally told what was going on with me - I had Grave's disease. The name alone is so morbid. Graves disease.

No matter how hard you try to spin the word grave, it's just not a good word. Think about it. A grave is where you rest after you die. A grave condition is very serious. A grave problem is not a good problem to have. It's just not good. In this case, Grave's disease is named after Robert James Graves who I'm sure was a lovely person and clearly a very brilliant person. He just had a not so positive last name. Anyways. So Mr. Grave's identified the autoimmune condition affecting the thyroid causing hyperthyroidism and that's why we have Grave's Disease today. My friend who went with me when I was diagnosed has multiple sclerosis and lets everyone know she has it. Her reasoning being if there's ever a cure, she'll be the first to know. She'll be the first person people will call to tell her a cure has been found. She's always been a cup half full kinda person. When the doctor said I had Grave's Disease, she high fived me and said, "Welcome to the autoimmune club Jana". I'm sure the doctor was confused. If you know my friend though, that's exactly something she'd say. The most optimistic, glass is half full, don't worry until you have something to worry about kinda person.

I left my job 4 months after I was diagnosed for a clinical job in a large teaching facility. The best thing about teaching hospitals is the teaching and research. There were lectures all the time from medical experts around the world. Anytime they had a lecture on hyperthyroidism, in particular Grave's Disease, I would go. It was a little intimidating being in a room with a bunch of physicians - they all knew me as the dietitian with Grave's disease. I decided to take my friend's approach. If you hear of a new amazing treatment or cure, I wanna be the first person you call. I asked all kinds of questions and approached the lectures as free consultations. Plus it's always good to know about the most up to date research or if there's anything I should do different. I've learned to advocate for myself and got second, third and fourth opinions on how to manage my condition. I found what's worked for me and found a physician who works well with me too. That makes all the difference.

[Music and Intro]

Hey there. In this episode, I'm gonna review a case study. You'll learn how to break it down and how we as dietitians can be the biggest advocates for our patients. I share my story with you because you just might be asked about hyperthyroidism on the exam and stories are the best way to tie everything together. Plus, you're gonna more about hyperthyroidism with this case study.

But before we start...

I have a really exciting announcement. One of the most popular podcast episodes was the one that breaks down tube feeding and parenteral nutrition. When I was in college, I remember learning how to calculate TPN. And I gotta be honest, it went right over my head. I was so confused and eventually got to the point where I thought, "I don't need to know this. I'm willing to miss those questions on the exam". Well, let me tell you. I needed to know it and I have dietitians reach out asking me for TPN help. Also, everyone has different exposure and experiences with it in their internship. I've been teaching for over a decade now and I gotta tell you, math is one of those topics that makes people freeze and shut down. Math teachers really gotta approach math differently and make it fun. If you haven't listened to Episode 4 yet which covers TPN and Tube feeding, be sure to do so. And if you're looking for a resource that shows you step by step how to calculate Parenteral Nutrition in an easy to follow and easy to do yourself way, I created the perfect workbook for you. It shows you exactly what to do, every math step and calculation, and takes away the guess work. It's very practical. And you'll have everything you need in one resource. You don't need to sit and worry about how to calculate TPN. I want you to feel confident in your calculations, confident with your math - to the point where you'll not only be ready for any TPN calculations on the exam, you'll be hoping you get them because you've got the math down. If this sounds like something you need, check out the link in the show notes.

So let's get to our case study. Billy Bob is admitted to the hospital after getting in a car accident. His injuries are minor but he did end up with a laceration to the stomach and a broken leg. After going through the past medical history, you see that Billy Bob is a 66 year old male with a history of Stage 3 Chronic Kidney Disease, Grave's disease (or hyperthyroidism) and cataracts. You look at his labs and see that his free T3 and T4 are normal. His TSH is also normal so his thyroid levels are good. His Phosphorous and Potassium levels are slightly elevated. His GFR is 35. You notice that his weight is stable from the last hospital visit 6 months ago. His BMI is 24.9 which puts him in the normal BMI category.

While cataracts is a concern to the patient, it's not something a dietitian can address at this time. So that is not something you would spend time on. Let's go over hyperthyroidism. Hyperthyroidism is when the thyroid is over active. It's hyper. Think about a kid running around in circles. It kinda feels like that because the body feels like

it's working on overdrive. People with hyperthyroidism such as Grave's disease often have a fast heart rate, GI discomfort such as diarrhea and frequent bowel movements. They can have sensitivity to temperature, shaky hands and dry eyes. They may lose weight due to increased energy expenditure and may require additional calories. I say may because you have to look at someone as an individual. If there's no weight loss, they likely are fine and don't have increased nutrient needs. You can do a diet recall to get an idea of how many calories they typically eat which can help you determine if they're eating more than you'd guess they were. When someone has hyperthyroidism, at least when it's initially diagnosed or is not well controlled, the TSH is low. I know it seems backwards but this is how it works. In hyperthyroidism or Grave's Disease, the thyroid produces excess T3 and T4 hormones. The pituitary gland tries to get the body back to normal by stopping the production of TSH. TSH is Thyroid Stimulating Hormone. TSH is a hormone that stimulates the thyroid. When the thyroid is hyper and won't calm down, it doesn't need to be stimulated so the pituitary gland stops the production of TSH. When excess T3 and T4 is produced, that's when someone will start to feel symptomatic. Now this is not the case with Billy Bob but let's go over what hypothyroidism is. it's the opposite of hyperthyroidism. I remember hypo as slow. With hypothyroidism, the TSH is high and the T3 and T4 are low. When someone is hypo, the symptoms are opposite from hyper. They feel tired, sluggish, sleepy, they might experience hair loss and they may have weight gain due to decreased energy expenditure. Therefore they may need less calories. Again, everyone is different so you have to look at them clinically.

Now that you understand the difference between hyperthyroid and hypothyroid, let's get back to Billy Bob. His weight is stable and his thyroid labs are good so I wouldn't worry about his history of thyroid disease. Endocrinology will follow the patient. As a dietitian, there's nothing for you to do. So let's see where you're at. You've determined that his history of cataracts and hyperthyroidism are conditions you won't be addressing right now. But Billy Bob also has CKD or Chronic Kidney Disease which should be addressed. First, what is chronic kidney disease? Chronic Kidney Disease is long term or chronic and can lead to kidney failure. Billy Bob has CKD stage 3 so that's definitely something you'll want to pay close attention to. Billy Bob's potassium and phosphorous levels are also elevated and his GFR is 35. If the GFR is between 30 and 59, the patient has CKD Stage 3.

What are you gonna consider with this patient? Well, first thing you're gonna do is have a conversation with him and see what his level of understanding is. You want to see if he knows what to eat to manage his condition and prevent the progression of his kidney disease.

You speak with Billy Bob. He states he's had a great appetite. He doesn't have any GI upset or tolerance issues to his meals. He eats regular meals and feels his appetite hasn't changed. He's only had a quick conversation with

someone regarding his diet but he was in shock at the news there was anything wrong with his kidneys so a lot of it went over his head. He asks you for help. He's been feeling very tired and was told by his doctor that he has anemia but he doesn't understand why.

So where do you start? Well, you've already determined his medical history and his meal intake prior to admission which is great. He's asking for help regarding how to manage his CKD and he's tired and anemic but doesn't know why.

You gather some helpful information for Billy Bob and spend time educating him and explaining food that contains potassium and phosphorus. Since his lab values are elevated, you would want to emphasize the importance of monitoring his intake of those foods. You'd also go over a renal diet so he understands protein sources and roughly how much protein he can have in the day or at each meal. You also want to incorporate motivational interviewing principles especially if Billy Bob starts showing resistance. In this case, Billy Bob is eager to learn and wants to know what to do. When you're done educating him and having a conversation, you want to make sure you assess his level of understanding and expected level of compliance. This gives you, the dietitian, and the rest of the interdisciplinary team an idea of where he's at with regard to implementing what he learned.

Now remember, he was confused about why he's anemic. Why is that? Well, people with CKD have decreased kidney function and therefore don't produce as much erythropoietin because it's produced in the kidney. That can be the cause of his anemia. You would discuss this with the doctor and see if there's anything else that you should address from a nutrition standpoint. Remember, it's best to work as a team. A lot of your questions can be answered by talking to the other experts managing the patient.

So let's review the MNT for CKD. For patients with CKD stage 3 like our patient here, Mr. Billy Bob, he'll need a protein restriction of 0.6-0.8 gm/kg body weight. Since his potassium and phosphorus levels are elevated, he'll need to monitor what he eats. It's important to note that foods that contain protein also contain phosphorus so while it's important he pays attention to foods high in phosphorus, he should make some progress by monitoring his protein intake and avoiding some high phosphorus foods. He should be eating a good amount of calories at least 25-30 kcal/kg but might need as much as 30-35 kcal/kg.

You already determined that cataracts and Grave's disease are not a primary concern at this time which is why you focused on CKD. Phew. That's a lot to cover.

Remember. With hyperthyroidism, the TSH is low and the T3 and T4 are elevated. With hypothyroidism, the TSH is high and the T3 and T4 are low. With CKD Stage 3, the GFR is between 30 and 59. For CKD Stage 4, the GFR is 15-29 and for Stage 5 CKD, the GFR is less than 15. Protein needs to be restricted in patients with CKD stage 3 and below. Sodium, potassium and phosphorus need to be monitored and intake needs to be decreased if the labs are elevated.

As dietitians, we have a critical role in helping people live their best life. Be an advocate for your patients and yourself because remember, you are a patient too. You go to the doctor and you get regular check-ups (hopefully). And when you have a cast study, you start with reading the medical record, looking at the PMH, the anthropometrics and labs and then talk to the patient. Once you have all the information, then you can start breaking things down.

Keep on top of your study game. There's no limits to achieving the success you desire. Until next time my friend.

[Music and Outro]