Blood Chemistry Intro: Vitamins

Transcript

Welcome to our blood chemistry module section on vitamins. This is not vitamin testing per se throughout the whole system; this is on testing specifically in the blood in the standard blood panel with a couple of additions added to it. Most of the vitamins are not measured directly in the blood; many of them are measured indirectly, and there's markers and indicators that suggest problems, and it's usually enzymes that we're measuring that tend to be low when these particular vitamins are low, because they're co-factors and that's what we're going to look at right now.

Make sure your client knows that this is not intended to replace a one-on-one relationship with a qualified health care professional; that you are reading their labs as a courtesy and helping them to understand what's going on in their labs, but by no means is this intended to replace a one-on-one relationship. When you're working with people on reading their labs, you always want to make sure that they know that you're just doing this as an educational piece to help you understand their nutritional status, and that if they're under the care of any professionals, that they need to work with their doctor.

Vitamin D is one that we can measure directly in the blood, and I recommend that you do that with everybody, because Vitamin D has been implicated in so many conditions. In autoimmune disease, it's important for the T-regulatory cells to have Vitamin D; in muscle pain, in fibromyalgia, super-important in diabetes. Obviously in osteoporosis, because it affects bone metabolism. Really, cancer; we're seeing so much cancer these days, and Vitamin D deficiency is rampant, mainly because everybody tries to stay out of the sun and in fact, they end up staying out of the sun to try to avoid basal cell carcinoma, when indeed, there are other cancers like colon cancer, breast cancer, prostate cancer that are way more serious than basal cell carcinoma, that are actually caused by lack of Vitamin D.

In fact, there's a lot of evidence that melanoma, which is the dangerous skin cancer that can metastasize, that that actually can be caused by a deficiency of Vitamin D, so a lot of people are staying out of the sun and it's creating havoc and problems. Even neurodegenerative disease, depression, fatigue, anxiety, problems with hormones; Vitamin D is rampant and it affects every tissue in the body.

When we test for Vitamin D, we're looking for ranges. The labs will go from 32 to 100; that's a pretty darn wide range. How could you say that somebody with Vitamin D of 100 is any less healthy ...

Sorry, let me say that one again. How can you say that a Vitamin D level of 32 would be just as healthy as a Vitamin D level of 100? It doesn't even make sense. The tighter range that we use in the literature, and when you look at protection from cancer, tends to be in the 70 to 110. Usually 100 is the cap, but for some people with autoimmune disease and history of cancer, going up to 110 can be prudent.

There are other vitamins that you can test in the blood system, and it happened to show here, but they're not as accurate like Vitamin D. Vitamin D's pretty accurate about what your status is. It's been studied, it's been documented. Vitamin B12 in the serum really doesn't tell us a whole lot of anything because you can have a lot of Vitamin B12 in the blood and not have it be utilizable, and not have it be the active metabolites. With folate similarly, we don't know what the folate is actually measuring. It's measuring combination of synthetic folic acid, which people are taking in all their vitamins, plus the methylfolate, which is the active form. What we know is that the synthetic form of folate actually interferes with the activated methyl forms, so you may have a really nice looking folate in the blood, but it's not really good because it's got some unmetabolized folic acid in it.

What affects your Vitamin D requirement? Well, lots of things: Body weight, skin color, age, where you live. I always tell people you can lie naked on the roof up in Toronto and you will not get enough Vitamin D. Anything above Atlanta, Georgia is considered not to be very useful for Vitamin D in the winter time. The summer is a different story. The use of sunscreen will affect it, and sunscreens can be really dangerous and damaging to the skin, so it's best to use natural stuff and also to cover up rather than ... You know, when you've gotten too much, but to get some sun every day. Chronic illness and autoimmune disease: I like to see the levels at the higher end of the Vitamin D spectrum for things like Hashimoto's and other autoimmune diseases.

I put this in here because people ask me all the time: "I do the test, now what?" I wanted you to see what I do. You might find that it works close with people, but it's a starting point. If we're going through the optimal range being more like 70 to 100, let's just say, if the person has a level that's under 20, I'll usually have them take 20,000 IUs every day for a week up to a month, depending on how low it is, then drop it to 10,000 for two months and then retest. Now, if somebody's willing to get tested more frequently, because it is $50 a pop, then what I do is just have them do the 20,000 for four to six weeks and retest right then and there. Then if we need to drop it down, we can.

Generally what I've found is that most people need that 20,000 or even more, for a lot longer when their numbers are plummeted below 20. I had one person who had an 8, and I told him to take 20,000 for six weeks and then go to 10,000 and then retest it three months. Didn't see him for a year and a half; he came in with some new blood work, and I looked at his blood work and I said, "Where's the Vitamin D?"

"Oh yeah, I forgot to take the Vitamin D." I said, "How much Vitamin D are you taking?" He goes, "Oh, well, I'm still taking the 20,000 like you told me to."

He took 20,000 a day for a year and a half, and I freaked out. I said, "You got to stop. You got to get it tested right away." He went and got it tested right away. I was expecting it to be in the 2,3,400 range; you know, this is a year and a half of 20,000 IUs a day. It was 60; 60. This guy clearly had a Vitamin C issue. He did eventually get his SNPs done and he had the Vitamin D receptor SNPs. There are a few other Vitamin D SNPs that are important; SNPs being the single nucleotide polymorphisms related to genetics.

That's where I start. If they're in the 20 to 30 range, I'll oftentimes just say take a 10,000 for three months and let's see where you go. If they start out in the 30 to 40, I'll have them take 6,000 for three months and then retest. 40 to 60 range, I just have them take 2,000 to 4,000 and then recheck and see where they're at. If they're 60 or above and they live in a northern climate, I'll have them take 1,000 to 2,000 until spring and on days they don't go out in the sun for at least thirty minutes, and retest in four to six months.

The thing about this is, it depends on whether they're already taking Vitamin D before this got taken into account, so like I said, this is a rough guideline, but if this person with 75, they say well, I've been taking 2,000 IUs for the last year and a half and that's what got them to 75 and that's how they're there, I'd say just stay on that. Okay, if they hadn't been taking anything and they're at 75, then I would do this, where I say if you're in a northern climate, go outside. Get your stuff, take it in the winter and you'll be good. I don't see that very often; not often at all.

Let's look at B12 and folate. We did talk about these more in the anemia section. The best way to test for B12 deficiency is methylmalonic acid. If it's high, that means there's not enough B12 to break down the neurotoxin. Remember we talked about how Vitamin B12 will have neurotoxicity effects. We talked about how my son had tingling in his toes when he sat for too long, and that was his Vitamin B12 deficiency. Even to this day ... He's away at college, I send him his Vitamin B12. He takes it, but then he'll maybe forget for awhile, and he'll write to me and say ... Or he'll be out of it and he won't tell me: "I'm out of Vitamin B12 and I haven't been taking it for a month or two and I'm starting to get that tingling back. Could you send me more?", so he's learned to tune into his body. I really wish he would not let it get to that point, but there's just so much you can do to get kids to do what they're supposed to do, and he's pretty good about it.

That's the methylmalonic acid. As far as folate, I don't think there's a real great test for folate, but if you've got the MCV, I always will supplement with both, but you got to take into account other genetics as well. With the B12 and folate, the way you know if they are deficient, you're suspicious when you see high MCV, MCH and MCHC. Possibly the iron is high, but it could be low. RDW is high. White blood cells might be low. Red blood cells might be low. Hematocrit might be low, hemoglobin might be low.

Homocysteine might be elevated, and uric acid could be low. Now, let me talk a minute about homocysteine, which is a part of the methylation pathways. Homocysteine is converted upstream to eventually get converted to methionine and SAMe, which are part of your methylation pathways.

When homocysteine builds up, it can be an indication that you don't have enough methyl groups, and you don't have enough B12 to convert, or you have a genetic imbalance there. Homocysteine is an indirect measure of enough B12, right? It also could be that you don't have enough folate, so it's an indirect marker. We've also found that B6 is related to high homocysteine, so it's not specific for B12, but it can be useful in putting together a clinical picture.

Vitamin B6; there's a number of markers that are good for Vitamin B6. Now, we don't measure Vitamin B6 directly, so what are some of those markers? Well, if the liver enzymes, AST and ALT, are low, or GGT, that can indicative of Vitamin B6. Medicine usually doesn't look at them when they're low; they just look at it when it's high, in terms of liver stress or bone stress or other kind of stress. If it's low, because it takes a B6 dependent enzyme to create these enzymes, then if it's low, you might not be creating them, so it could suggest a B6 deficiency.

Elevated iron and low hemoglobin together, to me suggests the possibility of B6 deficiency, because the B6 is required as a coenzyme for the conversion and the incorporation of iron plus oxygen to make hemoglobin. A low MCV is oftentimes indicated ... Low MCH and low MCHC can be indicative of a Vitamin B6 deficiency when the iron is normal. The RDW, you're going to see that high in all kinds of anemia. Red blood cells can be low and that's again because of the decrease in that enzymatic activity that converts the iron and incorporates it into the red blood cells. Hematocrit, hemoglobin low and the alkaline phosphatase is low again, because again, it's mostly a zinc dependent enzyme, but Vitamin B6 gets in there, so it's a possibility that Vitamin B6 is involved.

Then we have Vitamin C, so what are some indirect measures of Vitamin C? Well, low hematocrit, high alkaline phosphatase, high red blood cells, low hemoglobin and low hematocrit and high MCV, MCH, and MCHC, so Vitamin C is involved with the co-factors, the enzymes that help to put this stuff together. Vitamin C is important for iron absorption, so when you see low iron, it can be an indicator that Vitamin C is low as well. That's the story with vitamins in our routine blood chemistry.