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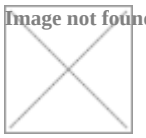
Dr. Jorge Miranda Massari Discusses IV Vitamin C



August 23, 2019

LS: Today I have the pleasure of interviewing Dr. Jorge Miranda Massari. Dr Massari is a clinical pharmacist and researcher. His research focuses on pharmacologic nutritional biochemistry and metabolic optimization in cancer, diabetes, and autism. Dr Massari, do you work with patients directly?

JMM: I work directly with patients in a pharmacy setting one day a week. I also receive a lot of consults through clinicians.

LS: By the time you see a patient have they exhausted other options, or do you see people as their first line of consultation?

JMM: It varies. Sometimes the people I see have had a very complicated situation and their disease is advanced. Other times people come soon after they're diagnosed.

LS: Is vitamin C particularly toxic for certain types of cancers more than others?

JMM: There is certainly a wide variety of sensitivities related to individual biochemistry and cell characteristics. We haven't reached a point where there are accurate biochemical tests to ascertain if a person would have a better response; it's more empiric. Because vitamin C has so many mechanism of action, even when cells have a relative tolerance to vitamin C, It can still benefit the patient in a variety of ways.

Vitamin C has more than 10 mechanisms of anticancer action, therefore, sometimes the reaction is very intense. One of the most potent mechanisms is the creation of peroxide. That seems to work so well that some people respond as if they were having a very intense chemotherapy.

LS: What kind of response might you see in that instance?

JMM: When I'm giving a lecture on the use of intravenous vitamin C in cancer patients, I warn that you have to be very careful in people who have advanced disease and very large masses of cancer because you won't know how intense the response is going to be. It could be dangerously intense. Therefore, as a part of the protocol that was published in 2003, when you start dosing vitamin C you have to take certain safety precautions including laboratory testing. Also you start at a lower dose to avoid certain lytic reactions that would release a lot of toxin to the body.

LS: What are some of the lab tests for safety that you routinely do?

JMM: There are a lot of important tests you need to do, including renal function and cardiac function. I will go into detail in my presentation. I will say that G6PD testing is important. In people who have deficiencies it can induce some anemia. It's very rare but you have to be careful not to use high doses in these patients. In new patients you start with lower doses like10 grams and you quickly go up to 20, 25 grams if the patient tolerates it well.

LS: What on average would be a duration of treatment?

JMM: It's been noted that people who stay on intravenous vitamin C for about a year do better than people who stay on for less time. When patients initially are diagnosed with cancer, they have to of course have oncological reviews, looking at tumor markers, imagery, and so on so you know where you stand when you begin IV vitamin C. Throughout treatment you review how the patient is doing. Often times you'll see a decrease in tumor markers and tumor size. In addition the patient is feeling better and has more energy.

There comes a point when you can safely taper down the intensity of the treatments, but you have to be at a level in which you feel comfortable, you have control over the disease. Of course, you do that within a framework where you have an integrated treatment plan and you're treating everything you find that is related to the disease. Even though vitamin C is one of the most potent therapies, obviously that's not the only therapy you use. Ultimately we want to identify and eliminate things that damage the energy production system of cells. That's why we will give vitamin C to people, IV and also some oral dosing. But even more importantly, we focus on what the person is eating and any current or past environmental exposures.

LS: Are you looking specifically for diets that are pro-inflammatory and free radical generating?

JMM: Yes. First you want people to reduce refined carbohydrates. In fact, initially to go as low carb as possible, because the lower the carbohydrates, the more you starve the cancer cell, and energy production systems can switch to a mix of ketogenic and gluconeogenesis. That's number one. Number two, there are particular foods that are dangerous or damaging. One of them is a milk-based dairy products. There's a lot of research by Dr. Colin Campbell on the carcinogenic properties of dairy, specifically the protein casein and other growth factors. Sugars, carbs, and dairy products are the most important things to eliminate from the diet. It's important to eat fruits and vegetables, but also to learn which tend to be higher in pesticide content so the patient can avoid them and protect themselves from more chemicals that can disrupt cellular energy production. Obviously this is a very short list. There are many things to consider, including fasting, to help healthy cells survive.

LS: Do you think high dose ascorbate could interfere with the anticancer activity of certain chemotherapies or create any adverse drug effects?

JMM: That's a very important question and in the presentation I'll be giving in San Diego, I will show updated information about it. In 1999 I was first author on a paper with a group from Sloan Kettering Memorial. That paper identified the mechanism by which vitamin C enters cancer cells via a glucose transporter. I still remember the paper vividly because it was very important, but also something else happened. The group speculated that if vitamin C is an antioxidant, there should be concern about it neutralizing the effects of a lot of chemotherapeutic agents. They were concerned and they expressed that concern in the paper, which is actually a normal thing to do in research: You get your findings and in your discussion you try to anticipate what will happen in the future. However, because this was a very important group of researchers and a very important journal, that expression of concern was taken as the expression of a real problem. For many years, most oncologists all over the nation used that reference as a reason not to give vitamin C to cancer patients.

Data from *in vitro* experiments has shown that most of the time, not always, but most of the time, this

interaction is not a negative one but a positive one. In other words, it suggests that most of the time vitamin C will enhance, not decrease chemotherapy activity. Animal data shows the same thing. Most of the time you will increase the effect. Human trials show that as well. When you look at the whole context, you see that, in general it's not a negative thing.

However, because we don't have enough comprehensive studies and we don't have all the knowledge, you still want to be cautious. I will be talking about that and showing new research and case studies. In clinical practice, we usually don't give it the same day as chemotherapy. We give it the day before or the day after, but vitamin C is being clearly shown to enhance quality of life.

LS: Dr Massari thank you very much. I really look forward to hearing your presentation in San Diego.

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