The Power Of Fasting To Combat Cancer Transcript

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Introduction and Guest Background

Hi, everyone. This is Dr. Joseph Antoun. Welcome again to the Fasting and Longevity Summit with DrTalks Then a very important episode today. I have the pleasure of hosting Dr.

Tanya Dorff who's an amazing physician that changed a lot of cancers. People life because she doesn't that only focuses on the the chemo or the immunotherapy or whatever chemical we're putting in our body.

But she actually actually generally cares about nutrition, lifestyle and other aspects of the patient's life and how we can use all these determinants to support the care and optimize the care.

Dr. Tanya is one of the prominent oncologists at City of Hope, and I've had the pleasure of knowing her and we both collaborated on one trial, which I appreciate.

She's going to mention some it started some nine years ago and then met her in person some four or five years ago. But I'm so happy that they were connecting and I think it's going to be a very important session that will focus on fasting for cancer and fasting nutrition for cancer.

So welcome, Dr. Tanya. Thank you. Do you mind introducing a little bit yourself to the audience and and and your background and interest in fasting? Sure.

So I'm currently the section chief for the Genitourinary Cancer Program at City of Hope. So I'm a medical oncologist who specializes in geomalignancies and particularly in the treatment of prostate cancer, as well as research in immunotherapy for prostate cancer.

But also, I've been interested in empowering patients with tools that they can use to help promote their own health during their prostate cancer journey, which has included exercise.

And then also the work that I started back when I was at USC working with Valter Longo, looking at fasting and fasting mimic diets and how they might be useful in the setting of cancer and hopefully we can also mention some of the ongoing work that we've brought over to the City of Hope in this arena.

Why Fasting Matters in Cancer Care

Yeah, fantastic. So probably people listening here to us are wondering why what what's the relationship between fasting and cancer or cancer treatment.

And in, if you can, a little bit discuss why fasting is interesting and here, what does it do for a cancer patient? And then what could be the benefits?

So when Valter first approached me, his data were extremely compelling. He had done some work in the lab showing that fasting is a really strong environmental signal that normal cells react to in a profound way.

So by saying to intervene when you say, Valter, this is Professor Valter Longo. Sorry. Yes. In Southern California. Yeah, no problem. And hey, most people know about Valter Longo No need for introductions and if you if you Google Valter Longo is a prominent leader in longevity nutrition and nutrition for food is medicine in the last time I had repeated him, he was the number one expert by tangibly in longevity, nutrition and number one in fasting in the world.

So but undoubtedly, I mean, it's his passion and he he sort of lives it. But he he's the one who really brought the science to my attention and has done a lot of the science, right.

So a, a few people know his work on the book, The Longevity Diet. So for for most here, we're going to talk a lot today about fasting, fasting, interest in cancer and a lot of it is going to be in this book, the longevity diet, life changing book for if you're healthy and you want to eat for longevity, or if you have one of the big four chronic conditions, very enlightening book of what you should do and what you should eat and what and when not to eat.

So please go ahead. And so the data initially that he showed me were about how these thousands of genes get upregulate or downregulated in the setting of fasting in normal cells.

But the same is not true in cancer cells. And so it looked like fasting was a way that one could protect the normal body against toxic treatment, such as chemotherapy.

And so we initiated a study to see if cancer patients receiving chemotherapy could fast and if so, did it induce these protective changes? And the goal was really to give patients a tool they could do themselves to, to be part of their care and to potentially enhance their cancer treatment by reducing side effects.

And that might allow them to continue to get their treatment at full dose and on schedule. So that was one way we thought it could actually help against the cancer as well.

Of course, reducing suffering during chemotherapy treatments, an important goal in and of itself. But we also were we're hoping that this would be something that would help make the treatment work better.

You know, eventually, I think the science evolved to show that some cancers may actually be sensitize to chemotherapy in the state of fasting. But initially we didn't know that. And, you know, that still remains perhaps to be further delineated which cancers might be more susceptible.

But it looked like fasting was something that could be done. So in our Phase one study, cancer patients could fast for up to 72 hours. And that was broken down 48 hours before chemotherapy and 24 hours after it induced the metabolic changes that seemed to be a hallmark of being in a protected state.

And we saw some preliminary evidence of protection. We were launched into a phase two trial with randomization, but that's that was a little bit harder to complete.

And what we realized is fasting is hard. You know, both are social need to eat with each other. Our biological clock of our day kind of revolve around eating something.

And so the fasting mimic diet was a great idea because it allowed patients to have something several times a day. So it was a specialized nutrition that could induce a similar kind of protective state as as pure fasting.

That's something that was a lot more widely acceptable and tolerable. It fit in with the premise and our little bit here categorizing maybe to to the audience.

The premise is you fast right before the chemo or right before the immune therapy and right before the intervention.

How Fasting Protects Normal Cells

It was chemotherapy. And yeah, it's 48 hours right before the infusion. Yeah. And these would be 48 hours of water fast. And why to do so what what could be the three or four benefits of doing that for it.

For the patient before getting the chemo or the, the, the autoimmune, the, the immunotherapy or the tyrosine is because now there is studies in Europe and in the US office of fasting was so many intervention in so many different patients.

Yeah. Specifically for chemo we know it does DNA damage and you can actually measure that. And so we looked at patient's own white blood cells to see whether less DNA damage was being done after exposure to chemotherapy because of the fasting.

And that was something that we saw with 48 hours of fasting before chemo and not was 24 hours. So we didn't have a control group of no fasting, but 24 hours maybe wasn't quite enough to induce the protective state.

So one benefit is less damage to white blood cells, meaning less suppression of the immune system, which is one of the biggest complications of chemotherapy.

People can get very sick with an infection, so preventing that would obviously be a huge benefit for patients. We were hoping potentially to see less nausea, vomiting.

So, again, quality of life, less suffering during chemotherapy. We were hoping that potentially some of the kind of irreversible side effects, such as neuropathy, numbness or tingling in fingers or toes, we could protect the nerves.

Then by having the fasting or the fasting mimic, they induce a protective state that that would be a huge benefit for survivors of cancer. So these were, you know, hypothesized.

We saw some preliminary data, the more definitive study where we were looking specifically at things like neuropathy in the setting of prostate cancer with the specific chemotherapy that randomized trials still has not reported out.

So I don't want to overstate that we saw these benefits, but those were the ones we were really looking for. And I want to dig a little bit deeper into the science of why why to do either a two day of water fasts or afterwards.

I think the studies involved patients were finding it difficult and obviously doctors were concerned to put the patient in, which sometimes they're frail, sometimes they they started a few cycles and they seemed like they lost weight.

They don't want to put them on a water fast. And and by the way, this is this is the essence of why the fasting mimicking nutrition was the fascinating thing that was even developed by Professor Valter Longo in the USC and L-Nutra the entire goal, the way this discovery started in a couple of decades, of course, now ago, is to feed, nourish a cancer patient while keeping the fasting signals and the metabolism in the cells.

So this is this is so important to us here because that's the essence of our our research. And now 18 universities across the globe are testing that fasting, mimicking nutrition for diabetes, for cancer, for Alzheimer's or other conditions.

But it all started with cancer. It all started with what you're reporting, which is Professor Walter Longo in his labs and then in mice. He was saying that if you fast them on water.

And again, we developed the fasting nutrition because humans didn't want to fast and water. But the premise is you do to two days in water or four days with food.

The fasting mimicking attrition to induce the fasting benefits on cancer patients. And and those benefits as you mentioned, you know, they start with, you know, chemotherapy with chemotherapy hits cells in replication.

And when you fast the normal cells of the body, they hibernate and therefore they go off replication because there's no growth signals, there's no and therefore they are spared the side effects.

What you mentioned then, the neurological side effects of the GI or others in hair and immune cells. So the the premise was if we fast before chemo, when the normal cells go off replication and be spared the side effects, cancer by definition is a cell that keeps going, doesn't know how to stop.

So cancer would be preference really hit by the chemo was sparing the side effects on the normal cells. And this is a phenomenon that talks about what the longer described as a differential stress.

Resistance is a difference with how the normal cells in the cancer would respond than the chemo because that fasting is separated them. They had normal cells, they and after replication you would be spared cancer.

There's not to do that. So they will be sensitized to the chemo and that that was one of the promising in at least increase the efficacy of the standard of care with that.

Right and that difference you point out that the cancer cell is not protected with so important because people have been concerned about just throwing antioxidants or other pharmaceuticals in the mix that maybe protect the normal cells, but also could protect the cancer.

So that difference in that behavior was really, really important. And then the nutritional signals seemed to create such a more profound effect.

Fasting Mimicking Diet and Immune Effects

I mean, there are you know, pharmaceuticals can target one pathway that might be part of cell metabolism, but it's not the same as the profound amount of changes that can be induced with this this approach.

So there was the benefit, number one, the theory of why fasting I'm trying to categorize it for people, you know, not specialized as we do doing this, but just stress exposure.

So hopefully sparing the side effects on the normal cells. Number two, sensitizing cancers so that the standard of care that we're providing is little bit optimized, a little bit enhance.

Number three is we were seeing a lot in mice and now actually the early trials are showing the same. There's two big European trials showing the rejuvenation of the immunity and the better immune attack on cancer.

We know that fasting induces changes in white blood cells and rejuvenates immunity and in mice. We saw infiltration of immune cells into the cancer. And now in Europe as well.

Professor Ranieri in Italy and the Institute at Emory actually published a couple of articles in top European journal showing infiltration of women in a better excitement of immunity to attack cancer.

As we know, cancer is a chronic disease of the immune system, just gets used to it. Although the cancer cells are not very differentiated and there's a lot of inflammation around it, it ends up just coexisting with the immune system.

And the third premise that Dr. Longo had was creating the fast mimicking diet is can we really excite immune system to help same way immunotherapy does to help, you know, better attack on cancer.

So these were the three four benefits and the premise and you were from the early days, I think were you the primary investigator on the on the first fasting mimicking nutrition trial in humans with Longo?

That's right. And we always wanted to look at the impact on the immune system. So many of our cancer treatments these days are immunotherapy and some of the best ones, some of the ones capable of creating durable remissions, but they don't work for everyone.

And the big question has been, how can we make them work better for more people? And one thing that's come out is that the microbiome seems to have a huge impact.

And so that's one mechanism that could link the the fasting mimic diet to being something interesting to study in the context of immunotherapy as if it can shift the microbiome in favorable ways.

That seems to be something that in multiple different cancers has been associated with an enhanced response to immunotherapy. Fantastic. And I think since this is 12 to 14 years ago now and since then, there have been around eight articles published or eight clinical trials in on cancer.

I think the University in Ireland published the prostate cancer trial and prostate campaigns where you focus on it can have a double benefit because the patients, many of the patients end up dying from cardiovascular

complications or cardiovascular disease, getting the testosterone therapy and then just being in chronic disease in men, this is how they can is still the number one reason how they die.

And and look at the fascinating reconstruction benefits potentially for the treatment. But as we know, there's a lot of established data on using the classic nutrition just, you know, three or four times a year, just for country metabolic reasons.

So there's a double stripe there. Right. The study that Valter Longo did in normal, healthy subjects suggested that there were all these changes in metabolism that could promote longevity and reduce chronic disease.

You know, things like insulin resistance and these cardiovascular sort of parameters. And that always made me very interested to study it specifically in prostate cancer, where we one of the cornerstone treatments is to lower testosterone, and that induces all these negative metabolic changes.

You know, men gain weight, they gain fat around the middle, their cholesterol gets worse, their blood pressure, they become insulin resistant. And, you know, and and clearly, nutrition plays a role there.

But the profound changes that we saw in that study that that Dr. Longo had done in in kind of normal, healthy subjects, really provided compelling evidence.

And so we actually have just received funding as part of a MULTI-CENTRE grant to study the fasting mimic diet in men with prostate cancer who are getting hormone therapy.

Because we think this is going to have profound potential to protect against that increased cardiovascular risk that we get from androgen deprivation therapy.

But also, as you allude to a bit, that the cancer is is potentially feeding on some of these negative metabolic changes. So insulin like growth factor can stimulate prostate cancer growth.

So suppressing it by doing a fasting to make diet maybe not only protects the patient against these conditions that predispose to heart disease, but also might help weaken the cancer or help stop feeding its growth and its progression to castration resistant.

So we are super excited. Friedland at Cedars Dr. Lynn at Duke and myself that we're going to be putting this into a clinical trial for patients using one of the all neutral fasting mimic diets.

Prostate Cancer, Hormone Therapy, and Metabolic Health

In anyone listening today if you want to participate then I didn't know actually about this that the the that that you just got the grant and would be very happy to support obviously and everyone anyone who wants to participate feel free to reach out to Dr. Tanya Dorff and I am my sorry I came I came from I think medicine and traditional treatment based.

And then I'm very interested in nutrition, as you know, and fasting in one of one of the surprises I had is there's a GM oncology, which is one of the top three probably oncology journals in the world.

There's an article in 2016 about intermittent fasting, just 13 hours and breast cancer. And I don't know if you remember that one, but it's it's a target of oncology that there is reporting at trial.

And it was observational, but there were thousands of women there and they were just categorizing them. And the ones that, you know, typically spend 13 hours plus with no food.

So just simple intermittent fasting. We're not talking about the two, three days. We're not talking about the long term fasting, the benefits on immunity, etc..

It's just intermittently starving that cancer, not feeding it all the time. Right. Because today there's a big in oncology in the traditional approach and the doctors and the patient are not really in-depth depth in nutrition.

The goal is like make sure they eat a lot because they're going to lose the weight. And we're feeding cancer first and foremost because that's the fastest growing organ.

And it was fascinating to see that women who had 13 hours or more of fasting, they had a statistically significant decrease in remission rate. I mean, it was like unbelievable.

They did have overall survival difference, but it was 13. It wasn't designed to ask them to go longer. It just was pure observational. And every extra hour of fasting was adding to the decrease in chance increases the chance of remission.

So it increases the chances of remission. So it's such a simple intervention. It's such a powerful I mean, we spend billions and billions of dollars to find one medication that can help a little bit with remission, with a lot of side effects of a lot of donors and the health system and a lot of risk of short of that.

And here comes a very simple concept. Do not sit and eat all the time because you're feeding cancer first. That's what is the fastest growing organ with you have it right and it's simple and there's thousands of people.

It's published in JAMA Anthology and it's just frustrating sometimes where this simple information and very powerful yet doesn't get disseminated and adopted by by many or most doctors and patients in here.

But I just wanted to highlight this, to say it's not just the prolonged fasting or the passive and beginning nutrition, but even simple intervention like don't feed your cancer all the time and you don't need to go and drink high protein drinks that they show on people because they're just feeding cancer.

You get it. Turn your diet into a little bit more plant based. You don't, you know, eat short term cards and spike your insulin because that's going to push the growth.

You don't want to eat super high protein in a diet because it's going to feed cancer, it is going to feed IGF, make sure you have the healthy fats and the balance mix of plant based sources of proteins and carbs.

And that can I mean, as simple as 13 hours of no food, meaning an extra two, 3 hours in the morning is changing remission rate. Imagine what what nutrition could do as a as a support to the cancer care.

And we should definitely do a summit on that on nutrition for cancer. We we we studied big time nutrition for cancer. Dr. Longo is going to come up with a new book, by the way.

And in the third quarter of 2024, what's going to talk about nutrition and fasting for cancer? It's such a big intervention and an important one. We're seeing fasting in nutrition impacting cancer, but enhancing the standard of care.

We're not here to replace standard of care or go wrong. This actually works very well together. And and hopefully, you know, people like you and other oncologists will join to do trials and generate more and more data so that we know what to use, when and how.

But it's very exciting and very promising.

Time-Restricted Eating and Radiation Therapy

Yeah, I'm glad you mentioned the time restricted eating or intermittent fasting approach because it is something that I think a lot of patients find more accessible.

And we have been studying this in the setting of radiation where timing seems to be particularly critical. So Dr.

Rose Li is a radiation oncologist at City of Hope who's been interested in oxidative stress and is applying the time restricted eating or intermittent fasting for patients receiving radiation in the pelvis.

So not just prostate cancer, but also something like rectal cancer to see if that allows the normal organs that are in the field to be better at repairing the damage of radiation, that there are fewer late toxicities.

But of course, you know, it would also be interesting to see how it factors into the cancer response. It's just that's a little bit harder to prove. It takes a bigger experiment.

So I these are really interesting signal finding studies where we're hoping to learn, you know, we've looked at chemo, we're going to look at hormone therapy.

Radiation is another setting that can make a lot of sense, but you can't do four days or five days or 72 hours once every few weeks when you're getting radiation every day.

So there that that timed approach. So she's having people not eat before the radiation for a set number of hours and then after the radiation for a set number of hours and then put their eating all into the restricted time.

That's fantastic. I cannot, as a practitioner, wait to see or as a physician, as a scientist and obviously excited about fasting and fasting nutrition.

To see the results of these trials, I think they're going to be game changers for hopefully actually for a lot of patients around the world. Dr. Dorff, any other comment before we conclude here?

No, I thank you for bringing attention of this important topic. I think you're right. It's a shame that as more and more data come out, physicians maybe due to time pressures or not seeing the data, don't share this with patients.

Closing Thoughts on Nutrition and Fasting in Oncology

I do know patients go look for it and find it on their own because patients really want to help themselves get better. And this is a really simple and powerful approach, as you've said, that patients can can look to.

So hopefully as more and more data come out, more physicians will include nutrition and potentially fasting approaches as something they talk about with their cancer patients.

Well, thank you very, very much and appreciate it very much. Thank you.