

June 7, 2022 Patient Education Webinar- Nutrition for Pemphigus and Pemphigoid

Amethyst: Welcome, everyone, My name is Amethyst Yale and I am the Community Engagement Manager here at the IPPF. Thank you all for joining us today. Today we're joined by Dr. Jun Lu from the University of Connecticut for today's Patient Education Webinar. This call is now being recorded. I'd like to thank everyone for being on the call with us today and to our sponsors, Genentech, argenx and Cabaletta Bio for making today's call possible.

“Information is a key factor in treating and living with any condition. However, every patient's situation is unique. The IPPF reminds you that any information found on the Internet or during presentations should be discussed with your own doctor or health care team to determine if it applies to your specific situation.” Now, I'd like to introduce our speaker for today. Dr. Lu graduated from China Medical University and did her residency and research training at Mayo Clinic, Rochester MN. In 2010 after finishing residency in dermatology, she joined the Department of Dermatology, University of Connecticut as a faculty. Dr. Lu practices general dermatology, specializing in complicated medical dermatology including autoimmune bullous disease and autoimmune connective tissue disease. She also leads the clinical research and clinical trial unit in dermatology, and is a principal investigator of multiple clinical trials and clinical studies on new therapies for inflammatory skin disorders including bullous pemphigoid. And now I'd like to go over a few housekeeping items...(Reviews Housekeeping slides)

Amethyst: Now, it is my pleasure to introduce Dr. Lu to discuss her study on PTSD in patients with autoimmune blistering diseases and to answer your questions. And we will hand it over to you, Dr. Lu.

Dr. Lu: Hello everyone. Hopefully everybody can see my slides. So today our topic will be nutrition and blistering disease, particularly pemphigus and pemphigoid. But before we talk about food I would like to do a very quick review of these two conditions. Obviously, they all cause skin blistering but they are also very different. And you may have one of these types and it's good to know some of the background knowledge of what is the difference between two of them and what we should do. So those are two hallmarks of autoimmune blistering disease. This is the skin structure. You may already know that our skin has three big layers, the epidermis, the top dermis which is the mid layer, and subcutaneous fat. And your condition is happening on the very top layer. And the top layer also has several sub layers. There are several layers of keratinocytes, the skin cells and they all glued together and also the hook to the basement membrane which is the layer almost like the foundation that connects the epidermis and the dermis.

Dr. Lu: So here is where your condition is coming from. For people who have a bullous disease you can imagine all the skin cells are like little bricks piled up on each other and to keep the

bricks in place there is glue to glue them together and also there is glue to glue them to the basement, the foundation. So patients that have pemphigus vulgaris, your body produces auto antibodies that break down the glue among these top cells. For bullous pemphigoid, your body produces auto antibodies that target or damage the glue, that glues the top layer bricks to the background or the basement membrane or the foundation of the epidermis.

Dr. Lu: If you have pemphigus vulgaris, your condition, as I said, is caused by all those top bricks falling apart, you have circling antibodies against the antigen called desmoglein 1 and desmoglein 3. If you look at the really, really enlarged picture from the dermatoscope or the microscope, you will see all these little hooks starting to fall apart and separated. You tend to have more painful blisters. For people who have pemphigus vulgaris you're more likely, most of you will have mucosal involvement, which means you may have painful sores inside of the mouth on the tongue and sometimes back on the throat. In rare cases sometimes even all the way down to the esophagus and you're more likely to have pain from eating and drinking. These are just a few pictures.

Dr. Lu: Then obviously, the biopsy is the diagnosis. You will see the separation when they do the immune staining and you will see where it stains. It stains like a little fishnet, all around the derm cells. It tends to affect people a little bit younger ages for pemphigus vulgaris. But for bullous pemphigoid and tend to have a lot more cases. It's a lot more common compared to pemphigus vulgaris as it tends to affect patients that tend to be a little older, usually 60 year and above and it tends to have more large blisters. Not all of you guys will have mucosal involvement or sore inside of the mouth. A small percentage of the people who have bullous pemphigoid, in general less than one third of people, will have sores inside of the mouth and throat and they tend to be the milder cases. Most patients experience extreme itchiness and your blister tends to be itchy more than painful. And these are just some of the pictures.

Dr. Lu: Again, the skin biopsy your doctor will do to show the separations. When we do the immune staining that's what separates the pemphigus vulgaris and bullous pemphigoid. In terms of diagnosis, they stain the basement membrane, that's where the foundation is.

Dr. Lu: So the treatment for pemphigus and pemphigoid are very similar. So usually, if you just have a localized disease, you will get some topical steroids and for people who have more widespread conditions, more blisters and sores, your doctor tends to put you on prednisone by mouth, coupled with other non steroid immunosuppressant, because it's not safe to be on steroids for long term. A lot of the old fashion medications that have been used for many years are Azathioprine brand name Imuran, Methotrexate, Mycophenolate has been used a lot which is also called Cellcept. Also for moderate, not very severe disease, your doctor may also recommend Tetracycline plus Nicotinamide. We will talk more about this because Nicotinamide is a vitamin while tetracycline is an antibiotic more for their anti-inflammatory properties. For

more severe conditions, which has been used more and more often these days, your doctor may set you up to get it IV infusion called Rituximab which is a monoclonal antibody CD 20, which is the marker for B cells, which basically wipes out the mature B cells were produced, the antibodies. They also may put you on IVIg, which is a pooled immunoglobulin, which neutralizes the autoantibodies you produce in your body. These treatments can be used either separately or together. So those are a really quick wrap up of what you might want to know about your conditions. And then next, we'll move on to talk about the role of food and nutrition.

Dr. Lu: So it goes back thousands of the years, Avicenna who is a very well-known Persian physician and a philosopher, noticed that certain food may cause whats called "hot swellings". He put it into a chapter in the book, The Canon of Medicine, and said, some of the foods, particularly some of the spices, onions, and garlic, leeks, peppers, and some of the spicy food and wine, cause people to swell up on their skin and that might be painful. So, in today's world from a scientific point of view, what's the role of food and nutrition? There are 3 different perspectives we will talk about separately. So first, food as the trigger of the condition, which means you've noticed, some people recall certain food that starts their blister, or some people noticed that after their diagnosis, certain food made their condition worse. So these are called triggers. As you already know, the majority of people with pemphigus vulgaris, or about one third of people with bullous pemphigoid have a variety of extent of the sores inside of their mouth. It could be on the top a lot, on an area called buccal mucosa, inside of your cheeks and sometimes on the palate, and down to the throat, in the rare cases, even esophagus, that can make it very painful when you eat and drink to the point it limits your food intake, and people can have nutrition deficiency because you don't have a very good, well balanced diet because of the pain. The third aspect of the relationship between food and your condition or disease is food as potential treatment. We will talk about these aspects starting with pemphigus vulgaris first.

Dr. Lu: So first we're going to talk about nutrition and pemphigus. So, first, we'll talk about the triggers. So well-known triggers for pemphigus are more in the family of spices. Onions, garlic, leeks, chives and shallots, which are these small oval shaped onions. They are used a lot in a lot of ethnic food or Mediterranean food. In areas that tend to eat a lot of spicy food, they're almost very common in everyday diets. What do we know about these foods? So we know, all of these foods share a similar feature that they contain thiols and disulfide, which are chemical structures that can cause or trigger pemphigus. Some of the scientific evidence shows that when you have normal skin cells and if they put them into a Petri dish into what we call self cultures and culture them with some of the garlic compounds containing thiols and disulfides, the scientists observe that there underwent some degree of the separation among the cells. Also a lot of patients with pemphigus recall these foods as triggers either before or at the beginning of their condition or during the condition that causes the flare ups. Geography location and certain cultural groups that eat a large amount of garlic seems to have a higher incidence of pemphigus vulgaris. Another big food group that has been shown to be a trigger of pemphigus are foods that contain tannins. Shown in this picture are berries, black pepper, mango, nuts, red wine, tea, and chocolate. Those are all supposed to be healthy foods but

unfortunately these foods contain tannic acid. They form complexes with irons and they can have antioxidant effects, that's why they were considered to be a group of food that should benefit you in terms of health because of the anti oxidants effects. But what do we know about the scientific evidence whether they trigger pemphigus? Not a whole lot. There are a few small scale, very early, preclinical research but so far there's really no double blind studies or large scale epidemiology studies, showing these foods truly trigger pemphigus. But they are isolated a reports that and people recall these may be triggers . In what we call in vitro studies, they take some of the blister fluid from the pemphigus, and they show an increase in the concentration of tannic acid. But whether these directly come from the food intake, we don't know. Also in the culture, so of breast tissues in tannic acid, they can cause skin cell separation. But whether you just take food with this, will really translate into increased tannic acid into skin tissues that can cause skin separation, we do not know.

Dr. Lu: So, other isolated reports for food triggers for pemphigus include tomatoes because they're cinnamic rich. Other than tomatoes, some of the other citric acid foods, like oranges can trigger pemphigus. We don't know the mechanism, but it can also just be because they can be more sort of irritating when you have an open sore inside of the mouth, rather than a specific mechanism, it could just be a generalized to irritation. For walnuts there are some isolated reports, people with pemphigus have walnut allergies and when you eat walnuts it can make your pemphigus worse.

Dr. Lu: So next level we'll talk about nutrition deficiency in pemphigus. So as we just said, a lot of people, the majority, actually of the pemphigus patients first presented with sores inside of the mouth even before they had the skin sores. And they can be very painful, affecting the throat all the way back down to the esophagus and affecting people's eating. And sometimes they can even cause mild nutritional deficiency. Some studies have shown that these patients have low vitamin D levels and sometimes low in certain micronutrients, like I think zinc, selenium and copper. So, it's very important that if you do have painful sores limiting your food intake, it is very important to consider taking some of the supplements containing vitamin D, zinc and some of the micronutrients. And try to be cautious because you don't want to limit yourself from a lot of things, instead you should eat a well balanced diet and nutrition that contains plenty of the proteins and carbohydrates to maintain good nutrition status while just trying to avoid some of the triggers we just talk about. You shouldn't be extreme about limiting your food because that could only make things worse.

Dr. Lu: So, what foods can be used for pemphigus treatment? There are just a very small studies showing high doses of vitamin A. There is a medication called Isotretinoin that is a derivative of high dose of vitamin A and there's a small study and a few case reports showing that may help a specific type of pemphigus called IgA pemphigus but it still has to be proved in a large scale study . Vitamin D as I said, a lot of the patients have low vitamin D levels and also the majority of the patients have undergone a period of prednisone treatment which can cause people to have osteoporosis. So regardless you should probably consider vitamin D

supplements about 600 to 800 international units as a preventative or prophylactic treatment. Study show, pemphigus patients even though they sometimes have a good amount of sun exposure may still have low vitamin D levels. Nicotinamide is a hot topic these days. It is a form of vitamin B3. There are both pre-clinical and clinical studies, showing vitamin B3 can calm down the inflammation in the skin. As a matter of fact, it has been used to treat several inflammatory skin conditions, not only in blistering disease but also in connective tissue disease and people with sunburns and people that have rosacea et cetera, et cetera. So there are studies actually in Europe in which they did a real good, randomized, double blinded study that tested Nicotinamide together with Doxycycline and they did show a good response for mild to moderate conditions but often not enough in people who have very severe disease. Doxycycline, even though it's an antibiotic, a lot of the study shows it has strong anti-inflammatory properties. So in this case they are used together with Nicotinamide for an anti-inflammatory effect.

Dr. Lu: So next we'll move on to talk about nutrition and pemphigoid. So food triggers for pemphigoid are actually pretty rare. Only single case reports have been reported, which means that in isolated cases people will report here and there. There's no large studies, there is really no good scientific evidence to prove that cases come with food allergies. I remember one of the questions on the list to say, some of the patients did switch to a gluten free diet, or a dairy free diet, thinking that may benefit their blistering disease. Number one, there is really no strong scientific evidence to support that gluten sensitivity or milk allergies are really causing pemphigoid, but there are studies that show, if you happen to have milk allergy or gluten sensitivity, trying to stay away from those foods can decrease the amount of flare ups. So the relationship is not clear but I would not recommend people just trying to stay away from dairy products or a gluten free diet. I don't think there's enough scientific evidence to support that. If you truly have a gluten sensitivity or milk allergy, if you strictly follow your doctor's recommendation after your diagnoses, that may at the same time benefit your pemphigoid. And there are other reports saying people who have a nickel allergy, if they have contact with nickel or eating nickel-rich food, may cause more flare ups. Again, I don't believe there is a clear message that you should unanimously or universally try to follow these food restrictions, unless you have been diagnosed or there is clear evidence you have allergies to those things. In terms of tomato and garlic again, this is more of an irritant because all the spicy food, and citric acid food, as cinnamic acid food tends to irritate anybody who has open sores. So, if you do have active, open sores inside of the mouth, you may want to try to stay away from those types of food.

Dr. Lu: Nutrition deficiency in pemphigoid is relatively rare. Again, as I said only a small percentage or number of the patients with bullous pemphigoid have open sores and they tend to be milder and respond to the treatment better. However, there is a one specific type of pemphigoid called cicatricial pemphigoid that can have severe scarring and blistering particularly targeting the mouth, the eyelids, and people can have scars all the way down to the esophagus causing constriction or tightening of the esophagus making it harder for them to

swallow. In this case a lot of time people have to really eat not only bland food but food really mash it into very soft and small quantities. And for this group of patients, it is very common that you may have nutrition deficiency and low albumin level. Albumin level is a good marker for whether people have malnutrition. Again because of the prednisone, the steroid, sometimes limited food intake. A lot of patients can have low vitamin D levels. So what can we do to help the treatment? It's very similar to pemphigus, people should consider taking vitamin D supplements, 600 to 800 international units, to help offset the side effects apprentice on to your bones and also to help with the possible low vitamin D levels from the not so good nutrition status. Nicotinamide has been used quite often again for the fact that it can calm down the inflammation and often use it together with doxycycline.

Dr. Lu: So to wrap up for this small talk, the take home messages will be, when you do have active sores inside of the mouth you should consider avoiding irritating food like onions, garlic, peppers, tomatoes, certain nuts, wines, and berries. You should continue to maintain a very good nutritious well balanced diet. That can be difficult and sometimes it requires you to be creative, although you may want to limit some of the most tasty food, especially with some of the most tasting spices. But you have to be creative so sometimes the food tends to be a little bit more bland and some people may require you to smash the food into small pieces. But regardless, you should eat just as well with a good amount of protein and carbs to maintain a good nutrition because when you have open sores, the healing of the sores requires you to have some good nutrition and that's very important. A lot of studies show vitamin D deficiency is very, very common and also is a common side effect from your steroid treatment so you should probably consider taking vitamin D supplements on a regular basis. You may want to talk with your doctor about trying out Nicotinamide with or without doxycycline and these are over the counter or available by prescription. Also, there's really no strong evidence showing that you should eliminate dairy or gluten from your diet unless you are already diagnosed with gluten sensitivity or allergy to dairy products, you should certainly follow those instructions. But again, the human body is very complicated and everyone is different. A lot of times you have to do a try and see and if you definitely see when you eat certain foods your blisters are really flaring up, follow your instinct because you know your body better, and let your doctor know because that could be a learning experience for us, too. And I think that will be the end of the presentation. I'll be ready to take some of the questions. Thank you.

Amethyst: Great, thank you so much Dr. Lu That was very informative. We're getting a lot of questions, so I'm going to just hop into those. Janet asked, are these recommendations also the same for pemphigus foliaceus, I know you did not mention that subtype.

Dr. Lu: Yes, pemphigus foliaceus is a subtype of pemphigus vulgaris. Luckily, you will not have sores inside of the mouth, because it doesn't target desmoglein 3, which is the auto antibody particularly in the mouth. So you are lucky in that case. It wouldn't affect the way you eat. However, we know that pemphigus foliaceus tends to affect the face, chest and more sun

exposed areas. So you are more sensitive to the sun. You may notice a lot of time, too much sun exposure makes you or your skin flare, so you should be careful. Maybe you should consider wearing sunscreen. Also, certain food and medication may make you more sensitive to sunburn. People using too much of Vitamin A can make you sensitive to sun and certain blood pressure medications make you more sensitive to sun and that can cause you to be more sensitive to flare ups.

Amethyst: Thank you. Sue says they have experienced some weight loss due to the sores in their mouth and are finding it hard to eat. What can they do to help keep their nutrition and maybe gain some weight back?

Dr. Lu: Yeah, that's very important as I said, when your skin is trying to heal, you really need good nutrition. That is very hard, it depends on your nutrition. I have a couple of patients who have significant esophageal involvement to the point their esophagus is constricted very small, to the point that it really requires, what we call multidisciplinary care. You not only need your dermatologist, you need your GI doctor, which can do a scope to see what's going on. Because what we can see is inside of the mouth but they can see if you have sores all the way back down to the throat and esophagus. If that's the case, that really impacts how aggressive the treatment needs to be. If that's the point, you really have to talk with your doctor. They need to be more aggressive in treating those, to settle down the pain and to settle down the sores. And sometimes the GI doctor has to go in to do scope to dilate the esophagus, so that you can keep the food down. And if needed, you need not only systemic treatment but also local treatment. The swish and swallow, the steroid, the immune suppressant that can be put into a liquid that you can rinse your mouth with and even swallow to help settle inflammation down the throat to help you to be able to eat better. You also probably need a nutritionist to sit down with you and really design the food that can be bland but still tasty and really nutritious. Higher power food with a lot of protein and if needed even protein powders to help maintain the nutrition levels so that your body will be strong enough to fight off the condition. While, at the same time, you have to really try to avoid anything that may cause the pain to get worse. That's a really tough condition to be in. So as I said, you really have to work with your doctor, the nutritionist and even your GI doctor to design a good food regimen for you that is tailored to the extent of your condition. At the same time, trying to aggressively treat not only the skin but also all the way through your mouth all the way down to your GI tract.

Amethyst: Great, thank you. On that note, do you recommend that patients keep a food journal to keep track of what might cause their inflammation or a flare?

Dr. Lu: Yes, I think that's a very good idea. As I said, even though there's really a lack of very strong, solid, scientific evidence, a lot of patients report randomly eating something and that food makes it worse or eating another food and it makes them better. But from a doctor's point of view, because we have to practice based on evidence, we cannot blindly recommend you do

certain things. But the human body is so complicated. I think a food diary is a good starting point if you want to really figure out if certain food makes your pain worse inside of the mouth or maybe your blisters worse. For people that have to take prednisone for a long period of time you may also have GI reflux and that has to be taken care of otherwise it also affects the absorption of the food. So keep a food diary so at least you will know what exactly works for you and follow that especially if they are becoming a repetitive pattern. That will give you more confidence to know whether certain food is beneficial or more destructive, or make it worse.

Amethyst: Great. Thank you. Speaking of prednisone, somebody said that they've been taking it for three weeks now, and I know a lot of patients will be on high doses of prednisone. Are there any supplements that you recommend they should be taking on a regular basis with prednisone?

Dr. Lu: Yeah, there's a lot of studies showing if you take prednisone at a mid to moderate dose like a 20 milligrams or above for longer than four weeks to six weeks, you definitely need vitamin D supplements and calcium supplements because they weaken your bones. So it should be standard. Vitamin D of 600 up to 1,000 IU and calcium 500 to 1,000 milligrams every day that's a must. And also as I said, prednisone can cause reflux. People can have heartburn not only affecting absorption of certain food can also cause pain and limit your eating. So if that happens, you need to talk with your doctor. They may have to put you on pepcid or omeprazole or some of the medications that help with the reflex.

Amethyst: Great, thank you. Katherine wrote in and asked, is there a difference between Nicotinamide and Niacinamide and?

Dr. Lu: They're very much the same.

Amethyst: David wants to know, Is there any link between low magnesium, along with doxycycline and prednisone?

Dr. Lu: I have to be honest, I'm not sure about the magnesium part. If you have malnutrition because of eating you may have low magnesium. But in terms of doxycycline, I've never really put people on magnesium supplements when they are on Doxycycline or Prednisone. So I have to be honest, I'm not sure about that. I have to look it up myself because at least in my everyday practice, I never really put people on those supplements.

Amethyst: Great. Thank you. Sarah wants to know, What is the recommended dosage of Nicotinamide? I don't know if you had mentioned that before.

Dr. Lu: Yeah, those are usually 400 to 500 milligrams twice or three times a day.

Amethyst: Thank you. Chris wants to know, is it recommended to take omega3?

Dr. Lu: That's a really interesting question. So omega3 has what we call an antioxidant or anti-inflammatory effect. There are studies showing omega3 intake helps with psoriasis and sometimes connective tissue disease. But there's really no good report about omega3 and blistering disease interestingly. But personally, I feel like it doesn't hurt. It may even benefit you because it does have good vitamin D. If you eat certain omega3 rich foods like salmon they are rich in vitamin D and rich in calcium and proteins. So, a lot of omega3 foods are very rich in nutrients. It won't hurt, it just doesn't have much scientific evidence whether it will truly benefit the treatment.

Amethyst: Okay, thank you. Somebody wants to know if there's a difference between the vitamin D that they get from the sun versus like a vitamin D supplement that they take?

Dr. Lu: That is a very good question too. Supposedly what you get from food tries to mimic what your body has made by themselves. So basically the sun exposure acts as some of the precursors of an active form of vitamin D and it needs another process in your kidney then can circulate in the blood. What you take as a supplement should be very much similar. But there are some studies that show that people seem to respond better if they get a little bit more sunlight, that the vitamin D that you acquired from the sun from your skin, your own body seems to work better than just taking supplements of vitamin D by itself. To the point, sometimes you will see your doctors will give you a maintenance vitamin D at a level of 600 to 1000 international units and it can take a long time for the serum levels, when they do the lab tests, to see the vitamin D levels going up it's usually I would say less of an efficient way compared to the natural way. Your doctor might even give you a very high dose of vitamin D of a monthly dose for a couple months to try and boost it up. So, they're not exactly the same. But again to get vitamin D from sun exposure has its limits. For a fair-skinned person it increases your risk of skin cancers and, as I just mentioned about pemphigus foliaceus patients are very sensitive to sun. So that really limits your choice. Also certain groups of bullous pemphigoid patients see that UV light actually triggers their blisters. You have to be very careful. So sometimes if you have these conditions you can't overdo the natural sun exposure. So taking vitamin D supplements is a safe choice and should be done regardless. And if you could, I would say moderate sun exposure, 20 minutes a day if it isn't affecting your skin issues. For a fair-skinned person that time and for a darker skinned person that time can be prolonged slightly longer to 30 or 40 minutes a day. But you shouldn't really be under the sun in the summer between 10 AM to 2 PM or lying on the beach, that should never be done because that can cause bad blisters. If you have sun blisters it almost often will flare up your blistering

disease. So that should never be done, even if you decide to get some sun exposure. So it should be gentle, early morning or early evening gentle sun exposure.

Amethyst: Great, thank you. We talked about deficiency, Debbie asks when you're doing your routine check up with PV should that be combined with regular blood work to check those vitamin levels? How often should patients be getting their vitamin levels checked when they do bloodwork?

Dr. Lu: Yeah, that's a very good question. In general if you have bullous pemphigoid, itchy blisters all over and it doesn't really affect you or you don't have sores in your mouth and it isn't affecting your eating or a mild cause of pemphigus vulgaris. Or if you don't feel like there is significant weight loss it's not really a standard of care to have those nutrition tests however if you are a patient that has very painful sores to the point that it limits your way of eating and you start losing weight, I think that's the time you may want to talk with your doctor to check on the those micronutrient level. Zinc can be tested, vitamin D, vitamin B levels can be tested and if they are really low, you may consider taking supplements to replace the loss.

Amethyst: Thank you. Linda asks, Are there any contraindications for taking Nicotinamide? Or are there any interactions with other medications or nutritional supplements?

Dr. Lu: It's generally pretty, it's available over the counter however it does have some side effects. It can cause flushing of the face. For people who have cardiac disease, there are some contraindications with this medication. So definitely talk with your doctor and then when a prescription is made you can always check with the pharmacists and your doctors for drug interactions. It has to be a case by case evaluation. Generally speaking it is very safe but as I said it can cause flushing and people may or may not tolerate it.

Amethyst: Great, thank you. Besides, just like a potential vitamin D supplement, if it's needed or prescribed by the doctor. Should patients be taking a daily multivitamin?

Dr. Lu: It does not hurt. I will say, it may or may not benefit your disease, but it is certainly something that is very low risk and may have some benefits. I don't think it's mandatory and there's really no scientific evidence highly recommended. But I think it doesn't hurt to do.

Amethyst: Great, thank you. Is it safe to take a prebiotic or a probiotic or even like an immune system booster such as herbal supplements, echinacea, or ginseng?

Dr. Lu: I would really caution against herbal supplements because you don't know what's in it and "immune boosters" because these groups of conditions are autoimmune diseases and it's not because your immune system is weak, your immune system is unusually overly active towards your skin cells. So I wouldn't do that.

Amethyst: And what about a prebiotic or a probiotic?

Dr. Lu: A prebiotic I think it's definitely reasonable to take because a lot of those studies has been focused on sort of the microbiome of the gut, the relationship with the inflammation overall. We don't know exactly, in the field of autoimmune blistering disease, it could be an interesting topic in research down the road. We don't know at this point, but theoretically prebiotics helps to keep a well balanced gut and helps the absorption of nutrients especially if you're taking prednisone you take a lot of anti-inflammatories and, especially doxycycline is a pretty broad spectrum of antibiotics. Those can all kind of mess up some of the balance of the gut microbiome. So a probiotic I think, in general, will be beneficial. But whether it will bring a significant improvement in your condition, we don't know. Overall it should be a beneficial thing to consider.

Amethyst: That makes sense, and maybe even something like a drinkable kefir?

Dr. Lu: Yeah, some of the Greek yogurt especially those that contain plenty of protein, some of them have 12 to 17 grams of protein with less sugar and with active yeast, those tend to be better yogurts to consider.

Amethyst: Great. Thank you. Maureen, just wanted to double check. Did the information that you presented on tannins also apply to pemphigoid or is it a little more specific to pemphigus?

Dr. Lu: It is more specific to pemphigus not so much so to pemphigoid. And also it is fairly rare for pemphigoid patients to have bad sores inside of the mouth except for cicatricial pemphigoid. That is a specific type of pemphigoid. I don't think there is any evidence showing that tannin containing food triggers pemphigoid, it's more specific to pemphigus.

Amethyst: This person is asking, is there any food or diet that improves or restores the B cells or your T cells?

Dr. Lu: Yeah, that's an interesting question. Pemphigus and pemphigoid are more considered to be a B cell disease or condition. It's not because your B cells are not working, it's because your B cells are working too hard. They produce a lot of these small molecules called auto antibodies which are attacking the glue between the skin cells and that causes the falling apart of the glues that keep your skin cells together and that's how a blister forms. So the treatment targets calming down the B cells and T cells and that is why you are on immune suppressants such as Cellcept, Mycophenolate, Methotrexate or Azathioprine, they all calm down the B cells and T cells not to restore them. Rituximab which is the IV infusion that you receive basically wipes out your B cell population and then your body will automatically recover by itself. So, I don't think there's any food, particularly, that will bring the B cells or T cells back. And again, as I said, you shouldn't be taking any immune stimulator. You should be taking an immune modulator, medications and food that calm down your immune system not to boost your immune system.

Amethyst: That makes sense. Thank you. Nicole says that she has MMP and she's on high doses of prednisone right now. She's getting a lot of muscle spasm and muscle pain in the prednisone. Are there any recommendations of foods to eat to help more with muscle pain?

Dr. Lu: This is tough, because what I would recommend is there's not a problem that food can fix. I would say, taking vitamin D and calcium supplements for sure. And it depends on how long you've been on a high dose of prednisone. If you're really on a high dose of prednisone for a long time to the point they start to have muscle pain, you probably need to talk with your doctor to consider other treatments because it's not safe to be on high doses of prednisone for a long period of time. These days Rituximab plus or minus IVIg works pretty well for cicatricial pemphigoid although I understand it's one of the types of blistering disease that is very hard to treat. To bring your prednisone dose down, is it only probably the best treatment you'll get And to be able to do that, you probably need aggressive treatment that required Rituximab infusions and maybe plus IVIg monthly infusion and maybe even together with Cellcept, Azathioprine to control the disease then the doctor can significantly decrease the dose down and taper it off in the near future.

Amethyst: Great, great advice. These next three questions are a little more specific on actual food. Marion asks, as you talked about eating a well balanced diet, are there any specific proteins such as a plant protein or animal protein that you would recommend for patients with the condition?

Dr. Lu: I don't think it matters that much for animal protein or plant protein. It really depends on your diet habits. For people who are vegetarian, some of them eat eggs and even if you don't eat meat but you eat eggs, beans, and other dairy products you are probably fine as long as you keep a good protein intake. It's harder for people who are vegans, that is completely not

eating any animal products. That can be hard if you just rely on plants you have to watch your vitamins levels and things like that because people who are completely vegan probably need vitamin B12 anyway because some of the plant food you need extra vitamins. But if you eat eggs, dairy products, fish, even if you don't eat red meat, you're perfectly fine as long as you maintain the protein level.

Amethyst: Great. Thank you. Tina wrote in before the webinar said that they noticed that lentils and peas make their skin worse, is that something that's been proven to cause flairs?

Dr. Lu: No clear evidence but it's certainly possible. As I said, I always trust my patients instinct, because you know your body the best. Recently there has been articles about people having soy allergies. So it may be possible, though it's not a very bad allergy and make you have nausea, diarrhea, but it's enough that it set your body on edge. So people can be allergic to beans like soy beans, lentils, and things like that. And another thing is that a lot of the bean products can make people bloated some of them make you produce a lot of gas and that can cause some of the discomfort and cause some of the GI problem. If that's the case you probably want to really limit the intake, even though those are healthy food. My notion is there really is no magic food, it really is key to have a well balanced meal. You should eat a good variety even if it is supposed to be a healthy and good food you don't want to over consume a certain type of food.

Amethyst: Great, good advice. As far as herbals, is there any evidence that ginger is good or bad?

Dr. Lu: I would actually be really cautious about ginger because ginger is a spicy food. It is spicy if you eat it or even if you drink it, it's spicy. We know a lot of the spicy food can irritate the sores inside of the mouth. Also ginger supposedly boosts your immune responses so it may make things worse. I would be really cautious. I would group ginger more into the garlic group.

Amethyst: Thank you. Somebody asked, can having an autoimmune disease like pemphigus or pemphigoid cause them to have other internal issues, such as IBS? And if they have both, what kind of specialists should they be working with to manage both their conditions?

Dr. Lu: That's a very good question, as I said certain blistering diseases can involve your digestive systems. From the surface of your lining of the mouth, all the way down to the esophagus. Also the treatment you went through, especially prednisone can cause a lot of irritation to your GI tract or GI systems. I don't think one causes another. There's no evidence showing IBS causing blistering disease or blistering diseases causing IBS. It can just happen

that they happen at the same time and the treatment only makes it worse. So if you have a lot of GI symptoms you need to talk with your doctors. If needed you might need further evaluation with a specialist. Because some of the treatments not only prednisone can cause reflux such as Cellcept and Mycophenolate are well known to cause nausea and diarrhea. And it's dose dependent, I have so many patients when your doctor tries to push up the dose of the Cellcept 1 gram to 2 gram to 3 gram people to have diarrhea. So it's a multi-factorial condition and is very complicated. If you've noticed those symptoms can be part of the condition a lot of times it might just be side effects from your treatment and you really need to let your doctor know first and talk about what can be done from there.

Amethyst: Great, thank you. Well, that was a very quick hour. I can't believe we have already flown through that. So, thank you for taking the time to speak with us today. We really appreciate you being on the call with us and to all of you for joining us today. I'd also like to give a huge thank you to our sponsors, Genentech, argenx, and Cabaletta Bio for making today's call possible. Before we go, I do have a few quick announcements. Join us for our next IPPF Patient Education Webinar on June 27 with Dr. Robert Kelch to discuss "Oral Care and Health for Pemphigus and Pemphigoid " and answer your questions. You can register online today. We are also happy to announce that the 2022 Annual Patient Education Conference will be virtual this year. We are looking at dates toward the end of October so stay tuned for more details and information to come! Do you wish there was a better understanding of our diseases by doctors and researchers? Do you wish there were more FDA-approved treatments and better treatments available? Well here's your chance to get involved and make these goals a reality - Join the IPPF Natural History Study today! The Natural History Study is a patient registry sponsored by the National Organization for Rare Disorders (NORD) and the US Food and Drug Administration (FDA). Your information is private, the IPPF Natural History Study follows strict government guidelines to assure patient information is protected. Your participation and the data will be used by the IPPF to help advance research, better understand the patient journey, find better treatments, and hopefully one day a cure. By sharing your journey and answering some questions, you directly have an effect on the future of all people affected by pemphigus and pemphigoid. So get involved today! You can find the Natural History Study by visiting www.pemphigus.iamrare.org. There are many opportunities coming for our community to get involved with research. From clinical trials for potential new medications and online surveys to patient opinion panels, telephone and video interviews, there may be an activity that would be right for you. This is a great opportunity for patients to really have your voices heard and to be part of scientific research to help others with the disease. Please keep an ear out by signing up for our mailing list to learn more about these opportunities. If you are interested in continuing to help support the IPPF and allow us to continue to provide free programs and services like today's webinar, you can become a healing hero. Healing Heroes fund the future of the IPPF community by making sustaining, monthly gifts to support our mission of improving the quality of life for all those affected by pemphigus and pemphigoid. No amount is too small, even a \$10 or \$15 monthly donation goes a long way and continues to allow us to provide for the greater good of our community. The IPPF has a number of upcoming virtual support groups across the country. If you are interested in attending a meeting, please check the IPPF's Event Page to

register for a meeting. Also, we are always looking to expand our support network. If you are interested in starting a support group in your region please contact Becky Strong at becky@pemphigus.org. It's easier than it sounds to start a support group and you can help connect others in your area with other patients. This call recording will be sent out with the survey following this call. Thank you all for joining us.