[MUSIC]

LAURA FERRIS: The top 10 part got added literally the day that I submitted my talk. So we're just going to call it, Top Dermatology Challenges in Primary Care. These are my disclosures. These are primarily companies with whom I've done clinical trials.

So the topics that I was going to cover are near and dear to my interests. One is skin cancer screening in primary care. The second one is, we use a lot of medications and newer medications in dermatology. Many of these have some adverse events or side effects or risks that patients may present to you with before they come to us. So I wanted to talk a little bit about that.

And then also, there are medicines that you prescribe that patients will come to us with side effects from those. So there are dermatological effects of medical therapy and medical side effects of dermatological therapy.

And then I have sort of my big two-- that one of these is a condition that if you ask any dermatologists [INAUDIBLE] say, I'm going to give a talk to a bunch of primary care physicians. What would you cover? Everybody has the same first answer, so I'll tell you what-- I'll show you what that is.

So the first thing I'm going to talk about is skin cancer screening and prevention in the primary care setting. So obviously, skin cancer is a very big part of our practice as dermatologists.

But most patients who are ultimately diagnosed with advanced melanoma are likely to be patients who don't see dermatologists regularly. They are much more likely to see you. It's important to think about how we can identify skin cancer early-- sort of a team approach.

So this is just a little bit about melanoma. There's about 76,000 cases of melanoma in the United States each year. Around 10,000 people will die from melanoma each year.

If you look at the incidence and mortality of melanoma, you can see that the incidence is definitely rising over time. Mortality has been stable. Part of that is probably due to the fact that patients and physicians are more aware. We probably find more early disease, so that is an increased incidence of non-fatal melanoma.

However, we really want to think about how we can change screening to not just finding early melanomas in the most worried patients by dermatologists screening, but think about how we can really target those patients who are most likely to die from melanoma.

So who are those patients? It does mirror the new cases. Its patients-- the incidence in mortality both increase with age. So patients over the age of 50. And this continues to go up into the 70s.

The median age of diagnosis for melanoma is 63. The median age of death is 69. This is a disease that's more common and definitely more fatal in men. Men are also much less likely to be screened. And risk factors include in addition to age and sex, UV exposure, family history of melanoma, fair skin and light hair.

So if I can drive home one point from this, older men are at the highest risk of developing and dying from melanoma. I can also tell you that they are the least likely to seek out skin cancer screening.

So this is the basic ABCD's of melanoma that everybody learned in medical school. This is a good fundamental approach, but certainly I'll show you that melanoma can look like anything. But asymmetry, boarder irregularity, color variegation. So particularly, if that's not typical for a patients nevi.

So if all of a patient's nevi are about four millimeters in diameter, and medium brown and round. And then they have one that's eight millimeters and it's two or three colors and has irregular borders, that should be concerning. A diameter of more than 6 millimeters. Although, more and more we're finding melanomas that are smaller than this in diameter.

Regression is this whitening out. So this is an immune response to the tumor cells. So you actually have deep pigmentation within the lesion that is whiter than the surrounding skin, usually.

And then evolution. So this is one of my own patients who had a mole that we were monitoring because they didn't want a biopsy. And I said, come back in three months, and he came back in two years. And that was the change that we saw and that ended up being early invasive melanoma.

And then the ugly duckling. This is something that patients can understand, but it's also something when you're examining a patient. If you're looking at their skin as part of your physical exam-- if there is one lesion that jumps out at you because it just doesn't look like anything else on their skin, that's the ugly duckling. That is actually a fairly sensitive sign for melanoma.

The United States Preventative Services Task Force has given skin cancer screening and eye recommendation. So that does not mean that it's not recommended. It certainly doesn't mean that it is recommended. It means that the evidence is insufficient to recommend for or against screening.

One of the problems is that compared to cancers like breast cancer, the incidence of melanoma is relatively low. Also, because of the modality of screening is looking at somebody with your eyes, doing a double blind study, is extremely difficult. And doing a randomized study is also challenging because you would have to tell a group of patients not to have a doctor look at them.

So we will never have really good quality evidence to support screening. So I'll go over a little bit of what we do know and what the level of evidence that we're trying to achieve. So by screening, I just mean a full body visual examination of the skin.

What the task force does recommend is they do actually make some recommendations about counseling. And this is relevant to two primary care practices. A grade of B was given to counseling about-- to minimize UV exposure, particularly for young adults, adolescents, children and the parents of young children who have fair skin types.

And certainly, it's hard to sit and judge somebodies fair skin type, but when we talk about Fitzpatrick type 1 or 2, those are patients who burn easily and tan minimally.

For adults older than 24 with fair skin, there's a C. They give a grade of C to offering counseling about minimizing UV radiation. I will say that the evidence does support. I was a little surprised that they chose to give this a grade of C. The evidence does support that exposure at older ages, meaning older than adolescence.

So over the age of 20 actually is associated with an increased risk of skin cancer, but their take on this was that it has a grade of C. But I would say that the evidence is just as highly supporting as it is for younger patients.

And then there is actually no recommendation to suggest skin self examinations in adults. I do think that telling patients-- or they're asking are there any lesions that you're concerned about on your skin. And counseling them to consider looking at their skin regularly and pointing out anything that concerns them is still a low risk intervention.

We have looked at melanoma screening at UPMC. Any of you who practice within UPMC may have noticed when you pull up an Epic in the health maintenance module, full body skin exam is one of the boxes that you can check. It will come up as, do once a year, for anybody 35 and older.

That is a quality initiative meaning, that we have tried to provide education about it. And we have suggested and provided online training, which we're going to upgrade and re-release again later this fall. But it's not a study and it's certainly not a mandate.

But when you click that box, what happens? Well, what happens is that we collect all that data. And then we try to look and see what difference that might be making. So this is non randomized. It's voluntary. And it really is just using the existing system that we have, which is Epic.

And we were using that EHR module to check who has been seen, so they would be eligible to be screened if they were seen by a primary care provider at UPMC, and they were over the age of 35. And that's our screen eligible group.

And then if that box is checked, we know that they were actually screened. To collect their outcomes, we look at pathology records collected through the EHR through the cancer registry and through the health plan.

So this is the training that we use as a validated training. It's called, Informed, and it's available now online at this site called, VisualDx.

So what did we find? So this is our first collection of-- our first pass of the data. So we had over 333,000 screened eligible patients in a one year period.

Over 53,000 were screened and over 283,000 were not. What we did find was that of those screened, about 43% were men, which is great because another study is about 25% of those screened are usually men. We are getting that group.

And the median age range of those screened was right around 60, which is also nice because a lot of times our screening efforts tend to target younger lower risk patients.

We looked at melanomas that were diagnosed in these populations. And we found that there were 50 melanomas in the screen population and 104 in the unscreened populations. That was a entire rate of melanoma detection in those who were screened.

And we look at the distribution of insight too. So non-invasive melanoma to invasive melanoma, and we can see that we have a shift toward thinner melanoma. So one, about half of the melanomas in the screen population were found before they were invasive. Whereas, it was about 35% of those in the unscreened group.

Two, we also look among those invasive melanomas. How thick were they? In the screen group, they were 0.37 millimeters. And then the unscreened group, they were about 0.65 millimeters. That was statistically significant. So we are seeing earlier detection associated with screening.

And then the other thing that I think is encouraging is if we look at thick melanomas-- so melanomas that are thicker than two millimeters, these have the greatest risk of death. We found that we actually did not have any of those among those screened. Those were only in the population that was not screened.

We are now currently looking at what's happened while this program has been in existence for a longer time. And what we want to see is what happens, not just in that first year of screening, but to those patients years down the road. Are they less likely to later present with thick melanoma?

So who found the melanomas here? So dermatologists were screening, also primary care providers. We were able to look at those primary care providers who did our online training module, versus those who did not but still screened. If we look at the number by how many melanomas in sight too-- so how many of the earliest melanomas were found.

We find that actually doing our training module did not mean that you were finding much thinner or earlier melanomas. But I do want to point out that the majority of the melanomas in the screen population were not found by dermatologists. They were found by primary care providers. And really you were finding them very thin and early too.

We also looked at biopsies performed by primary care providers. So one argument could be, if you don't do this every day. If this isn't your life's work, you may not have a good sensitivity or you might have a low [INAUDIBLE]. You might be doing a lot of biopsies.

And so one way that we can look at that is, what's your biopsy ratio? How many skin cancers did you find per biopsy? And it turned out that you found about one malignancy for every 3.7 benign biopsies. And for just out of all the biopsies you did, how many were melanoma? About one melanoma for every 29 benign.

That's actually very good. That is very comparable to what we see in a lot of studies of community practice dermatologists. We're not seeing over biopsying.

So what can I do? I don't expect that as part of your busy practices that everybody can do a 10 minute skin exam. So I always say, don't let perfect be the enemy of good. Catching the obvious melanoma in that patient who was never going to see a dermatologist is a huge benefit to the patient.

So gowning them-- just having your office put them in a gown before their visit is very helpful. And then simply having them stand up and look at the back of them. And then turn them around open the gown and look at the front of their skin.

Will you find every two millimeter in diameter melanoma? No. But will you find the one that was sitting on the back that the patient didn't know about? Very often, yes.

This is particularly important in older patients. We started this initiative for those over 35, but even particularly focusing on those over 50.

Melanoma-- I just put this in here because I showed you the ABCD's, but these are all examples of melanomas that we've diagnosed. So they can have multiple different appearances.

If you're comfortable and you have a pathologist preferably a dermatopathologist you can send to-- by all means, do a biopsy if you suspect melanomas there. There's many ways to do this.

The key is you don't want to sample the lesion. You don't want to get part of it. You want to get the entire lesion. And you want to go down deep enough to get-- the most important predictor of outcome is the thickness of melanoma, so you want to get below the base of it.

The recommendation is, if you're not sure, to go down and saucerize down to the level of fat, but deep in the dermis is often sufficient too. You can do this with a punch. But I would just emphasize only do a punch biopsy if it's truly a punch excision. You want to get the whole thing.

Now, I'm going to move on beyond that to dermatological effects of medications that you may prescribe. So this is hydrochlorothiazide. So certainly something that is a very commonly used antihypertensive drug.

As we know very well, this is a photosensitizing drug. So our patients on hydrochlorothiazide are more likely to get sunburns. It turns out that they're actually more likely to get skin cancer as well.

So this was a case control study. 1,500 cases of patients with basal cell and 8,600 of patients was squamous cell carcinoma match 20 to 1 for sex and birth year. And then they looked at the incidence of these non-melanoma skin cancers. The odds ratio was 1.29 for basal cell. And about 4 for squamous cell carcinoma among high users of hydrochlorothiazide. So it's greater than 50,000 milligrams of cumulative dose.

The highest risk particularly, for squamous cell carcinomas on patients under 50. And the risk increases with drug exposure. This is a meta analysis of multiple observational studies of thiazide diuretics in general. And what we can see here is that we do see a small increase in basal cell carcinoma.

But I've highlighted here, squamous cell carcinoma where we see the highest increase in incidence. Melanoma-- there's maybe a small increase. But really the true risk seems to be squamous cell carcinomas.

So considerations-- counsel patients who are on hydrochlorothiazide about the risk of photosensitivity and the importance of sun protection. Consider alternative and a hypertensive drugs for patients with more than one non-melanoma skin cancer or those who are particularly fair skinned or have high sun exposure. And if possible, try to limit their cumulative dose of hydrochlorothiazide.

So that's the bad news on antihypertensives and skin cancer. This is the good news. This was an interesting study in JAMA Oncology looking at propranolol.

And so we have evidence that propranolol has some antineoplastic properties. When babies develop hemangiomas-- it's actually, several years ago in *New England Journal of Medicine* paper that found this amazing responsiveness to propranolol because it decreases proliferation of the vascular endothelial cells.

So it turns out that propranolol can actually reduce the risk of melanoma recurrence. This is not a very rigorous study, but it's again, kind of the best evidence we have. And hopefully, something that will get added to future investigations.

But 79 patients with thick melanoma were assessed and 53 participated in this study. This was actually not randomized. The patients selected that they wanted to go on. They were willing to go on propranolol or they will not-- they were not. And they wanted to be in the observational cohort. And so there were 34 cases-- or 34 treated and 19 obs observe patients.

And so what we can see here is this. If we look at disease free survival, we actually see fewer recurrences among those who took propranolol. It's not A level evidence, but it's encouraging and something that we can consider for patients.

And then this is another emerging side effect from a drug that's commonly used. So this is a case. This is an 81-year-old patient who, 8 months ago, started Linagliptin for his diabetes. And he developed this rash. And so these are tense bullae. They're very periodic. On biopsy they're full of these eosinophils.

And this is diagnostic for bullous pemphigoid. So this has been something that's come out recently in our literature, but dipeptidyl peptidase-4 inhibitor associated bullous pemphigoid. So this is a relatively rare autoimmune bullous disease.

Patients are generally elderly. They're usually over 80. And they develop this very intensely periodic eruption often. Usually, it blisters and they have antibodies directed to hemidesmosomes proteins, which is why you see that entire epidermis lifting off.

This is again, a retrospective case control study with diabetic patients with bullous pemphigoid and matched controls. And there was an association with DPP-4 inhibitors, but not other diabetic medications with the risk of bullous pemphigoid.

This has been supported by other studies as well. And the highest risk seems to be with vildagliptin. And again, most of these cases resolved with stopping the DPP-4 inhibitor. So this is something we usually make that diagnosis a bullous pemphigoid. we are now looking at MedList to see if they're on one of these drugs.

And then the next thing I want to talk about are medical side effects of dermatological medications in the particularly the ones that you may encounter. So there are now 10 biologics that are FDA approved for the treatment of psoriasis. There was one when I started residency here, so this has really been an exploding field.

Many of these are also FDA approved for inflammatory bowel disease, RA, psoriatic arthritis. So they're going to be prescribed by across a variety of sub-specialties.

So the TNF alpha antagonists include a etanercept adalimumab, certolizumab pegol and infliximab. These are all used to treat psoriasis, psoriatic arthritis, and all but etanercept are used to treat Crohn's disease too.

This is ustekinumab-- is IL-12, IL-23. Antagonists used to treat psoriasis and Crohn's. And then there are now three anti-IL-23 antagonists-- guselkumab, tildrakizumab and risankizumab.

And then finally, this class of drugs that are approved to treat psoriasis and psoriatic arthritis-- ixekizumab, and secukinumab are fully human monoclonal antibodies to IL-17A. And then brodalumab is only FDA approved to treat psoriasis, but it's a fully human monoclonal antibody to the IL-17RA receptor.

So class specific safety concerns with these drugs. So you will all have patients on TNF antagonists because they're so widely used. Lupus like syndromes have been reported. We do see these. They seem to like to present with serositis, pericarditis or pleuritis.

Demyelinating disease-- this is rare, but can be devastating. So these patients will progress usually-- or will present with MS like symptoms, congestive heart failure exacerbation, reactivation of hepatitis B. There is a small increase of risk in non-melanoma skin cancers. So we are very aware of this in our patients who have psoriasis.

Salmonella and listeria infections. So I will talk a little bit about that. And then melanoma metastasis in patients who had previous melanomas.

And then the other class that really has these adverse events that I think are important for you to-- would be aware of is IL-17 antagonists have this risk of inflammatory bowel disease. I'll talk a little bit about that.

And then non-invasive Candida and fungal infections. And then brodalumab actually carries a warning of suicide.

So IBD-- I put this in here because I-- these drugs are highly effective for psoriasis. Some of our patients who have never been better before we've been able to put on these drugs and they're clear. And it's been a really great thing for their care.

However, I did have one of my patients who was finally clear on ixekizumab. And she developed bad belly pain, profuse diarrhea. Went to the emergency room, was admitted. And they said, well, we'll make sure we give you your next dose of ixekizumab. And it turned out that she had pancolitis.

And fortunately, when the gastroenterologist saw her they knew this association and they stopped the drug and she's gotten better. But about one in 1,000 or so-- one to two in 1,000 patients on these drugs will develop inflammatory bowel disease. And they are likely not to call us, but to call you even though we discuss it when we do prescribe these drugs.

Secukinumab is the other one. They both have similar risks. Brodalumab-- there's only been one case reported, but the utilization of brodalumab is much lower. So it's about one to two in 1,000 patients.

Candidiasis and tinea infections. So the incidence of mucocutaneous candidiasis is about 3% to 4% for patients on these drugs. In general, that's going to be thrush or it's going to be vulvul vaginal candidiasis.

Importantly, there have not been any cases of systemic or disseminated candidiasis. These are treatable. Usually, topically treatable infections. You don't need to stop the drug, but treat them and certainly remind them to bring this up to their dermatologist.

Suicide and brodalumab was a-- there were four cases in the psoriasis clinical trials that were reported. If you go and dig into all of them, they have some tragic life story behind them. However, it's pretty rare to see that many suicides in a clinical trial of a psoriasis drugs.

There was also one in an RA study and one in a psoriatic arthritis study. The FDA analyzed the data and said that they don't see a true risk. This drug was ultimately FDA approved, but again, I bring this up. If you have patients who are on brodalumab and seem to be suicidal, consider the drug and make sure that you talk to their dermatologist.

Screening tuberculosis is another one. It's recommended that you screen for tuberculosis before starting any of the biologics. The highest risk is certainly with the TNF antagonists, however.

When you're screening for latent TB, we generally use a QuantiFERON Gold. You can do a PPD. However, some of our patients have had prior BCG vaccination and that can make it a little bit more complicated.

One of the things that I always remind patients of is that their chest X-ray is going to be normal in latent TB. So patients will say, I just had a chest X-ray. It was fine. I don't have latent TB. But that's not what you would expect.

Patients who do have latent TB can actually start biologics. However, they must start and complete a course of prophylaxis. And one of the important things that we have realized is that we can't just start the drug. I give them a month of taking INH because I need to make sure that they're going to be compliant with it and finish the course as well.

The other important pearl here is that in 2/3 of cases of TB reactivation in patients on biologics, primarily TNF antagonist-- that reactivation was extra pulmonary. So they had a normal chest X-ray. They can occur in other places, so just keep that in mind.

The other intracellular bacteria, that can be an issue or legionella and histoplasmosis, and also salmonella.

So in the United Kingdom, they actually introduced a warning label to avoid undercooked egg, poultry and meats for patients on TNF antagonists. And they decreased their incidence of listeria and salmonella in TNF users by 73%.

So we are now trying to incorporate this into our counseling for patients on TNF antagonists. But consider that for patients who get particularly those foodborne illnesses.

And then one other drug. It's not a biologic. It's apremilast. It's an oral, small-molecule. It inhibits phosphodiesterase-4. It's used to treat psoriasis and psoriatic arthritis. This has the side effect of-- not inflammatory bowel disease, not colitis, but significant diarrhea. It also has a side effect of depression. And a weight loss in about 20% of patients. In our patients, that's oftentimes a helpful side effect.

But if you have a patient who is on apremilast complaining of unintentional weight loss-- realize it may be due to the drug. Whether or not that's a bad thing depends on the patient. And then worsening depression-- consider the drug.

And then I'm just going to conclude here with my big two. So this is a 24-year-old woman. She has this rash that started three days ago. She reports she has not started any new medications. She hasn't eaten any unusual foods. She has no joint pain, fevers, GI symptoms. She feels fine. She's just really itchy.

These lesions come and go. So one lesion will resolve and then another one will appear in a new place. So this is a patient who has acute urticaria.

So I bring this up because a lot of times these patients will come to you before they will come to dermatology. So urticaria presents [INAUDIBLE] wheals, single lesions that lasts less than 24 hours. Usually, it's idiopathic. We almost never find a cause unless they said, I just started this antibiotic two days ago and I developed this. But usually, we don't find a cause.

There are-- things you can think about are drugs. Dermatographism, meaning that they get this from scratching. Physical urticaria-- so urticaria occurring in areas of pressure.

In general, pan allergy testing is not recommended. So we do not recommend sending these patients to an allergist and getting RAS testing. We generally don't find a true cause of the urticaria.

And if they have a negative review of systems, they really in general don't require lab work. There's one recommendation that I'll go over.

However, if those lesions last for more than 24 hours, they burn more than they itch, they're associated with joint pain, if they heal with bruising consider urticaria vasculitis in these patients. That's often associated with connective tissue disease. And those patients should be referred to dermatology. We do need to do a biopsy.

So we classify urticaria. We start with duration. If it's less than six weeks, it's acute. And if it's greater than six weeks, it's chronic.

When we look at chronic urticaria, which is most of what ends up walking into our office. Chronic spontaneous urticaria is spontaneous appearance. We don't have a known cause.

Inducible urticaria you can generally get from history. So it's either dermatographism-- I'll show you a picture. Cold urticaria, delayed pressure. Heat or solar urticaria are both different causes. Vibratory angioedema. Cholinergic urticaria. Contact urticaria. Aquagenic urticaria.

So what is the work up? And this is from the allergy literature. If the patient has angioedema and they're on an ACE inhibitor, stop the ACE inhibitor, re-evaluate them and see if it goes away.

If they have acute urticaria, take a history. Unless they say, you know, I never eat shrimp and I ate shrimp last night and I got this. Then in that case some food testing may be warranted. Other than that, you don't really need to do routine testing.

With chronic urticaria, again, take a good history. See if it's inducible. And sometimes patients-- and I'll show you some cases of inducible urticaria. And then look for other symptoms.

The monitoring that has been suggested and the allergy literature is just a CBC and an ESR and or CRP. And I'll show you why that can matter. And their recommendation that is intensive and costly general screening programs for causes of urticaria are strongly advised against because they're generally false positives.

So here's a case where this patient came in and I was able to induce his urticaria in the office. This was three minutes of exposure to an ice cube. This is cold urticaria. So you can just do this with an ice cube in the office if they say that they think it's caused by cold.

This is dermatographism. So you can just scratch with the end of a Q-tip or a swab on their skin, and they will get these urticaria lesions. This is dermatographism. Now, you have a cause and you can talk about avoidance and treatment.

This is the latter to follow in treating urticaria. So start with the second generation antihistamines. So these are your non-sedating antihistamines. If inadequately controlled, two to four weeks, or really earlier, you increase the dose. So you can safely give up to four times the dose.

So if 10 milligrams of loratadine is the dose on the bottle, you can give them 40 milligrams a day of loratadine safely. You can also combine two non-sedating antihistamines. You can also do non-sedating and then add a sedating at night. It's hard to hurt people with antihistamines. They'll just eventually get really tired and their mouth will get dry.

The recommendation is once you're getting up to four full dosing of non-sedating antihistamines, consider referring to a specialist-- so usually allergy or dermatology.

The next step is to consider omalizumab or cyclosporine. Generally, we would manage these. And again, some patients are refractory we have to combine these.

So what about oral steroids? They will make urticaria go away. They will disappear while they're on it. The problem is that it will come back. And so it's not a long term solution. They're not safe drugs to use long time. So they're actually rarely indicated for chronic urticaria.

But I will tell you, patients, once they get them that's all that they want to keep doing because they're so effective.

Here's the reason why the CRP, ESR recommendation comes in there is-- does the patient have some sort of autoinflammatory state. So this was a patient I saw recently. She had hives, but she said when they come on they're not really itchy, they tingle. And they come on every night, but then they kind of fade through the day. And when I get them I have fevers, and my joints hurt.

And when we looked at our labs, she had a markedly elevated CRP and a markedly elevated ferritin. And this is what her lesions looked like. So some of these were when she took at home because they were occurring at night.

So they have this sort of evanescent appearance and they'll go away, they come in at night. And this is a patient who had adult onset Still's disease, so rare. But the reason why we take a good review of systems-- she needed referral and further workup.

And one clue to this is this markedly elevated CRP and ferritin. They also respond to NSAIDs. So consider other causes if the patient has a positive review of systems. And then this is the one that everybody says, show to this to anybody in primary care because this is what gets missed the most.

So this is when wound care fails. So this is a 78-year-old woman. She's healthy. She spontaneously develops open wounds on her arms and trunks. A trunk, it doesn't get better with wound care or oral antibiotics. She's sent to plastic surgery.

They do serial debridements and it doesn't help and it actually makes it worse. And so she comes in with these lesions. Anybody know what this is? This is pyoderma gangrenosum. So these are other cases that we have seen in the hospital.

And so the reason that I bring this up is that it always follows this course-- that they get admitted. They get antibiotics. They go and they get debrided. And then it gets worse. And then about two weeks into their hospitalization, somebody consults dermatology. And then we say, that's pyoderma gangrenosum.

And now, you have to immunosuppress the patient. And everybody says, oh, my gosh, look at those open wounds. We can't immunosuppressed them. So I'm telling you that's pyoderma gangrenosum. So this warrants a dermatology consult.

This is a neutrophilic dermatoses. It's these chronic ulcerated lesions and they have pathergy. They get worse with mechanical trauma. It can be associated with inflammatory bowel disease, RA, seronegative negative arthritis, hematologic disorders including paraproteinemia, especially, IGA paraproteinemia and neutrophilic malignancies, particularly AML.

So the diagnostic criteria-- you need two major into a four minor. So major rapid progression of painful necrotic lesions with irregular violaceous borders and exclusion of other causes. So this is a diagnosis of exclusion. We will do biopsies. We will send tissue for culture.

Minor criteria are history suggestive of pathergy or cribriform scarring. I'll show you what that looks like. Other diseases like, they have inflammatory bowel disease or RA, compatible histology in response to treatment.

So the treatments that will do-- topically will do. Usually, topical steroids. High potency topical steroids. Sometimes that's enough. It's not usually. We'll also do topical dapsone because it's anti-neutrophils.

Systemic therapies include prednisone, cyclosporine, colchicine, dapsone-- both which work against neutrophils-- azathioprine, mycophenolate mofetil, and sometimes minocycline.

Biologics-- the anti-TNF antagonist work well against this also IL-1, and IL-23, IL-12 antagonists.

So this is our patient here. We put her on cyclosporine, adalimumab, topical clobetasol, topical dapsone. Lots of handholding for five years. And this is what she looks like now.

So this patient is now healed with some cribriform scarring. It looks like almost like a screen or mesh work in some of her scars. But it took a long time to get her here.

And then this is another patient who came to me. So initially she saw a surgeon for a lymph node. They did the surgery and it wouldn't heal. So they went back and re-excised the area and it only got bigger.

We saw her after just simply topical high potency clobetasol. We were able to hear her. So surgery is not the answer for these patients.

So take home points-- skin cancer during routine physical exam can improve early detection of skin cancer. Consider stopping thiazide diuretics in patients with skin cancer. Remember the risk of bullous pemphigoid on patients on DPP-4 inhibitors.

Remember, IBD with IL-17 antagonists. Remember, extra pulmonary tuberculosis for patients on TNF antagonists. Urticaria, think before you start a steroid taper. And for non-healing wounds, consider pyoderma gangrenosum. So thank you very much.

[APPLAUSE]