

Ferhaan Ahmad, MD ([00:16](#)):

Welcome to the hypertrophic cardiomyopathy podcast titled Beware Phenocopies of Hypertrophic Cardiomyopathy. This is one of a series of podcasts from the American Heart Association HCM Initiative, sponsored by Bristol Myers Squibb. I am Ferhaan Ahmad, an associate professor in the division of cardiovascular medicine at the University of Iowa. I'm also director of the cardiovascular genetics program and the hypertrophic cardiomyopathy center of excellence here at Iowa. And it's truly my honor to host this podcast on HCM phenocopies. We really have a very exciting panel of experts to help walk us through this rather vexatious topic clinically. First is Dr. Martha Grogan, who is a cardiologist and an associate professor of cardiovascular medicine at the Mayo Clinic in Rochester, Minnesota. She's also the founder and director of the cardiac amyloid clinic at the Mayo. Second, we have Dr. Matthew Taylor, who is a clinical geneticist and professor of medicine at the University of Colorado.

Ferhaan Ahmad, MD ([01:16](#)):

He is also the director of the adult medical genetics program and co-director of the NORD Center of Excellence at the University of Colorado. And finally, we have Mr. Tom Cilek, who is a patient with cardiac amyloidosis, and he's actually a very prominent business leader in our community here at Iowa. He is a senior vice president of a regional bank here at Iowa city. The first issue I think that we need to address is just what are these other conditions that I call mimickers of hypertrophic cardiomyopathy that can often confuse us and lead us down the wrong path when we are managing patients with these conditions. And so, Dr. Grogan, you're obviously an expert in some of these phenocopies, and I'll ask you first, what goes through your mind when you see a patient that may have hypertrophic cardiomyopathy, but may not?

Martha Grogan, MD ([02:05](#)):

That's a great question. Of course, I see mostly patients with cardiac amyloidosis and one of the most common mimickers of cardiac amyloid is hypertrophic cardiomyopathy. So, it goes both directions and important for people to realize that there are just two types of amyloid that really commonly affect the heart. The light-chain associated amyloid, which is a plasma cell disorder or a TTR amyloid, the protein produced by the liver. The most common form is wild type, but there's also hereditary type. So, we do see that it's very easy to confuse amyloid with hypertrophic cardiomyopathy. So, really a great subject for our podcast.

Ferhaan Ahmad, MD ([02:47](#)):

Dr. Taylor, I know that you're quite familiar with some of the metabolic conditions that can mimic hypertrophic cardiomyopathy.

Matthew Taylor MD ([02:56](#)):

Yes. As a geneticist, we see a lot of patients and are asked the basic question, are we looking at someone who has so-called generic hypertrophic cardiomyopathy usually due to a mutation in a set of genes that affects the sarcomere or one of these mimics or phenocopies. And so that includes the amyloidosis that we just heard about from Dr. Grogan, but other conditions such as Pompe disease, Fabry disease, Danon disease, and several others. And because those mimickers if you will or phenocopies are often hypertrophic cardiomyopathy plus some other features, we would argue it's quite important to distinguish some from the more generic, straightforward hypertrophic cases, because some of them have specific prognostic conversations attached to them and excitingly a few of them, some actual treatment options, which are beginning to emerge.

Ferhaan Ahmad, MD [\(03:46\)](#):

And Dr. Grogan, I imagine your practice is similar to mine. Sometimes, we are dealing with a hypertrophic phenotype in patients that have potentially acquired causes for cardiac hypertrophy rather than genetic causes.

Martha Grogan, MD [\(04:01\)](#):

So particularly, we think about hypertensive heart disease and athlete's heart as the more acquired mimicker of hypertrophic cardiomyopathy. I think it's important to recognize that hypertensive heart disease, the walls really shouldn't be severely thick. So, in many of these other conditions, so hypertrophic cardiomyopathy certainly, and then these other mimickers, you'll see very dramatic myocardial thickening and really wall thicknesses of more than 15 or so should not be due to hypertensive heart disease. And then in contrast, athletic training primarily causes chamber dilatation. So, we're going to see dilated left and right ventricle, dilated atria. And we really shouldn't see a lot of myocardial hypertrophy.

Ferhaan Ahmad, MD [\(04:45\)](#):

And so, another issue, I guess, that we sometimes get asked is, so why is it important to distinguish these different phenocopies from true sarcomere hypertrophic cardiomyopathy? And I think, Dr. Taylor, you alluded to some of the management issues. Do you want to tell us a little bit more about that?

Matthew Taylor MD [\(05:04\)](#):

So, there's a couple levels of why an appropriate diagnosis or correct diagnosis would make sense. Obviously, I think it's incumbent upon us as physicians to try to provide patients with as much information as possible. So a correct diagnosis, I think, is always something worthwhile to achieve. Then, I think from a genetic standpoint, we should pause briefly and mention that some of these have different inheritance patterns. And so obviously, we're used to treating the patient in front of us, but patients are very interested in risks to their siblings, to their future children. And if some of these cases, which are genetic have different inheritance patterns, it's important to know that as well. And then for the conditions where we already have therapies available, Fabry disease, amyloidosis, Pompe disease, and a few others, really, you want to be able to provide patients with disease targeted therapy.

Matthew Taylor MD [\(05:50\)](#):

So increasingly it's just no longer appropriate to call all of this hypertrophic disease and sort of leave it at that. I think increasingly we need to be able to tell patients what subtype they have, either because of a therapy that's available or potentially because of a therapy that's on the horizon as well as just giving patients accurate information about their disease.

Ferhaan Ahmad, MD [\(06:10\)](#):

And Dr. Grogan, I think your field of cardiac amyloidosis has really made huge progress in the past few years in terms of new specific therapies.

Martha Grogan, MD [\(06:22\)](#):

Exactly. It is so exciting what's happening in amyloid heart disease. And I think that some people might remember a time when it really was a more academic diagnosis, even for AL amyloidosis, although we've had therapy for quite a few years, many patients were diagnosed late and had very, very poor

outcomes. Now, treatment is definitely improving for AL amyloidosis, we're seeing improved outcomes. And for the first time we have medical therapy for TTR amyloid. So that really truly was just a disease of interest until a few years ago. So now that we have treatment, it's really incumbent clinicians to make the right diagnosis. You don't want to be treating an amyloid patient as a hypertrophic cardiomyopathy, especially now that we have medications for that specific disease. And then, we have targeted therapies for both AL and TTR amyloid, and those are rapidly expanding. So, the future is really bright. We think that people will see amyloidosis affecting the heart as a more chronic cardiovascular condition rather than a disease that was universally fatal.

Matthew Taylor MD ([07:28](#)):

I'll just add to that our fellows training in cardiology who really have been for many years, I wouldn't say disinterested, but really hard to engage on some of these genetic cases, because they seem so rare, the amyloidosis, which I don't actually spend a lot of my time on personally, but seems to be transformative in that it's common enough that the fellows are actually getting exposed to this and they're actually becoming molecular cardiologists to some degree. And so, I really think we're looking at the transition from cardiologists into the field of using molecular diagnostics and eventually molecular targeted therapies. And it's really quite exciting to see that transition.

Ferhaan Ahmad, MD ([08:04](#)):

Yes, Dr. Taylor, I think you're absolutely correct with that. Actually, I'm the program director for our fellowship program here at the University of Iowa and all our trainees are just much more excited about genetics now because as Dr. Grogan was saying, it was an academic exercise before we would provide a diagnosis, but not necessarily have much to offer our patients. And it was actually a little depressing for us not to mention the patients, but now, we actually have great tools available to mitigate the disease or even potentially reverse it in the future. These are great mimickers. And so, they fool us sometimes. And so, Dr. Grogan, I wanted to ask you, what is it in the clinical presentation that patients discuss with you when they come in terms of their symptoms. And then in terms of the findings on say, cardiac imaging, why can we get fooled so quickly and so easily?

Martha Grogan, MD ([08:48](#)):

That's a great question. And again, historically, we do see this very commonly, this mistake made that a patient with amyloid is misdiagnosed as hypertrophic cardiomyopathy. So with AL amyloidosis, there's a lot more of a likelihood that the patient will have some systemic symptoms, weight loss, nephrotic syndrome, gastrointestinal symptoms, any type of amyloid can have carpal tunnel syndrome. Then, when we move on to the TTR amyloid, again, we have carpal tunnel syndrome, peripheral and/or autonomic neuropathy. And then for the wild type patients, the real clues are also spinal stenosis or biceps tendon rupture. Lastly, from a cardiology perspective, unexplained atrial arrhythmias or need for a pacemaker. So, it's kind of a wide spectrum, but once you start recognizing these clues, then you're one step closer to the diagnosis. And most hypertrophic cardiomyopathy patients shouldn't really have a lot of other systemic symptoms unless they are directly related to their hemodynamics.

Martha Grogan, MD ([09:53](#)):

When we get into the imaging, they really can look very similar when we have had fellows present cases sometimes at echo conference, the way to really be a star is to look up there and see if you can see who referred the patient, because otherwise if a hematologist referred the patient, more likely amyloid and certain of our colleagues, more likely hypertrophic cardiomyopathy, but obviously, we can't guess at

that. So I think again, on echo, you'll more commonly see a pericardial effusion with amyloid patients, thickening of the right ventricle, which is not as common in hypertrophic cardiomyopathy. And then, the strain patterns really help us with echo. The other thing now of course is to use CMR to its fullest, including with T1 imaging that can help us sort out various of these phenocopies. And then for TTR amyloid, we have nuclear cardiac scintigraphy with PYP scanning.

Martha Grogan, MD ([10:49](#)):

So all those things put together, then we should be able to distinguish them. But I'll still say that many times when there's significant dynamic outflow tract obstruction, the mistake that's made is that people think that only happens in hypertrophic cardiomyopathy, but it does happen in not only amyloid, but other conditions such as Fabry's disease.

Ferhaan Ahmad, MD ([11:10](#)):

Right. And so, I guess very detailed history and physical are very important here as well as our reliance on technology. Patients presenting with symptoms, sometimes there's a lot of overlap between HCM and the phenocopies. So, they may have chest pain. They may have dyspnea, exertional dyspnea. They may have palpitations. So, really important to try to tease out these different conditions based on other symptoms that are suggested one or the other, as you mentioned. And then of course, an appropriate physical exam and an appropriate set of tests to be able to distinguish these different conditions. And I actually wanted to bring Mr. Cilek into the conversation here because Mr. Cilek, you are a patient with a phenocopy of HCM, but you initially were actually referred because of a suspected diagnosis of HCM.

Tom Cilek ([12:03](#)):

In 2015, I was going to modify an insurance policy. Health has always been good, never really been sick in my life, et cetera. And they did one of those physicals in my house, they listening over my heart and they came back and they said, "We think there might be a problem." I said, "What? There can't be a problem. I feel perfectly healthy. I run three miles a day, not real fast, et cetera." So, I went down to the local private hospital, Mercy Hospital, saw a cardiologist and they did some tests and they decided I had, I guess, I call it non-obstructive HCM. That's the thing they told me, so. And they talked about genetics and checking my children and see if there any problems there. So anyway, I had that. So, I went on living my life, didn't have any major health problems. Then, the event that really happened was in the fall of 2018.

Tom Cilek ([12:54](#)):

This is three years later. My wife and I, we're married 52 years, were walking to the Iowa football game up a slight little hill. And I was running out of breath. That's never happened to me before and I was concerned, but I thought, oh, okay, it's just a bad day. Take a long story short, the next month, things got sort of weird, gained a bunch of weight. Actually, my son-in-law is a doctor trained at Iowa and Milwaukee. And they said, you better go see your doctor, saw my doctor. He said, "Gee, this is a mystery." And they sent me to the university and I got over there, I first showed up there I think in January of 2019, went through all these tests and studies. And I think, believe about three years today I met Dr. Ahmad and Katie Halbmaier. They said, "Well, you know, you got this amyloidosis thing but you know, you got the good type. You have the wild type."

Tom Cilek ([13:42](#)):

As I understand, that's what I was told. And there may be some hope, though they were pretty brutal and honest with me, but they mentioned that Pfizer may developing a drug. And during the year I started taking the, I called, [VYNDAQEL](#) and they convinced me that pacemaker would be helpful. I had that done in December of 2019, because I was a little nervous about that. And I don't want to exaggerate here, but in my own mind, I'm cured. I realize I'm not cured, but it has no effect in my life right now. I worked full time. I'm 75 years old. Don't run as much as I used to because I have some issues, it's some stress fractures, but I feel normal. I have lots of energy. So, what can I say? All I know is that the University of Iowa diagnosed it correctly. They encouraged me to take care of myself. My wife's been supportive and I think Pfizer deserves some credit. So, here I am. I feel normal. That's that's my story.

Commented [PSL1]: Brand name for tafamadis, I think this is OK because it was the patient talking, and there are no other drugs on the market for this condition.

Ferhaan Ahmad, MD ([14:34](#)):

Thanks Mr. Cilek, that's great. And I think it's a little bit inspiring that several years ago, you wouldn't have been able to probably provide the same story because we didn't have specific therapies, but we are now developing these therapies that actually help patients like you.

Tom Cilek ([14:50](#)):

One more thing I do wanted to tell people, three years ago today, I was told by you, I think Dr. Ahmad, that what I had was fatal, non-curable but we'll all work together, but that was a little alarming. Okay. But you were very nice to me and you gave me some hope and then we moved down the road. And so here I am, I think about this every single day of my life, what can I say? I plan to work forever and I'm having lots of fun. It was a little nervous back through in April 2019, but here I am, so thanks.

Ferhaan Ahmad, MD ([15:17](#)):

All right. Dr. Grogan, you alluded to this and addressed some of this earlier about either history and symptoms or basic studies like electrocardiograms and some cardiac imaging. What are some of the clues that will point you to these phenocopies rather than HCM? And I know you discussed amyloid already a little bit. I don't know if there's anything else you want to add in terms of say electrocardiographic findings on amyloid and then maybe just touch on some of the other phenocopies and what are some clues that can tell a clinician that maybe this isn't run of a mill sarcomere hypertrophic cardiomyopathy.

Martha Grogan, MD ([15:53](#)):

Great question about how we can use our clinical skills to distinguish these. The basic electrocardiogram, if you think about it's our oldest cardiac imaging test. It has so much power in the ECG. So, characteristically with amyloid, we've seen low voltage. We see infarct patterns when there has not been a myocardial infarction. Those are some of our common findings that would certainly distinguish these patients from hypertrophic cardiomyopathy. But we've found over the years, especially with wild-type TTR amyloid, which is almost certainly the most common form of cardiac amyloid. Many patients don't have those classic findings. So, the traditional ECG has been a little bit limited. We are excited that we and others have developed algorithms looking simply at the electrocardiogram to try to distinguish using artificial intelligence, these patterns of diseases. So, we have that available at Mayo now and others have similar. So, I think eventually this technology will be readily available for clinicians, so we can look on a dashboard and it will give us the probability that the patient has hypertrophic cardiomyopathy and the probability that the patient has amyloid.

Martha Grogan, MD ([17:07](#)):

And normally, there's not much overlap. So, we have seen patients that even in our echo lab, were thought to have hypertrophic cardiomyopathy. We look at the algorithm, it actually is strong and positive for amyloid. So again, I think there are clues that we can use that even a really trained ECG reader can't see these patterns and artificial intelligence really, really helps us with that. Again, with hypertensive heart disease or athlete's heart, it will more be kind of imaging and history that will help us in that regard. I don't think we have a lot of characteristic findings in Fabry's disease on the ECG, but you can correct me if I'm wrong on that other clues to the diagnosis. But I really do think that eventually we will, of course, apply artificial intelligence to our imaging techniques to help us see the patterns.

Martha Grogan, MD ([17:57](#)):

So, echo can be pretty subtle in early amyloid, whether it's TTR or AL, but especially AL, so I think we'll be able to pick up tissue characteristics and patterns that we can just see without the use of the computer-enhanced artificial intelligence. So, I think that will really help us in cardiology in general.

Ferhaan Ahmad, MD ([18:19](#)):

And for amyloid, my experience is that generally you don't see a huge amount of hypertrophy compared to some of the other conditions.

Martha Grogan, MD ([18:27](#)):

On the electrocardiogram you mean?

Ferhaan Ahmad, MD ([18:28](#)):

Or the echo for that matter. Usually, it tends to be less hypertrophy than say some of the other metabolic infiltrative disorders.

Martha Grogan, MD ([18:38](#)):

Yeah. Many of the storage conditions and hypertrophic cardiomyopathy are going to have some of the thickest walls you'll ever see, the exception is that the wild-type TTR and actually some of the hereditary TTR have very thick walls. I mean, it's not unusual for us to have a 24-millimeter septum, not as common to have some of the higher ones. And then on the ECG, one mistake is that some people think that criteria for LVH will never be present if the patient has amyloid, but we can see that. So, there's an overlap, but again, I think newer techniques but using our most simple technique, one thing we love about the AI ECG is that almost everyone gets an ECG, even when they have very vague symptoms, early in the course of their disease. It's a way to pick up these conditions earlier.

Ferhaan Ahmad, MD ([19:26](#)):

And how often do you see that famous cherry on top on the longitudinal strain?

Martha Grogan, MD ([19:32](#)):

The apical sparing of strain is pretty common with both AL and TTR. Sometimes when there's just subtle wall thickening, that is a clue. Our sonographers will often see that and say, "I'm going to do strain" and they pick up the pattern. It's not completely specific for amyloid because it's an exaggeration of normal. It can happen in other diseases, but particularly in HCM, which will more commonly have abnormalities of the septum versus amyloid or apical HCM is a perfect example. You see the opposite of the cherry on

top, you see white on top, you see whipped cream on top, I guess there's no cherry on top. So, these patterns really are informative.

Ferhaan Ahmad, MD ([20:16](#)):

So, on the storage disorders side, I actually study some of this in my basic science research lab too. So, there are less, I think, specific changes, certainly on echo, you will see massive hypertrophy, but there's probably no other special clues like you do sometimes see in amyloid, however, one classical sort of finding, I don't know how often we actually see it, but something that I always mentioned to our trainees, you will often see findings of LVH on the electrocardiogram. But at the same time, you will see a short PR interval because it's not true Wolff-Parkinson-White syndrome. It's actually a disruption of the annulus fibrosis by glycogen and you get a direct communication between the atria and the ventricles. So, a short PR interval with LVH and then sometimes conduction abnormalities on top of that. So, you have a short PR, but yet you have a conduction abnormality because you have potential damage to the conduction system by the glycogen or whatever exogenous substance you have there.

Ferhaan Ahmad, MD ([21:11](#)):

So that's kind of something that if you find, you should start thinking that this is an HCM phenocopy and potentially a glycogen storage disorder. So that's some of what we do as cardiologist, but then, Dr. Taylor, as a geneticist, can you tell us what you do in terms of genetic testing or other molecular testing to try to make a diagnosis?

Matthew Taylor MD ([21:32](#)):

So, it's always a little bit nerve wracking for me as a geneticist to talk about cardiac stuff amongst some cardiac experts. So, what I hear when I hear some of your comments, Martha, is I hear a little bit of, there are some features whether it's electrocardiogram or echocardiogram, which we like to think are compelling suggestive, but are rarely sort of completely diagnostic because there's a lot of overlap in these disorders. And as we've expanded our knowledge of these disorders, we find that quite a few cases of amyloidosis don't fit with exactly the classic pattern that I learned 20 years ago in medical school. And so from our perspective in genetics, we are excited to see the fact that we have molecular tools that can often help bring additional information to these cases. And so, from our perspective, we quite routinely now offer molecular genetic testing to patients with this type of cardiac phenotype.

Matthew Taylor MD ([22:22](#)):

And in many cases, perhaps half a case is now perhaps a little bit more, we can find a molecular diagnosis. And I will say as the non-cardiologist in the group, I've got some cardiology colleagues who are very good at saying, this will be amyloidosis and they're frequently right. They're also not always right. In other cases where they say the strain pattern in this has to be Fabry disease and it turns out to be something else. And so, I think that all of these bits of data get mashed in together, I'll mention that we should have family history data thrown in there as well. And the more data you have, the more likely you are to be able to select that correct diagnosis. But molecular testing has really gotten us, I think, a lot way further forward in being able to confirm a diagnosis and many of us wouldn't move forward with a confirmed diagnosis of amyloidosis, Fabry disease, Pompe disease, et cetera, without having that molecular data on hand as well, to make sure that we're correct.

Ferhaan Ahmad, MD ([23:13](#)):

Do you still rely on biochemical enzyme activity assays anymore?

Matthew Taylor MD ([23:20](#)):

So, it's a good question. We use some of the enzyme assays some of the time, but increasingly, the molecular data is as easy to get sometimes quicker to get. And to my earlier comments of you can't always be right. You might say this sure looks like Fabry disease, but why do just a Fabry disease assay, when I can do a gene panel. There are some risks of testing too many genes at once in terms of getting information, that's hard to interpret, but the use of enzyme assays for diagnosis, the same as the use of cardiac biopsy for diagnosis is probably dropping over time because you can use a molecular test first, often get your diagnosis and then decide whether or not you need the enzyme or the cardiac biopsy to give you additional information.

Ferhaan Ahmad, MD ([24:04](#)):

That's a great segue into another comment I wanted to throw out. So, how many of us are still rely on sort of tissue diagnoses? It's not very common anymore, but does that happen?

Martha Grogan, MD ([24:15](#)):

That is a great question. So as you know in the amyloid world, until we had nuclear cardiac scintigraphy, we always required a tissue diagnosis and that made it difficult, especially with the wild type TTR patients, because most of the time, the fat aspirate or sometimes we do bone marrows making sure there's no AL, it's much more common that those will be negative. Whereas in AL and in hereditary TTR amyloid, it's much more common that we can get tissue from elsewhere and make the diagnosis. So, we're very excited about that, but I must say that because of challenges of, when you give a cardiologist a new tool, we always need to be careful or any clinician, I don't want to be derogatory to my colleagues. It's using that scintigraphy in the right context for which the international consensus guideline said that this was appropriate.

Martha Grogan, MD ([25:10](#)):

So, having a classic echo and/or MRI, excluding AL amyloid, doing PYP scanning, it would be in the United States and making sure the uptake is in the myocardium. So, many times we see that those steps are not all followed. And we have the problem of patients being diagnosed with amyloid when they don't truly have amyloidosis or being diagnosed with TTR amyloid when they have AL amyloid. So in a certain sense as much as I agree with Matt about if we don't need tissue, we don't need it. In the cardiac amyloid world, we probably should be doing more biopsies, not less because now we have treatment. It's not an academic disease. And we know that if patients have monoclonal proteins, which is common to have a monoclonal gammopathy in elderly patients, then if you think they have TTR amyloid, you really have to do or any type of amyloid, you have to do a tissue biopsy.

Martha Grogan, MD ([26:05](#)):

So, for amyloid, because we're finding so many more patients, we should be doing more biopsies. There's a big segment that won't require a biopsy, but there's a certain group that really should. And that's probably where we're almost back to the basics. And I remember once being on a panel at ACC or AHA where someone really challenge us, how could you say that there's a substitute for tissue and we were all so gung-ho, but now when we've seen the problems, it's like anything, there's a balance.

Matthew Taylor MD ([26:36](#)):

If I could just add to, I agree with your comment entirely. I think another thing that your comment brings out is that as exciting as this new molecular diagnostic era is, it's making life much more complicated.

And so now that you actually can segment hypertrophic disease into different categories means you have to think about how you're going to actually address those categories. And you might need really significant expertise to be able to make sure you're addressing each of these very precisely. And so as exciting as this is, it does create a challenge from a training perspective as well as just whether this is something that's done only at large centers with specialized individuals or how this can be accessed across the country. It has gotten a lot more complicated and I'm a geneticist, so I used to know a lot more about amyloid than the average cardiologist did. I felt as a geneticist, I now know much less than my cardiology colleagues who treat cardiac amyloidosis because they're light years ahead of where I am now in terms of how to complexly evaluate those patients. So, it's interesting but it's creating some new challenges.

Ferhaan Ahmad, MD ([27:39](#)):

And for some of the other storage disorders, Fabry or glycogen collection storage disorders, Dr. Taylor, my impression is that genetic screening is pretty high yield, we are able to identify large portion of patients that have variants in the genes associated with these conditions while tissue diagnosed can sometimes be helpful, we don't have to do it very often. I mean, they do have these classical findings of, for example, vacuoles full of glycogen if they have a glycogen storage disorder, but we really have to go that way, is that your experience too, is a molecular diagnosis sufficient, or do we still have to occasionally rely on tissue diagnosis?

Matthew Taylor MD ([28:14](#)):

There are some occasions where a tissue diagnosis would be helpful. The molecular testing for things like Fabry disease is very high yield. So, if it is Fabry disease, you can find the mutation in almost all cases, but sometimes a patient will get biopsied either a kidney biopsy or a cardiac biopsy to make a decision about whether or not they have significant burden of disease to merit treatment. Fabry disease being a sex linked disorder, the condition's a little bit harder to evaluate in women to some degree because some women are minimally affected and possibly could be followed clinically, others are more significantly affected. And so, a Fabry male is a fairly easy decision of when are we going to start treatment in most cases, but for Fabry females, it's a little bit more difficult. And so, we sometimes use biopsies in those instances to get a handle on the burden of disease to make decisions about these therapies.

Ferhaan Ahmad, MD ([29:03](#)):

Great. So, Mr. Cilek based on our discussion, I think you've already addressed these questions, but I want to recapitulate how your diagnosis was made and then how your life has been after you started on specific treatment for amyloid?

Tom Cilek ([29:18](#)):

Again, that's all, my memory's a little faint here, but I started in 2019, went to the university, had a series of tests before I met you, all sorts of things. So, I was in scanning all the time. So in that process, I think that's when you and your staff reviewed it, you determined I had this wild type ATTR and you people were nice to me and we moved down the road with the various diuretics and stuff. And then, I had to go in the hospital once, that August you made a call and that's when you mentioned that Pfizer had this drug. So, I just have a general comment to all the people who are listening to this, I think there are two things that I would say as the patient, one is no doubt the medical care I've received here at the University of Iowa has been outstanding.

Tom Cilek ([30:03](#)):

The people have been very competent. The pacemaker was a huge deal. I don't minimize that. And nor do I minimize what Pfizer did with their drug. I think I may be getting better who knows. All I know is I'm feeling great, but besides that at the heart clinic at the University of Iowa, the people there really cared about me as a person. It's hard to describe. I don't want to exaggerate here, but with people I check at the front desk or this, Katie Halbmaier, the nurse practitioner, I see these people, they liked me and they cared for me. And that made me, I guess, made me try harder. It's all part of the big picture when you had this diagnosis, you get a little discouraged, but now anybody who has this thing, there's hope if you just follow the rules, do your best. And again, University of Iowa has been special, both on the medical competence but also as a human being, so I do appreciate, I can't separate the two off.

Ferhaan Ahmad, MD ([30:55](#)):

Well, with that I was just reflecting on what I've learned and I guess the biggest issue is trying to avoid getting fooled, involves putting together some disparate pieces of information. And certainly the history from the patient can give you clues as to what you're dealing with and then combining it with some targeted physical findings. And then some basic studies can sometimes really point you in the right direction. The electrocardiogram often gives you those clues, that this might be amyloid or might be Fabry or what have you. And then, of course, we can get onto more advanced imaging and more sophisticated testing, including molecular testing and genetic testing. The basics are sometimes enough to give you a suspicion that what you're dealing with is not sarcomere HCM. So, that's kind of the lesson I'm learning, Dr. Grogan, Dr. Taylor?

Martha Grogan, MD ([31:46](#)):

I would just echo what Mr. Cilek said, that it's just so important for providers to realize that there is hope probably most of these diseases, but specifically in amyloid, we still have patients that come in that have read the literature from before we had treatment. So now if we identify patients early, we really can change the natural history. And that's just very exciting. And he's a great example of that. And the reminder to everyone of always having that human touch when we interact with our patients.

Matthew Taylor MD ([32:18](#)):

I would also add that these are often family-based conditions and that engaging genetic counseling is often very valuable for families, both as they're worried about their living relatives, who perhaps live in other states, but need to be evaluated and connected to centers of excellence as well as the conversations that come up around family planning. I know that's not something that we've necessarily done traditionally, a lot of in cardiology, but it's certainly coming to cardiology now with these genetic conditions and for many families, that is one of the most important reasons they're coming to see you is also the issues around health to their family and family members and we shouldn't forget that either.

Ferhaan Ahmad, MD ([32:55](#)):

And Mr. Cilek, you've been very eloquent already, any final thoughts?

Tom Cilek ([32:59](#)):

But on that genetic testing, I didn't understand all that back then, I thought what's going on? But the university did do that for me. We did the genetic testing and decided it was going through the family, but we've talked to my daughter and my son. I have granddaughters who are in college now. So, they're all aware of the situation, they're all aware what's going on. So, the genetic testing was very important

to our family. So, it's all part of the big picture. But again, I want to tell people, I cannot tell you three years ago, you guys told me, they thought I could live for three years. They were, you guys were very careful, but here I am. I cannot tell you how good I feel. It's making a huge difference. I may live forever. I know that's my new theory. So, thanks for everything.

Ferhaan Ahmad, MD ([33:36](#)):

Thank you, Mr. Cilek. Yeah, we'll work on that for sure. We'll end this podcast and I want to thank Mr. Cilek and Dr. Grogan and Dr. Taylor for joining us today. This podcast is a part of the American Heart Association HCM Initiative, sponsored by Bristol Myers Squibb. And in closing, I'd like to remind everyone listening to encourage your patients to play an active role in their medical care by advocating for themselves and their family members. To get additional information, please visit the AHA's hypertrophic cardiomyopathy website for more education. Thank you.