Dr. Tevfik Ismail (00:05):

Welcome to the AHA Pericardial Disease Podcast entitled Recurrent Pericarditis in Systemic Autoinflammatory and Autoimmune Disease, Clinical Recognition and Management. This is the seventh in a series of eight podcasts on recurrent pericarditis. I'm Dr. Tevfik Ismail. I'm a consultant, cardiologist, and Clinical Lead for Inflammatory Myocardial and Pericardial Diseases at Guy's and St. Thomas' Hospital, London, United Kingdom.

(00:32):

For this podcast, I will be joined by two leading experts in this area, Dr. Claire Peet, a research fellow in recurrent pericarditis and works in the Inherited Periodic Fever Service at the National Amyloidosis Center in the Royal Free Hospital, London, United Kingdom. And Dr. Amin is a rheumatologist at the Mayo Clinic, Rochester, Minnesota. In the earlier podcast in this series, we've talked about the diagnosis and management of acute and recurrent pericarditis. We've also explored the basic pathophysiology of pericarditis and introduced the concepts of autoinflammation.

(01:06):

In the first half of this podcast, we're going to explore in more detail the diagnosis and clinical features of the monogenic autoinflammatory diseases, many of which can present with recurrent pericarditis, and what we can learn from the treatment of these conditions with respect to idiopathic recurrent pericarditis. Now, while autoinflammation is an important mechanism responsible for pericarditis, pericardial inflammation is also a frequent feature of autoimmune rheumatic disease. In the second half of the podcast, we will discuss a spectrum of autoimmune diseases that can be complicated by pericarditis, how to recognize these clinically, and most importantly, when to call for help. So to kick off, Dr. Peet, most of us listening to this podcast would be familiar with acute and recurrent pericarditis, but maybe less familiar with the concept of an autoinflammatory disease and may never have seen the patient with a monogenic autoinflammatory disease. Could you give us an outline on the kind of patients that you see in your clinic?

Dr. Claire Peet (02:07):

Well, thank you for inviting me to join you on this podcast and it's a real pleasure to be able to talk to you about the monogenic autoinflammatory diseases and when to suspect them as secondary causes of pericarditis. Regarding the patients we see in our clinic, our clinic is a multidisciplinary service which specializes in the diagnosis and management of autoinflammatory diseases. Now, autoinflammation is a relatively new field of medicine and it may not be entirely familiar to all clinicians listening to this podcast. So to quickly summarize, autoinflammation describes excessive activation of the innate immune system in the absence of an extrinsic stressor, be that pathogen or tissue damage, or autoreactive B or T cells, as you would see in autoimmunity. And it's perhaps best understood within the context of monogenic autoinflammatory diseases, where genetic mutations result in autonomous activation of innate immune pathways.

(03:07):

However, more recently there's been recognition that it may be more relevant in common conditions and that includes pericarditis. These monogenic conditions present with episodic and more rarely persistent multisystem inflammation, which may include episodes of pericarditis. And so patients are typically referred to us either because there is a clinical suspicion of one of these underlying diseases or more commonly because patients have an undiagnosed inflammatory syndrome, which can't be explained, which is often refractory to conventional treatments. And through that route, we also see a lot of patients with treatment refractory pericarditis. In the longer term, we manage patients with these

monogenic autoinflammatory diseases and also patients with treatment refractory pericarditis because there's significant overlap in the pathways we use to manage these diseases.

Dr. Tevfik Ismail (04:05):

So you mentioned that these diseases are relatively uncommon. When should cardiologists and other allied cardiac professionals be thinking about a monogenic autoinflammatory disorder in patients particularly presenting with recurrent pericarditis? What sort of things should we be looking for?

Dr. Claire Peet (04:22):

So as you say, they are relatively uncommon. I will preface this in saying that whilst they're uncommon, they are extremely high value diagnosis for two reasons. Firstly, because we have extremely effective treatments to manage them, which means that establishing a diagnosis can allow you to initiate treatment which is transformative for patient quality of life. And second, because undertreated monogenic autoinflammatory diseases carry the risk of life-threatening AA amyloidosis, which is entirely preventable if we establish them on effective prophylactic therapy. So that being said, collectively these diseases are uncommon, individually, the individual diagnoses are often very rare, and it would be unrealistic to expect all clinicians to be able to see specific features and think this is the diagnosis. Instead, the priority is a comprehensive clinical assessment to elicit features which may be suggestive of an underlying systemic autoinflammatory process that would then prompt referral.

(05:26):

So as part of that comprehensive assessment, the first thing that you should be thinking about, are there features of inflammation beyond the pericardium? So asking questions which elicit features, signs, or symptoms that are suggestive of inflammation at other sites, asking about rash, ocular inflammation, periorbital edema, arthralgia, myalgia, mouth or genital ulcers, pleuritic chest pain or peritonitic chest pain, and fever. Moving on from assessment of the patient's personal history, it's then important to take a really thorough family history. And that's not simply, "Do you have a family history of pericarditis." Often patients with a family history of monogenic autoinflammatory disease will have an undiagnosed family history. So it's asking the right question that can elicit those undiagnosed features. So asking questions like, "Does anyone in your family have episodes like you do" or "Does anyone in your family have a history of unexplained fevers that you're aware of?" And of course, "Does anyone have an autoinflammatory disease in your family?"

(06:36):

But if most clinicians don't know what an autoinflammatory disease is, certainly most patients won't know how to answer that question. In terms of documenting the family history, it's exceptionally useful to have a three generation pedigree. It's also important to ask about consanguinity because some of these diseases are rare autosomal recessive diseases that are only unmasked in the instance of consanguinity. And finally, it's important to remember that whilst the majority of patients with a monogenic autoinflammatory disease will have a family history, be it diagnosed or undiagnosed, a significant minority of patients will not have a family history. That may be because the disease is also recessive, it may be because the mutation has arisen de novo, or finally a number of these conditions can arise as a result of somatic mutations. So the absence of a family history does not exclude an autoinflammatory diagnosis.

(07:35):

Now, I've said that we don't want you thinking about specific monogenic autoinflammatory diseases. There is one notable exception to that rule and that is Familial Mediterranean Fever. And that is because

that is a condition particularly among patients of Eastern Mediterranean descent that is relatively common, although it can occur in patients of any ethnicity. So indeed in the Eastern Mediterranean, its prevalence is between one and 200 and one in 1,000 patients, so relatively quite common. Familial Mediterranean Fever presents with episodes of serositis. The typical history is for an individual to develop severe episodes of abdominal pain lasting one to two days, maybe accompanied by fever, usually with an onset in adolescents, and often they will have years and years of repeated A&E or emergency department presentations without achieving a diagnosis. So it's important to ask in the history if there's any history of pleuritic chest pain or peritonitic abdominal pain, which may be suggestive of Familial Mediterranean Fever.

(08:40):

A final thing to note on the clinical presentation of these diseases is interestingly myocardial inflammation, be that myocarditis clinically suspected or proven or myocarditis, doesn't seem to be a feature of these diseases. So there's never been a reported case within Familial Mediterranean Fever, which is the most prevalent of these conditions. And we've recently looked within our patient group, which is nearly 2,000 patients, and no patient had a history of myocardial inflammation. So your index of suspicion may be a little bit lowered if you see a patient who has significant myocardial inflammation associated with their pericarditis. So to really put that all together, what you need to be thinking is that if you see a patient who has signs or symptoms of extra pericardial inflammation who's presenting to you with pericarditis, you need to be thinking, is there a possibility there might be an underlying secondary monogenic autoinflammatory disease and should I make a referral or discuss with rheumatology for that to then be explored further?

Dr. Tevfik Ismail (09:45):

Okay, so in short, us cardiologists need to think outside the box or in our case outside the mediastina and ask about extra pericardial symptoms, take a detailed family history getting a three generation pedigree and particularly focus on Familial Mediterranean Fever. So we know these monogenic autoinflammatory disease can cause pericarditis. What can we actually learn by studying them and how can we apply some of this to patients with otherwise idiopathic recurrent pericarditis of a non-monogenic etiology?

Dr. Claire Peet (10:23):

So our understanding of autoinflammation itself has been largely driven by identification of the genetic changes causing monogenic autoinflammatory diseases. And in most cases, the aberrant pathways converge on the inflammasome, which has been discussed in previous podcasts, which is a cellular apparatus that cleaves pro-interleukin-1 beta into interleukin-1 beta, which is the key effect cytokine in these monogenic autoinflammatory diseases, but we now also think within the context of inflammation.

(10:58):

So to give you two interesting examples, starting with Familial Mediterranean Fever, which it usually shows autosomal recessive inheritance, the disease is caused by the presence of two gain-of-function mutations in the mefE gene, which encodes pyrin. Pyrin is an inflammasome sensor whereby mutations in mefE that encode pyrin result in constitutive activity of pyrin, resulting in assembly of the inflammasome and overactivity of the inflammasome and cleavage of pro-IL-1 beta to IL-1 beta. Similarly, in one of the conditions we look after called caps, that disease is caused by mutations in the NLRP3 gene, which may be familiar to some of our listeners. Again, NLRP3 is an inflammasome sensor and forms the NLRP3 inflammasome and again, gain-of-function mutations in this gene resulting overactivity of this inflammasome sensor and ultimately increased production of interleukin-1 beta.

(12:00):

Interestingly, thinking about whether we can transfer any of these genetic lessons directly to pericarditis, when we look at our patients with idiopathic recurrent pericarditis, we've observed that we see rare damaging variants in the meFE gene more often than would be expected in the general population, suggesting that there may be some risk conferred by the present of a single mutation in this gene in terms of developing pericarditis.

(12:28):

However, it remains the case that for the majority of individuals with idiopathic pericarditis, there'll be no genetic risk factor identified. Although of course this is an evolving area of research.

(12:42):

In terms of translational significance of thinking about the pathogenesis of these diseases. The monogenic autoinflammatory diseases are a real paradigm for how understanding of genetic change has resulted in real changes to patient care. So following understanding of this interleukin-1 pathway as being the central mediator of the monogenic autoinflammatory diseases that led to the design and, later, the application of targeted interleukin-1 therapies which were pioneered specifically in this field and which have completely transformed the prognosis of patients with monogenic autoinflammatory diseases. And of course, as I'm sure we'll come on to discuss, those same agents have been shown to be very efficacious in the management of pericarditis, which is of course of great interest to us in terms of the patho physiology of pericarditis itself.

Dr. Tevfik Ismail (13:37):

So you mentioned both monogenic autoinflammatory disease and an idiopathic recurrent pericarditis. We can use these conditions as kind of paradigm for how IL-1 mediates inflammation. And you mentioned that we've now increasing using therapies targeted towards IL-1. Are you able to just run through what therapeutic options are available and what the different mechanism of actions and pharmacology are?

Dr. Claire Peet (14:07):

So we have two main classes of agents available to us, both in the management of monogenic autoinflammatory diseases and in the management of idiopathic pericarditis, those being colchicine, and, more recently, the targeted anti-interleukin-1 biologics. Beginning with colchicine: colchicine is an ancient drug with pleiotropic effects on the innate immune system, and which more recently has been demonstrated to interfere with the assembly of the inflammasome and thereby result in reduced or impeded IL-1-beta production. And colchicine has been the main state of management of Familial Mediterranean Fever, this monogenic inflammatory disease that I've been discussing for decades.

(14:54):

The anti-interleukin-1 drugs were, as I say, developed more recently and specifically within the context of the monogenic autoinflammatory diseases, and that's where they were first applied. There are three agents that are currently in use. The first is anakinra, which is a recombinant version of our endogenous interleukin-1 receptor antagonist. The second is rilonacept, which is an anti-interleukin-1 trap. And both of these agents have been demonstrated to be efficacious both in the management of monogenic autoinflammatory diseases and in recurrent pericarditis. There is a third agent called canakinumab, which is a human anti-IL-1 beta monoclonal antibody, which is a drug which is very effective in the management of monogenic autoinflammatory diseases. But it's role in the management of pericarditis is currently unclear, and we have very little evidence that present to support its use.

(15:54):

When we look after patients in our clinic, the management of Familial Mediterranean Fever really is an excellent paradigm for the treatment of pericarditis. Briefly, we use a treat to target approach where patients are started on a relatively low dose of colchicine, usually one milligram, sometimes 1.5 milligrams depending on the clinical context. And their clinical response to that therapy is then assessed and according to the response if necessary, treatment is then escalated. Firstly through targeted up titration of colchicine up to the maximum tolerated dose or three milligrams a day, whichever is lower. And where that fails, then addition of an anti-interleukin-1 biologic. And that management is in line with international consensus guidelines from EULAR, which is the European Association for Rheumatologists.

(16:53):

I would really signpost anyone who's interested to the EULAR guidance for the management of Familial Mediterranean Fever, largely because it gives an excellent resource on the safe prescribing of Colchicine in these settings. Not only the guide to the treat to target principle, which is perhaps used for example in heart feed or in cardiology, but is probably more familiar to rheumatologists than cardiologists. But then also specifics around Colchicine prescribing, considerations for safe prescribing, practical considerations of how to increase the dose and how to mitigate side effects. For example, dietary lactose exclusion can be very useful for managing the gastrointestinal side effects. And finally, considerations in special patient groups, be that in patients who are more elderly, patients who are pregnant or planning pregnancy and patients who may have renal impairment. So as I say, we employ this approach when we manage patients with pericarditis and we found it within our clinic to be very effective at being a steroid sparing approach to managing treatment refractory pericarditis.

Dr. Tevfik Ismail (18:07):

Hey, thank you Dr. Peet. We've talked a lot about auto inflammation in this and in previous podcasts as well. However, the pericardium is frequently involved in systemic autoimmune disease as well. And so these may present to cardiologists. Dr. Amin, can you walk us through the spectrum of diseases that can be complicated by pericarditis that you see in your practice?

Dr. Shreyasee Amin (18:27):

Well, thank you and for that question. And thank you again for the opportunity of participating in this podcast. As a rheumatologist, there are four broad categories that we consider when we think about our autoimmune conditions, and that includes rheumatoid arthritis as one broad category. The next large category would be our autoimmune connective tissue diseases, which would include diseases such as lupus, Sjogren's syndrome, scleroderma, and the inflammatory myopathies. The next category we think about are the spondyloarthropathies, which include ankylosing spondylitis, the reactive arthritides, psoriatic arthritis and inflammatory bowel disease or bowel disease associated spondyloarthropathies. And then our last broad category would be the vasculitides, which then we sort of categorize as large vessel vasculitides, medium vessel vasculitides. And another broad category would be our ANCA-associated vasculitides. Apart from those four broad categories, of course, we also think about the autoinflammatory disease, which have been well covered with the Familial Mediterranean Fever.

(19:40):

The other things that we might think about in adults, at least, are... Another broad category or a few categories including adult-onset Still's disease that would be also in that autoinflammatory condition. And then some people may present an adulthood with a condition called TRAPS, that often is another autoinflammatory condition, many of which are actually identified in childhood. But TRAPS may be only recognized in adulthood or later in age. The other broad categories or miscellaneous categories, I should

say, include IgG4-related disease, which has protein manifestations, but one of which can be pericarditis and another condition we call Behcet's disease, which straddles sometimes in the vasculitis or the autoinflammatory family.

(20:35):

Now, when we think of these large number of different conditions, the ones that we probably will more commonly see associated with pericarditis include rheumatoid arthritis and of the autoimmune connective tissue diseases: SLE or lupus is another one that will often either be a presenting manifestation or will be a significant manifestation. And among our patients with SLE.

(21:02):

Sjogren's syndrome certainly can have that associated with it. And again, this travels together oftentimes with lupus. Another condition, scleroderma, can have pericardial effusions that are fairly large. They may or may not be symptomatic, but when they do appear, we do think about other manifestations of scleroderma including renal crisis, which may be heralded by a large pericardial effusion. The spondyloarthropathies, these can be associated with pericarditis. They are not the most common manifestations, but it is something we have to think about when it presents in this group of patients.

(21:42):

And of the vasculitides, again, large vessel vasculitides, the ones to think about are giant cell arteritis and Takayasu's arteritis, separated by mostly age range, but those have been associated with pericarditis, in rare situations. Polyarteritis nodosa or prototypic medium vessel vasculitis can be associated with pericarditis. Again, these are rare manifestations of rare diseases, however. And then when we think about the ANCA vasculitis that has been associated with pericarditis, especially one of the family of ANCA vasculitis called EGPA. And so these are also a group of diseases that we need to consider when someone is presenting with pericarditis. And as we've talked about before, adult-onset Still's disease, TRAPS, [inaudible 00:22:35] are also conditions we have to think about.

Dr. Tevfik Ismail (22:39):

So it's a huge spectrum of disorders that we potentially need to be aware of. Do you have any tips or pearls or strategies that cardiologists can adopt? When should we suspect these conditions? What kind of questions should we be asking in a history and what should we be looking for in physical examination?

Dr. Shreyasee Amin (22:56):

So those are good questions, and I think the first thing we have to think about is the patient. Does the patient that is presenting with pericarditis have a known history of an autoimmune disease or is this their first presentation, and we have to explore the possibility that we are seeing the manifestation or first presentation of one of these conditions? Rheumatoid arthritis, of the autoimmune connective tissue diseases, lupus, for example, those could be your first manifestations, however. So the first thing ask, do they have an underlying autoimmune disease? They may not volunteer it, so you need to ask about that, or they may not put the two together. And then if they do not have an underlying autoimmune disease, then the two most common conditions will be rheumatoid arthritis and lupus. But the things that you'll need to think about or ask about at least would be: do they have inflammatory joint pains?

(23:57):

And when we say inflammatory joint pains, that is joint pains that are worse when they are at rest and improve with activity, as opposed to osteoarthritis, which seems to tends to be worsened by activity. So key questions are, "Do you have joint pain that is in particular joints, and are there symptoms of prolonged morning stiffness of an hour or more?" Those are more likely to be inflammatory joint symptoms that could be seen in rheumatoid arthritis, that could be seen in conditions like lupus or some of our other autoimmune rheumatologic conditions that we talked about.

(24:40):

And then of the joints, is it in their MCP joints, their wrists, their elbows, their ankles? Those are joints that are less likely to be associated with osteoarthritis, unless there's been trauma through a joint. So specific joints that would be unusual for just run of the mill osteoarthritis. So asking about morning stiffness and joint pains are critical, and that may help you determine whether there is at least some inflammatory arthritis that might be associated with the pericarditis.

(25:12):

As we've talked about before, there is a protean manifestations for many of these conditions that has a review of systems from head to toe. However, if you can at least ask about photo sensitive rashes, rashes that, not sunburn easily, but do they get a rash that is worse with sun exposure or that's raised and arrhythmias? Some people, especially women, may dismiss that as saying something they've had for a long time and they may not even put that association together. Other symptoms that you may want to ask about is Raynaud's phenomenon. So do their fingers turn white with cold exposure in particular? These are again, symptoms that people may dismiss, not put that together, but these are a few symptoms that may be heralded before any development of or recognition of lupus, for example, or our other autoimmune connective tissue diseases. As we've talked about before, there are many symptoms from head to toe, but if they have other systemic symptoms like fevers, unexplained weight loss, you may be looking more for a systemic autoimmune rheumatologic condition.

(26:24):

But there are several symptoms that you'll need to work through. But if you can at least capture those ones: joint pain, inflammatory joint symptoms, Raynaud's, rashes, those would be tje big ones to ask about at least as a first cut for a screening. But there are several ones that you should ask about, but that's usually our job in rheumatology to do that investigation.

(26:49):

Now in your exam, again, I understand that the joint exam may be challenging for people who don't do that on a regular basis, but if your patients can't make a fist and they're young, that may be more likely a sign of an inflammatory arthritis or if they do have reduced range of motion. So especially in your younger patients, if you see limitation in their range of motion of the hands, wrist, elbows, that would be abnormal and could be a sign of an inflammatory arthritis. They may volunteer it, you may need to look for it. Again, rashes, vasculitic appearing lesions, nodules, for example. These are more likely to be associated with rheumatoid arthritis and maybe again, missed or people may have just dismissed their symptoms until they present with something more acute like their pericardial chest pains.

Dr. Tevfik Ismail (27:48):

So for the patient with known systemic autoimmune disease, when they present to us, how should we be assessing whether their disease is active and maybe therefore potentially responsible for pericarditis? So what kind of things should we be looking for clinically and on examination and on investigations It, I mean, whether a disease is active, for example, rheumatoid arthritis or SLE, which are probably the two most common things we see.

Dr. Shreyasee Amin (28:15):

So the things that we always have to keep in mind that if they have a known autoimmune disease, it is certainly possible that the pericarditis is related to their disease. But it's always important to take a step back and be sure, are we missing an infection? Because our patients are immunocompromised, they can get infection similar to people who are immunocompetent, but because they are on immunosuppression, it is important to be always vigilant for an infection, including atypical organisms. Of course, the presentation may be more different in terms of the acuity or how serious their symptoms may be. However, that is one of the things we have to keep in mind. And the other thing we have to be in conscious as if they have an underlying autoimmune disease, is this a presentation of an underlying malignancy? We have a higher association and particularly of hematologic malignancies with some of our autoimmune rheumatologic conditions. So we always need to take a step back and say, is it related to something else first?

(29:24):

Then when we start ruling out other conditions, we have to think about, is their disease active? And of course for rheumatoid arthritis, if their joint symptoms are out of control or not adequately controlled, that helps us with assessing that their pericarditis may be part of their disease activity or a manifestation of inadequately controlled rheumatoid arthritis. We do additional investigations of course, to try to assess that by our history, by our exam, and by our laboratory studies that might help us determine whether, for example, rheumatoid arthritis is more active. If we have the opportunity of looking at the pericardial fusion, if there is one that is, that we can tap the one of the characteristic findings is a low glucose in rheumatoid arthritis. Now that can be seen with infection, but if infection is ruled out, that again is more likely to be associated with a flare of rheumatoid arthritis.

(30:33):

Now, in lupus for example, we have to again go through a broad range of their symptoms to see if their disease is active. However, we also will look at different laboratory parameters. We look at their blood counts, we look at their renal function, their urine, their basic labs overall to see if there is any manifestations that would be associated with lupus. But then we have a number of serologic studies that we can look at, and it all depends on whether these patients have antibodies that what we call correlate with their disease activity, specifically the double stranded DNA and compliments. In some people, the compliments and the double stranded DNA will correlate with disease activity, meaning their double stranded DNA will be elevated, their compliments will be low with disease activity. And if they do correlate, we will look for those patterns. And then as we said, we look for other evidence of disease activity by their symptoms and their exam or by other testing if necessary.

(31:41):

But those are broad ways of assessing for rheumatoid arthritis in lupus. However, that goes the same for if they have an underlying vasculitis. We look at their symptoms, their serology, that may give us an idea of if they have disease activity as appropriate. For example, the ANCA vasculitides, we do have antibodies that may correlate with their disease activity. Some of the other diseases we do not have those markers. So it's really a clinical assessment that we have to make.

Dr. Tevfik Ismail (32:16):

Okay, that's great. So you'd be pleased to hear, I'm not going to ask you to summarize the treatment of every single different rheumatological disorder, but just as in general terms, just cause I think the approach is slightly different from with autoinflammatory disease per se, what's your approach to

treating autoimmune disease in terms of patients coming to you with a flare of disease or their first presentation disease? What's, what kind of strategy do you use to get the disease under control?

Dr. Shreyasee Amin (32:42):

Right, so those are good questions. So it all depends on the disease that we are dealing with. So once we have established that the pericarditis is related to a specific condition and as a flare of a manifestation of their, either their rheumatoid arthritis, their lupus, their vasculitis, or other autoimmune condition, then we go through the steps of establishing what treatments they've used before and what can we escalate in terms of their current management.

(33:15):

For example, in rheumatoid arthritis, we have a number of different options now, which we are very fortunate to have, and that will allow us to treat their disease adequately, including a number of TNF inhibitors, for example. But we have other options to consider.

(33:34):

Now when we try to assess their management. First, it's trying to control the disease acutely, so that may require prednisone in some situations. In other situations, we may be able to use similar approaches with NSAIDs and colchicine. But the ultimate goal is once we've get them under control acutely, is to then identify the medication that would next best be available to control their rheumatoid arthritis and hopefully again, their underlying pericardial disease as well. Fortunately, anakinra, which we use for idiopathic pericarditis, is also approved for rheumatoid arthritis.

(34:17):

Now the same approach goes for patients with lupus or other autoimmune diseases. We first will use prednisone is often our go to for acute control of their disease. And it depends on what other manifestations they may have, what dose we may need to put them at, whether we use extremely high doses, if they have other significant or serious organ manifestations. And again, I'm thinking about lupus or even the vasculitides as part of this spectrum. And then we will use the next best medication that's appropriate for the disease. And at one point we used to use very similar medications for all of the diseases. However, now we have more specific therapies that are available to us for the connective tissue disease, including lupus now.

(35:05):

For the vasculitides, it depends on the type, but for our ANCA vasculitides, we're having more specific therapies that we know are very effective. So again, it depends on the disease we are dealing with, but overall our overarching is making sure we get acute control of their symptoms, and then long term finding the best medication, we call a steroid sparing agent, for control of their disease.

Dr. Tevfik Ismail (35:38):

So patients with autoimmune rheumatic disease with cardiac involvement should always be managed by or in collaboration with the rheumatologist, particularly where immunosuppression is needed. However, cardiologists occasionally have to start corticosteroids, and particularly for patients with recurrent pericarditis. Sometimes as cardiologists that we're not very good at thinking about some of the long term complications of these drugs and preventing them. Can you give us some practical advice, particularly with respect to bone protection, which is sometimes something that often gets forgotten by cardiologists in particular, although I think other specialties are guilty of this too?

Dr. Shreyasee Amin (36:11):

Yes, for their bone health, that is absolutely critical, and that's a very good point. At a minimum, ensuring that they're getting adequate calcium through their diet would be one strategy, if not by supplementation. Vitamin D however, is probably more important. And we have had evidence that it's calcium with vitamin D or vitamin D alone that will at least be important for a first step at preventive strategy. So all of these patients should be on at least calcium and vitamin D. Most people should not get into trouble with too much vitamin D at 1000 international units or 25 micrograms of vitamin D3 daily.

(36:57):

That would be, again, at a minimum, depends on the age of the patient, other comorbidities, what you choose for other protection. But usually we will at least want to recommend bone density testing if these patients are going to be on long-term or we're anticipating long-term therapy in the setting of patients with rheumatoid arthritis or lupus, we're already probably thinking about that based on their prior assessments or prior use of medications. But think about bone density testing, especially in your older individuals if they haven't had that already, or if they are patients that are using long-term steroids for control of their symptoms because they have been refractory to therapy. Calcium, vitamin D at a minimum. And then the next step set of medications will depend on what their bone density is or their other comorbidities and how long you anticipate having their medications on board.

Dr. Tevfik Ismail (37:58):

Okay, thank you Dr. Amin and Dr. Peet both so much on behalf of the AHA for taking part in this podcast today. This is part of a series on recurrent pericarditis that's supported by an educational grant from Kinex Pharmaceuticals. For more educational material on this topic, please visit the AHA website at learn.heart.org and look out also for our series of webinars on this topic. We will also be shortly broadcasting podcast eight, which is the last in our series on recurrent pericarditis, which will address chronic pericarditis. The views and opinions this podcast are those are the speakers and reflect the synthesis of science. Content should not be considered as the official policy of the AHA. Thank you so much for your attention and to look forward to seeing you soon.