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(866) 423-7849

A Nephrology Perspective on Managing Heart Failure

Dr. Turck:

Heart failure has become increasingly complex to manage, and with emerging therapeutic advances, it may require a more multidisciplinary approach to care. But what kind of a role does nephrology have in the management of heart failure patients?

Welcome to *ASN Action Center* on ReachMD. I'm Dr. Charles Turck. And joining me today to talk about kidney care in patients with advanced heart failure is cardiologist Dr. Wilson Tang, who is a Professor of Medicine at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University. He's also the Research Director of Heart Failure & Transplant Medicine in the Heart, Vascular & Thoracic Institute at the Cleveland Clinic.

Dr. Tang, thanks for speaking with me today.

Dr. Tang:

Thank you for the invitation.

Dr. Turck:

Let's begin with some background on heart disease. Dr. Tang, what kind of interactions do the kidneys and heart have in patients with advanced heart failure?

Dr. Tang:

So, clearly, the heart and the kidneys are intricately related. We all knew that from medical school. There are definitely several areas that has evolving understanding. One is renal insufficiency as a consequence of advanced heart failure, which we all know. In fact, much of the literature is surrounding low cardiac output forcing organ perfusion abnormalities, and renin-angiotensin, you know, angiotensin, aldosterone and sympathetic overactivation that lead to progression. As a course of advanced heart failure is where renal insufficiency is also occurring, particularly with increased sodium avidity and increased congestion, which is really the topic that I'm most most versed on. And then as a comorbid condition of advanced heart failure, particularly in these metabolic aspects, that also can lead to a preclusion of advanced therapeutics for heart failure, and this is where nephrologists and cardiologists will have an intricate role in co-management.

Dr. Turck:

And from your vantage point, how does this relationship factor into the management of heart failure?

Dr. Tang:

I think the key is to understand either whether the heart and the kidney is the primary culprit and to break the cardiorenal cycle of disease progression. I think addressing the underlying cause, whether it's from a cardio-centric or a nephro-centric cause, to achieve euvolemia has always been one of the key tenets in both heart failure and renal insufficiency management. I think in the heart failure world we actually really appreciate the role of disease-modifying drugs like guideline-directed medical therapies. Now we have a total of four of them, and some of them have started to merge into this intricate role in prevention of renal progression, and that really comes into play with this co-management concept.

Dr. Turck:

For those just tuning in, you're listening to *ASN Action Center* on ReachMD. I'm Dr. Charles Turck, and today I'm speaking with Dr. Wilson Tang about kidney care in advanced heart failure.

Let's talk about point-of-care ultrasound. Dr. Tang, what kind of role does that form of imaging have in volume assessment and

management for patients with advanced heart failure?

Dr. Tang:

I think it's actually an interesting evolution. Of course, we have always relied on ultrasound to assess the cardiac function, and there's many attempts to estimate intracardiac filling pressures. What has been progressively evolving is this role on overall assessment of systemic congestion, particularly at the venous site, and I think that the challenges remain. It is still an estimation, but it definitely gives insights into the amount of volume expansion, particularly at the veins. However, it's not as discreet and really has been adjunct to clinical assessment. There's a lot of limitations and varying skills, and we still have some challenges in knowing exactly what the therapeutic algorithm should be, so we have been using it in conjunction with signs and symptoms, exams, sometimes trying to figure out the discrepancy with biomarkers like NT-proBNP, electrolyte changes, and other organ dysfunction that we could identify. The key is actually to confirm either with more invasive measurements or look at therapeutic responses, particularly with diuretics, and I think point-of-care ultrasound has really revolutionized, especially in the critical ill patients where we can actually use serial assessment as this key component of the examination.

Dr. Turck:

And are there any specific aspects of kidney care that should be prioritized when managing patients with advanced heart failure?

Dr. Tang:

I think two areas that is often overlooked and our nephrology colleagues have been very versed at, but cardiologists have not been very emphasized is how does renal replacement therapy be used in really advanced renal insufficiency. Many times we struggle back and forth with good reasoning, and many times we get into a lot of trouble with insufficient response to therapy, causing, you know, rehospitalizations, and the timing of renal replacement therapy is a shared decision-making that we have with our nephrology colleagues. And I think that another part is how we manage patients already on either temporary or permanent dialysis. That part particularly with how to rechallenge or potentially optimize these disease-modifying therapies would be of great interest because I think some patients do have some residual renal function. Dietary and metabolic intervention I think is the key. I think this is the part where we don't have a lot of guidance in heart failure, and I think co-management with renal insufficiency is a key aspect that would be able to improve.

Dr. Turck:

Now, if we take a moment to focus on care coordination, how can cardiologists and nephrologists work together to manage patients with advanced heart failure?

Dr. Tang:

I'm fortunate to be in a place where we actually have great communication with our nephrologists, both in the acute and the chronic care. I think the key is the ownership of co-management and also the communication. Like, for example, if there are patients who we have actually identified either from our biomarkers or our intracardiac monitoring to show their progresses, volume, accumulation, and of course, if our nephrology colleagues are pensive with the use of diuretics, a simple phone call and even, you know, kind of a discussion of how to best, you know, optimize and do, you know, trial management is actually the key. I do think, however, that there are good opportunities for shared plans of care, particularly not only in the immediate but also longer term because, of course, you know, planning on whether we need renal support or different strategies to better understand why somebody is having congestion or having progressive renal insufficiency, that may require either some renal or cardiac assessments that may clarify the situation, and that is not uncommon. So I do think that communication is the key.

Dr. Turck:

Looking to the future, are there any therapeutic advances on the horizon to manage the nephrological aspects of heart failure?

Dr. Tang:

I think we are actually in a really exciting area. Obviously, even within the last two or three years we have literally doubled the number of guideline-directed medical therapy in heart failure. The first point of discussion really is the advanced heart failure patient population. We have a lot more systems of care implementation of shock care, and that is not only in early detection but optimal and timely intervention and close monitoring of organ perfusion, and that probably would save quite a lot of end organs, particularly in the kidneys. After all, renal insufficiency is still one of the major drivers of disease progression in heart failure. There have been many novel uses of techniques that renal replacement have been using. There's been some really early data suggesting that the kidney can potentially be resetting in the sodium avidity with peritoneal dialysis like strategies. Monitoring strategies and treatment algorithms are also evolving for better understanding of volume and volume management, and I think that's actually a key advance in the future. The most exciting thing, at least from cardiology standpoint, is how can we provide localized improvement in renal perfusion, which is the tenet of what our nephrologist colleagues see in terms of acute kidney injury, and so there has been both forward flow and backward flow devices there

for the arterial support and venous decongestion support that is under active investigation. And I think the holy grail is really how to assess whether there's residual renal function in the setting of advanced heart failure because that would guide us in advanced therapeutics for heart failure.

Dr. Turck:

Well, with those very interesting thoughts in mind, I want to thank my guest, Dr. Wilson Tang, for joining me to share his insights on kidney care and advanced heart failure. Dr. Tang, it was great speaking with you today.

Dr. Tang:

Thank you. Thank you for the opportunity.

Dr. Turck:

For ReachMD, I'm Dr. Charles Turck. To access this episode and others from our series, visit ReachMD.com/ASNActionCenter where you can be Part of the Knowledge. Thanks for listening.