nephron number remained. There was a persistent reduction in tubular epidermal growth factor and an overexpression of transforming growth factor-beta 1 (TGFB-1).[2]

Basically, a few minutes' reading tells us a lot. The kid's kidney was damaged shortly after birth and the resultant reduced performance triggers elevated blood pressure. The original and continuing process of deterioration involves several underlying mechanisms that have a lot to do with nitric oxide, oxidative damage, and TGFB-1. We now have targets to aim our initial therapies at.

This is all about translation. We translate the near gibberish found in the scientific journals into clinical relevance, into supplement names and suggested doses. I guess this is what they mean by "translational medicine." It certainly is what the process means to me.

Working with the kid and his mom, we create a quick list of possible interventions that act on these "target of action."

We narrow the list looking to see which of these supplements have any published evidence that they affect kidney function and lower blood pressure. We debate possible compliance issues versus possible effectiveness. I hope that the kid will buy in to what we are doing. Nothing will matter if he doesn't work with me.

We end up with a short list that includes curcumin, L-arginine, and melatonin.[3–5] We work out a treatment plan to give these along with a plan for him to monitor his blood pressure to see if it improves.

My first step thus is to view anything I don't know as an open-book exam, one in which I can take a few minutes to learn the subject and then translate the current scientific knowledge and translate it into clinical therapies. It is not the last step.

The second step is to ask for help. Not as some patients would want, by my getting on my knees and holding hands with them in prayer. That's not my style. Instead I contact colleagues who know more than I do. In this case of hypertension secondary to hydronephrosis, I wrote the two naturopathic doctors who in my mind know the most about kidney health, Jenna Henderson and Eric Yarnell. I asked them for advice. Henderson responded that she often uses taurine in this situation, so that was added to our "to try" list.

I haven't had a follow-up visit with the kid yet and I'm starting to feel curious whether he is actually taking the supplements and giving them an honest try. Are they helping?

While I wait to see him again, I am thinking about taking it to the next level.

These days I know that naturopathic students get trained in a philosophic approach to naturopathic treatment that has been formalized over the years by Jared Zeff and Pamela Snider, in which the determinants of health and all sorts of hierarchical approaches are considered. Having myself been a onetime recipient of the AANP's Vis Award, I feel a certain obligation to take some sort of enlightened approach and adopt one of these strategies.

But I don't. For me it's more a process of elimination. Can I think of a homeopathic remedy that I think will fix this kidney? Not yet, so I don't prescribe one. The kid is pleasant, nothing in our visit has given me a nudge toward a constitutional remedy, nothing in the details of the disease process has shouted out to me, "Give this remedy!" so I simply skip it. For the time being.

Same with botanical medicines. I'm keeping a list of herbs to consider in the kid's chart but not rushing to tell him to take any of them. I'm not sure he will. Not unless I find one that tastes really good.

I keep wondering, though, if there is some way to localize the effect of the supplements which he is taking that would direct their impact to where we want it, in this case to the damaged kidney. The pathology seems centered in that kidney.

When I play "fetch the ball" with our dog and she is searching the wrong area, I will whistle and point. Is there some way to whistle and point those supplements to the kid's kidney, to where they are really needed?

I am debating using low level laser therapy. These "cold lasers" apparently stimulate release of NO in the tissues treated. This NO release and resultant increase in blood flow is often used to explain their benefit in healing injuries. Interestingly, with reperfusion injuries, the laser treatment also appears to protect other organs injured by hypoxia. In a 2012 study of reperfusion injuries in rat colons, laser treatment appeared to protect the rats' lungs.[6]

There is slim chance that the kid will put up with this idea; making time for laser treatments at home, or coming to the office for treatments just doesn't seem high on his teenage priority list. What if we experiment at the office and see if a single treatment lowers his blood pressure? He might change his mind if he sees immediate results. Perhaps if I had someone better-looking and younger to administer the treatments, someone not my gender, compliance might not be an issue.

After two decades of practice, as you can see, I still don't know what I'm doing. Each patient comes in with a unique story. It's still a rare day when I say to myself, I've seen this before. It doesn't bother me the way it once did. Perhaps it was all the *Lycopodium* I took.

Notes

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