Penn Medicine's AERD Center

An Interview with John Bosso, MD, and Nithin Adappa, MD

Host: Welcome to the podcast series from the specialists at Penn Medicine. Join us as we discuss the Penn aspirin exacerbated respiratory disease or AERD Center. Joining me in this panel are Dr. John Bosso. He's a clinical professor and serves as the Medical Director of the AERD Center at Penn Otorhinolaryngology-Head and Neck Surgery and he's the Director of the Otorhinolaryngology Allergy Clinic at Penn Medicine.

And Dr. Nithin Adappa. He's an Associate Professor in the Department of Otorhinolaryngology-Head and Neck Surgery and the Surgical Director of the AERD center at Penn Medicine. Gentlemen, I'm so glad to have you join us today. Dr. Bosso before we get into this topic, can you describe your personal history with aspirin exacerbated respiratory disease or AERD?

John Bosso, MD (Guest): It all started when I was a fellow in my final leg of training. I was out at Scripps Clinic in California and we were the sentinel site where we were studying this condition. And my mentors were at that time studying the mechanism of the disease. We were getting patients from all over the country to come in to try out a therapy, which was basically to desensitize patients to aspirin, and this was something that was serendipitously discovered, and I was fortunate enough to learn the technique at an early time where it really, not too much was known about this condition.

Host: Thank you for that. So, Dr. Adappa, why don't you tell for other providers that may not know— what is AERD?

Nithin Adappa, MD (Guest): So, AERD, or as you mentioned, Aspirin Exacerbated Respiratory Disease, is a progressive disease process. The patients manifest with chronic sinusitis with nasal polyps, asthma and they have a sensitivity to NSAIDs. Initially, it was described as aspirin, but essentially it's any NSAID. So, it's a progressive disease that can develop at any age, typically past puberty, but most commonly in patients in their thirties and forties, where initially they'll develop either the nasal complaints or the asthma complaints. And then over the next few years develop the rest of this triad. From a otolaryngologist's perspective, it's the most severe type of chronic sinusitis, nasal polyposis. So, from our end of things, this is a very problematic disease to treat because of the severity.

Dr. Bosso: And in addition, these patients really end up not getting their diagnosis early enough because a lot of practitioners don't put the pieces together. One person might see them for their sinuses. One person might see them for their asthma. And when they develop an allergic reaction to an NSAID, they may not really think it's part of the syndrome. And then they may end up in an emergency room or something like that for the reaction. But no one puts the pieces together that this is one syndrome.

Host: How interesting. So, then Dr. Bosso, so how is it diagnosed? And by whom? tell us about some of the symptoms of it, and who might notice them? Is this for primary care providers, who would notice?

Dr. Bosso: Well, anyone really can notice if they take a good history. So, patients who develop adult onset chronic rhinosinusitis with nasal polyps, asthma, and respiratory reactions to non-steroidal anti-inflammatory drugs, including aspirin, would be the patients that we would suspect would have this condition. Usually, if they have at least two bonafide reactions or one serious reaction to aspirin or

NSAIDs, plus the polyps as sinusitis and asthma, that certainly should be enough in most cases to make the diagnosis.

Now, the respiratory reactions can be as mild as sneezing, nasal congestion, nasal blockage, runny nose, but most of the time they involve acute broncospasm, wheezing, shortness of breath, chest tightness, and very rarely skin manifestations such as flushing and hives and, and even more rare, drops in blood pressure, elevated pulse rates.

Putting the whole package together does require a good history. Now, a lot of patients will not give you a perfect history or you may not have it, or they may not even be taking a medication in the NSAID family. So, you may not know what the diagnosis is.

When it's not clear, the definitive gold standard is to do what's called an aspirin challenge, where we bring a patient in, withhold any medications that may have suppressive effects on reactions, such as anti-histamines, and give gradually increasing doses of aspirin in a supervised setting. And of course, if a patient has any reactions immediately stop the challenge and treat them, and confirmed the diagnosis.

There is no blood test or skin test or a urine test that really is definitively accurate. We wish there was, that would give us a clear cut answer as to whether this patient has the syndrome. So, we rely on a good history or an aspirin challenge when the history is not clear cut.

Dr. Adappa: And I'd like to add, the other part for providers to think about is often you'll ask a patient who has asthma, nasal polyps, do you have a reaction to NSAIDs or aspirin products and they'll quickly say no, and you really have to

interrogate that a little further because there's a lot of patients they instinctively say no. So, you really want to interrogate whether this patient has taken these products recently as they're developing this syndrome or not because if the answer is no, you still haven't completely ruled it out.

And then the other issue is, as I think we're highlighting here, this is a progressive disease process. You don't wake up one day where you have all three aspects of the syndrome, rather they're going to develop over several years. And so, you may catch a patient who has new onset asthma and nasal polyps, but they may not have developed that aspirin component yet. So, you still want to think about that in the back of your mind, that's a patient who's newly diagnosed.

Host: This is such an interesting topic and really important information for providers. Thank you both for that diagnosis and history information. So important. Now, Dr. Adappa, tell us how the treatment has now evolved. And what's the latest treatment protocol at Penn Medicine?

Dr. Adappa: So the treatment protocol, in general, is complete sinus surgery, followed by aspirin desensitization. Now, this sounds fairly straightforward. And I will tell you before Dr. Bosso came to Penn Medicine, he was a couple hours away, in Nyack, New York. And we'd identified these AERD patients where, I would see them or my partner, Jim Palmer, we would see them, we would treat them and then we'd send them over to Nyack, New York, to get the aspirin desensitization.

Where we really evolved in a big way was when we were able to get John over to Penn with us, where we really could do coordinated care. So, it's not just surgery. It's making sure you do the thorough surgery. And that surgery really means a meticulous clean out of every area of the sinuses. And not everybody has the

expertise or the equipment to safely do these types of procedures. And once they're cleaned out, then in a coordinated fashion, you need to immediately get them in that desensitization before any polyps grow back.

If there's a delay in care or if there's not coordinated care, and some of these polyps start growing back then the aspirin desensitization part of this does not work nearly as well. So that really has been a big boon for us and how we've been getting a much better result. When John got here, our results improved that much further just for our coordinated center here.

Dr. Bosso: Yeah, in addition, it's not just a matter of me. It really is a matter of the working together. It's a matter of that our staffs understand what that goal is. They make sure patients are in the right places and they get coordinated surgical dates, which is really critical because time is of the essence once you start this process.

Host: Which leads very well Dr. Bosso into my next question. Can you expand a little bit about combining surgical management with desensitization for the best outcome? And tell us a little bit more about the combined clinic and what are you finding are the largest benefits.

Dr. Bosso: Well, the patient really benefits from the fact that we have two different points of view, with overlapping features. I mean, we each have been trained, to look at things from a somewhat different angle. The surgeons have been trained to look at something anatomically, and we've been looking at this from the standpoint of the medical part of it and the mechanism of what's going on immunologically and how to reduce inflammation.

We have overlapping skill sets, and so overlapping and complementary ends up being synergistic and the patients' benefit. And we also discuss these cases

together. We have clinics that are right next to each other. The benefit there is that whenever an issue arises that one of us feels is more beneficial to discuss with the other for the patient's care, that's done in real-time. Many times, patients can be seen the same day or their problems can be solved right on the spot. So, we find that's very, very helpful.

Dr. Adappa: And, I think another key component for providers to understand is the AERD population falls in that very extensive phenotype that essentially if everything is not done the correct way, there's going to be a high failure rate in any treatment whatsoever. So, from a logistical, nuts and bolts standpoint, when a patient comes in to see one of us in clinic, in most situations, they will see the other one the same day.

Once the treatment plan is initiated, the patient gets a surgical date that day, as well as the date for the aspirin desensitization, as well as the dates of follow-up visits before. So, it's essentially, we've got an algorithmic continuum plan to make sure that we get them treated the right way. And think I can speak for both of us, this coordinated care is allowing for better outcomes. And it's something that I think across the country really should be done for this type of patient with AERD.

Host: Dr. Adappa, but what about follow-up? Can you expand a little bit about what life is like for that patient afterward and for the referring physician, what communication is like as you follow up with this patient?

Dr. Adappa: Oh, completely. That's a great question. So, initially after surgery, they have several follow-ups with me to make sure that everything's healing and going in a perfect direction for that desensitization standpoint. And initially, patients will see us both pretty frequently. And then after the desensitization, then the

visits start to get a little more spaced out where we may see patients a month after the desensitization is done. And if they're doing well, then we'll say six months. And at that point, what they'll typically do, is with our outside providers, referral physicians, a lot of the patients will go back to the community and follow up with their local physicians.

If there are any challenges or concerns, they'll stay with us. But we communicate quite a bit with our referral physicians on their patients. This is not something from an ENT perspective that was discussed or taught a lot in a lot of our residencies in the past. So, the understanding of AERD has essentially evolved a lot. So, our education with our providers has, I think, has been great for everybody.

Dr. Bosso: I think that the key with the follow-ups has been that our team really encourages patients to not only be compliant but also to keep on top of who is following up. And making sure, especially in that first year that patients are well followed because the follow-up is just as important as the initial treatment. And sometimes tweaking that therapy, whether it be adjusting medications, or whatever it might be, or perhaps doing some sinus debriding, whatever it takes to just make this perfect.

Host: Well, thank you both. And I'd like to give you each a chance for a final thought. So, Dr. Bosso, we'll start with you. Tell us about any current or emerging therapies. Are there any game-changers, anything you're excited about?

Dr. Bosso: There are some newer therapies that we think may be complementary or may possibly help us in our refractory cases. Our current response rates are quite high and somewhere between 85 and 90%, but for our refractory patients, some of the newer targeted, biological therapies that are becoming available we

feel will help— their costs are quite prohibitive. So, we're at the current time reserving those for patients who don't respond to our standard model. And I think that we're doing enough research now to try to get a better understanding of the mechanism of disease.

We're finding out that all of the patients who have AERD are not the same. We're finding out that they're actually somewhat different when we look at mechanisms and cellular models. We're finding out that not all patients have the same inflammatory reaction. And so this may help us to sort out more precisely towards precision medicine, which specific patients would benefit from which types of medical therapies, and what to look for ahead of time.

Host: Doctor Adappa, the last word to you. What would you like referring physicians to know if they have a patient with suspected AERD? Give them a little bit of information about referral to the Penn AERD center.

Dr. Adappa: Absolutely. So, we have attempted to be very comprehensive on our AERD website, in the Penn Otorhinolaryngology sub-sites. So, there's a lot of educational information there for physicians, including a lot of the literature, and for patients as well, we've got some educational videos there and that's very easy to reach out to us. Also, you can call our office, at any time, and we're very happy to get patients in for evaluation. Typically, if this is something that you suspect… that there's a high chance for this. (It's estimated about there's about 1.7 million people with AERD in the US, so it is more common than people realize) we're always happy to see them.

Host: Thank you both so much. What an informative episode, this was. To refer a patient to Dr. Adappa and Dr. Bosso at the Penn AERD Center, please visit Penn

medicine.org/refer. Or you can call 215.662.2777. Or you can always call 877.937.

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