Dr. Mariam Hanna:

Hello, I'm Dr. Mariam Hanna,, and this is *The Allergist*, a show that separates myth from medicine, deciphering allergies and understanding the immune system.
There would seem to be a million referrals for shortness of breath that hits during exercise. They stop mid-activity, perhaps visibly distressed, and they tell you, "I can't get air in." Perhaps there's noise when they breathe. It looks really dramatic, and yet throw all the puffers at them, they just don't help—not a little, not at all.
So the question is, is this really asthma? It gets even trickier when someone does have asthma and everything gets better, but this exercise problem remains a problem. It's distressing to the patient, and it's frustrating to the clinician.
Welcome to the space where vocal cord dysfunction, and more precisely, inducible laryngeal obstruction, lives—underrecognized, often mislabeled, and frequently treated as something it is not. Today, we're unpacking that exact presentation from diagnosis to management.
To walk us through this, I'm joined by an ENT specialist who works at the frontline of this problem, where airway symptoms meet laryngeal function, and where the diagnosis finally starts to come together. Allow me to introduce Dr. R. Jun Lin. She's a fellowship-trained laryngologist and chief of the Division of Laryngology at the University of Toronto.
She completed her otolaryngology and head and neck surgery training at the University of British Columbia, followed by a two-year laryngology fellowship and master's training at the University of Pittsburgh. Her practice focuses on managing complex airway and laryngeal disorders, including conditions like idiopathic subglottic stenosis—a condition to discuss on a different day. But today, we're diving in.
Dr. Lin, thank you so much for agreeing to do this podcast, and welcome to the podcast.

Dr. R. Jun Lin:

Thank you so much for having me. I'm very excited to be here with you today.

Dr. Mariam Hanna:

Exciting or not, we really need to talk about VCD and ILO. I've noticed these two terms now being used almost interchangeably, or one more than the other. Are we talking about the same clinical entity, or is there a distinction between them?

Dr. R. Jun Lin:

In my opinion, we're talking about the same condition, but the different specialties in medicine and surgery have published their own work, and they have given the condition a different term. In the allergy and perhaps in the respirology world, clinicians typically call it vocal cord

dysfunction or inducible laryngeal obstruction. Some people also call it ILO, exercise-induced laryngeal obstruction.
But for folks who do laryngology, we typically describe the larynx or the vocal folds to talk about what they're doing during these episodes. We call it paradoxical vocal fold motion disorder. During this condition, what the larynx is doing is that when you're trying to take a breath in, instead of the vocal cords opening up like a V-shape, they close off. Subjectively, people feel that they're not able to take a breath in. It's a discoordination of the vocal cord movement with someone's respiration.
That's why, for us, we like to describe that action. We call it paradoxical vocal fold motion disorder. It's the same thing all around: PVFMD.

Dr. Mariam Hanna:

Okay.

Dr. R. Jun Lin:

All right. That's right. Catchy.

Dr. Mariam Hanna:

All right. And at what point should a clinician who's not available to scope their patients start questioning this? Is that the issue versus the asthma diagnosis? Or could it be a bit of both?

Dr. R. Jun Lin:

It can be a bit of both. I usually tell trainees and also patients that this is a clinical diagnosis, and it's also a diagnosis of exclusion after other causes of shortness of breath have been investigated or excluded.
Before I see patients for a consult for VCD or PVFMD, typically I would prefer it if they have already had pulmonary investigations, cardiac if needed, and also allergy testing. Based on the clinical history, typically it can pinpoint you in a certain direction.

Dr. Mariam Hanna:

Okay. And are there populations that are more prone to PVFMD versus others?

Dr. R. Jun Lin:

The classic history in a teenager typically is exercise-induced. In that population, you don't

usually see the inhalant-induced type of vocal cord dysfunction or PVFMD.
The classic history would be a competitive athlete. It could be a runner, swimmer, or a hockey player. The typical history is that 5 or 10 minutes into a warm-up or going into a game, they start feeling short of breath. The classic history is having difficulty with inhalation: difficulty getting a breath in, feeling tightness in the neck, not necessarily in the chest region. They report some noise with breathing as well, so it's not necessarily a wheeze. These are the distinctions that I would typically look for when I'm taking a history.
That's the teenager population. Some people would say that could be associated with a component of performance anxiety. They're very anxious going into a game; they want to do well. That's why a few minutes into the competition, they start feeling short of breath. In addition to the classic voice therapy that I would recommend, I would typically recommend to the parents to see a sports psychologist as well.
For the older folks, typically I would see inhalant-induced shortness of breath. The triggers would usually be strong smells: perfume, bleach, Febreze, gasoline, or even cooking fumes. If you put black pepper in the cooking pot or in the frying pan and people inhale that fume, they feel short of breath. Walking into a perfume store in the mall can trigger an episode.
Also, exposure to cold air, humidity changes, and laryngeal tasks—for example, speaking or laughing—sometimes can trigger episodes as well. In the older population, the triggers are a bit different compared to the younger population.

Dr. Mariam Hanna:

And is this a condition that suddenly appears at certain times in people's lives, or is this a chronic condition?

Dr. R. Jun Lin:

Some patients would say that they had an episode that brought it on. For example, someone who accidentally got exposed to chemicals at work, and after that one exposure, they start to get frequent episodes from exposure to other smells.
Sometimes it can be built up over time. For example, a hairdresser working at a hair salon, and over time she or he develops a sensitivity.
For the younger teenagers, it can come on all of a sudden. For example, when they become a bit more competitive in their sports, they start developing these episodes.

Dr. Mariam Hanna:

Okay. And you nicely said it's an inspiratory noise, not a wheeze. I will say, unfortunately, in the clinic, everything that is any whisper is called a wheeze on history. How much weight do you put

on finding that inspiratory noise history?

Dr. R. Jun Lin:

You have to look at the overall picture. I would ask about triggers; I think that's pretty important. I mentioned some of the classic triggers: smell, exposure to different temperatures, humidity, and in younger folks, it would be exercise. That's a big one for me.
Then I would ask about what happens during these episodes. Is it difficulty breathing in or breathing out? If it's breathing in, is there a noise associated with it? I would think that a wheezing sound would sound a little bit different compared to an inspiratory stridor. The stridor, typically, you would hear when they take a deep inhalation. To me, wheezing sounds like you may hear it more on auscultation of the chest. That's how I simplify it.
I try to tease that out a little bit more on clinical history to see whether I can make a difference. You mentioned earlier that this condition can also coexist with asthma, right? I would prefer to see these patients after they have already seen a respirologist or allergist—preferably, they have already done a methacholine challenge.
If they do have underlying asthma that's been confirmed by testing, is the asthma under good control? If the asthma is under good control but they are still having these episodes, then I do think that maybe they have a PVFMD component to their breathing issue.

Dr. Mariam Hanna:

Okay. And at what point should we be doing laryngoscopy? If it's a clinical diagnosis, at what point do we need laryngoscopy to confirm this diagnosis as well?

Dr. R. Jun Lin:

It's dependent upon how they have responded to the treatment that has been prescribed to them. For example, they have been trialed on a course of inhalers. As you mentioned at the beginning of the podcast, if they have minimal response or no response at all, then maybe we need to think about other pathology that could be causing the shortness of breath.
In histories like this, their laryngoscopy is pretty much always normal if it's PVFMD. But my role is to rule out other laryngeal pathology that can cause shortness of breath. I have picked up organic things like subglottic stenosis. I have picked up bilateral vocal cord paralysis in patients with that presentation.

Dr. Mariam Hanna:

Wow. Wow. And what about for exercise-induced cases? Are we scoping them while they're on

the treadmill, or what happens there for diagnosis or to elicit this?

Dr. R. Jun Lin:

It's talked about a lot. In my fellowship, the hospital was right next to a university with a big track and field track. We used to talk about having the patient do a few laps on the field and then come back to the clinic for us to scope them.
Over time, we phased out of that practice because, number one, it doesn't change your management. And number two, it's not very pleasant to put the patient in that situation because these episodes feel very catastrophic to them because they can't breathe, right? It's a horrible sensation to feel that you're choking. We just don't feel good about putting the patient in that position and then having them come back to the clinic and do a laryngoscopy exam.

Dr. Mariam Hanna:

Fair enough. And how often is there an overlap with perhaps an asthma diagnosis in the background?

Dr. R. Jun Lin:

I think it's quite common. In the literature, I want to say that it's probably anywhere between 10% and 30%. That's why it's a good idea for the patient to get a PFT and a methacholine challenge before they see an otolaryngologist.

Dr. Mariam Hanna:

Okay. And we briefly touched on first-line management with allied health. But what does first-line management look like in your office?

Dr. R. Jun Lin:

At the end of the visit, if I'm pretty convinced that there is a PVFMD component to their history, I will ask about vocal hygiene. For this condition, we want to minimize the irritation or triggers for these episodes to happen. I tell patients that I want to make your throat very comfortable, like a very happy place.
Drinking lots of water—I typically push about two liters of water a day. And by water, I mean water—not mixed with coffee, soda, juice, milk, or anything like that.
Then I also screen for reflux: any heartburn symptoms, how's their diet, do they typically go to bed with a full stomach? I find that to be a very significant trigger.

I will also inquire about sinonasal symptoms. Post-nasal drip is also a big one. If they do tick some of those boxes, I will consider optimizing that area as well.
Then I will make a referral to speech therapy for something called respiratory retraining therapy. During those sessions, the SLPs would typically do something called an indirect therapy and also direct therapy.
The indirect therapy is what I have typically reviewed with the patient in the clinic: education on the laryngeal structure, the mechanism of the disease, and then they'll review vocal hygiene practices. The direct therapy would be the actual breathing exercises. Most people only need about two or three sessions in total.

Dr. Mariam Hanna:

And can you give us some examples of two or three exercises that perhaps they would be instructed about?

Dr. R. Jun Lin:

The most common one is called pursed-lip breathing. It's a distraction for the patient from the shortness of breath. Usually, we will ask them to put a hand on their belly to try to become a little bit more in tune with their breathing.
Then they would do two or three quick sniffs through the nose, and then a long exhale through the mouth, through pursed lips—a long exhale—and then keep repeating. The whole idea is to break the spasm within the larynx, calm down the vocal folds, and make the vocal fold movement more coordinated with their breathing. That would be the most common.

Dr. Mariam Hanna:

This is done acutely during an episode, if I'm understanding correctly?

Dr. R. Jun Lin:

If they can manage it. A lot of patients say that when it's happening, everybody panics, right? It's very difficult for them to remember. But a lot of these people have a trigger, so they can feel it when the episodes are coming on. When they feel that the episodes are coming on, that's a great time for them to start doing this.
One thing I want to point out with the breathing exercises is that it doesn't necessarily prevent the episodes from happening. But when it happens, it can probably reduce the severity and also the duration of it. They do have to practice, and they have to be very mindful of the triggers. That's why the whole vocal hygiene practices and maybe scent avoidance at home and at work

are very important.

Dr. Mariam Hanna:

Okay. Got it. Any other quick exercises that we can learn? This is already a good one.

Dr. R. Jun Lin:

That's the main one that we would do. Sometimes we would tell people to have some ice water or water on the side. Again, that's a distraction. If you feel that you're starting to get an episode, maybe try to distract the larynx with something else: drinking some ice water, having some ice chips in the mouth, and that could potentially break the spell as well.

Dr. Mariam Hanna:

Fantastic. And where do we often go wrong as clinicians in working up this condition? It's often missed, but where do you see clinicians going wrong with our patients?

Dr. R. Jun Lin:

I wouldn't necessarily say that it's going wrong somewhere. Perhaps it's not making a referral for a laryngoscopy early enough. I also think that taking a good clinical history to rule out other organic or structural abnormalities that can potentially cause the shortness of breath would be important as well.

For example, the patient that I had seen with bilateral vocal cord paralysis was a 13-year-old boy. He had pulmonary investigations, and there was a flat inspiratory loop on the flow-volume loop. Again, they thought that it could be due to vocal cord dysfunction.

What was missed was that he was born premature, and he was intubated in the NICU for about three months. Things like that can predispose someone to laryngeal stenosis, upper airway stenosis, and vocal cord motion abnormalities. That type of history would be important to include in the clinical history taking.

Also, for PVFMD, the typical triggers are usually inhalational. I get a lot of referrals about food-related triggers for PVFMD, but that's not known in our literature. For example, eating pineapple—is that an allergic reaction triggering the PVFMD? For us in our area, we don't necessarily believe in that. It could be the acidity from the pineapple juice that's causing the paradoxical vocal motion; that could be something to consider.

Usually, for these patients, they don't have other allergy-type presentations. For example, tongue swelling, skin findings like urticaria, or having a rash—that sort of thing is not in keeping

with PVFMD.

Dr. Mariam Hanna:

Okay. I know you touched on optimizing management of other conditions. Is there any role for pharmacotherapy specifically for PVFMD? Are there any pharmacotherapy interventions specifically for this?

Dr. R. Jun Lin:

The short answer would be no. If the patient—as I mentioned management for the sinonasal conditions and potentially reflux—has a high-stress anxiety mental state, I would usually recommend them to see a family physician to help manage that.
There are medical treatments for PVFMD. That would entail injecting Botox directly into the vocal cord. That would be the only medical treatment available, but it's a procedure. I would typically reserve it as a last resort for patients who are very, very symptomatic and are refractory to speech therapy. The mechanism of the Botox is to purposely paralyze one side of the vocal cord. When they go into a spasm, the vocal cords won't necessarily adduct, so they won't have that sensation of tightness in the throat and also the inspiratory stridor.

The main side effect would be a change in the voice because one side of the vocal cord is paralyzed. Typically, people will speak in a whisper; they talk like this. The Botox will last about two to three months. Essentially, they're relatively dysphonic, if not aphonic, for about two or three months. You can imagine for someone with a regular job, it would be very difficult for them to function on a day-to-day basis.
Sometimes I do inject the Botox in the false cords—the area above the true vocal cord and not the true vocal cords themselves—to minimize the dysphonia. But that's not necessarily the area of obstruction, so sometimes it doesn't completely relieve their shortness of breath. That's why the Botox therapy is reserved as a last resort and not the first treatment.

Dr. Mariam Hanna:

It makes sense. Yeah. No, I get it. I get it.
All right. Time to wrap up and ask today's laryngologist, Dr. R. Jun Lin, for her top three key messages to impart to patients and physicians on today's topic: VCD / ILO / PVFMD. There we go. Over to you.

Dr. R. Jun Lin:

Great. Thank you.
The very first summary point is that PVFMD is a clinical diagnosis. Again, it should be a diagnosis of exclusion after other causes for shortness of breath have been investigated or excluded.
A second take-home point is that the primary triggers for this condition would be inhalational irritants—for example, smell. It could be exercise in teenagers. It could be stress. It can be exacerbated by reflux, but I find that it's rarely the cause. Typically, it does not have any food triggers or other dermatological or allergy-type findings associated with the episode.
A last summary point would be the cornerstone of treatment is a dedicated trial of speech therapy or respiratory retraining therapy. Not all speech pathologists specialize in this area, but there are certain providers in your area who can offer this type of treatment. If you're not sure whether your speech pathologist would do it, I would talk to them about it or ask them whether they know any colleagues who specialize in this type of treatment.

Dr. Mariam Hanna:

Fantastic. Thank you, Dr. Lin, for joining us on today's episode of *The Allergist*.

Dr. R. Jun Lin:

Thank you so much for having me.

Dr. Mariam Hanna:

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