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Gastroenterology & the Heart: A GI Perspective on Non-Cardiac Chest Pain

Dr. Buch:
Non-cardiac chest pain, or NCCP is defined as recurring, angina-like, retrosternal chest pain of non-cardiac origin. NCCP affects between 20 to 40% of all patients with chest pain and gastroesophageal reflux, or GERD, is the most common cause. Welcome to *GI Insights* on ReachMD. I'm Dr. Peter Buch. Joining me today to discuss the GI perspective on non-cardiac chest pain is Dr. Ronnie Fass. Dr. Fass is a Professor of Medicine at Case Western Reserve University, Chief of the Division of Gastroenterology and Hepatology and Head of the Esophageal and Swallowing Center at MetroHealth Medical Center, Cleveland, Ohio. Dr. Fass, we are honored to have you join us here, today.

Dr. Fass:
Thank you, very much. It's a great pleasure, too.

Dr. Buch:
Let's get right into it. First off, Dr. Fass, when exploring esophageal reflux as a source of non-cardiac chest pain, how do we make a diagnosis?

Dr. Fass:
Yeah. So that's a very good question and you already mentioned that gastroesophageal reflux disease effects a significant number of NCCP patients, in fact, as you also mentioned, it's the number one cause. So, studies have shown that about 50% of the patients with NCCP have gastroesophageal reflux disease as the underlying cause. And I'm saying NCCP that is due to esophageal cause because there are many other reasons that can lead to NCCP, all the way from pulmonary to, pericardial, chest, as well as many others that can lead to NCCP, but if we, look specifically at esophageal related NCCP, in about 50% of the patients have a gastroesophageal reflux disease as the underlying cause. Now, you have two options, either you go after gastroesophageal reflux disease as your first approach without testing the patient, taking into consideration that you would be likely right in 50% of the cases, so then you will embark in empirical therapy with, anti-reflux medications. Or, the other option, is to investigate the patient and find out if they truly have GERD as their underlying cause and then you will follow the usual, testing for gastroesophageal reflux disease, which starts with an upper endoscopy, biopsies and then you do some type of reflux testing.

Dr. Buch:
Cost-effectiveness: could you just mention how that might fit in?

Dr. Fass:
Yes, so, I think the most cost-effective approach would be, probably to treat the patient empirically and then see if they respond. In fact, studies looked into this and found out that using the PPI test or empirical PPI therapy in patients with NCCP, in order to find out if they have gastroesophageal reflux disease as the underlying cause, is the most cost-effective approach because it saves the patient a variety of, tests, many of them invasive tests, so that's where you save the money. Now, I mentioned two approaches, one is the PPI test and the other is empirical therapy; what is the difference? The PPI test is a short course of high-dose PPI, usually double-dose PPI that is given over a period of 14 days and during that period of time, you're trying to find out if the patient shows at least 50% reduction in the symptoms. If they do, then you've made your diagnosis. Empirical therapy is probably more commonly done, and this is because of the way we practice. So, we give the patient, PPI therapy usually once a day, but it is preferable, to use twice a day and then you bring them back 2 months or 3 months later and you evaluate them and see if you made, significant improvement in their symptoms, as I said, at least 50% reduction.

Dr. Buch:
And continuing with GERD, if a trial of proton pump-inhibitors twice a day is not successful, how do you proceed?

Dr. Fass:
So, if patients don't respond to PPI therapy, then you need to consider the next important underlying mechanisms of esophageal-related NCCP. The most common one is esophageal hyper-sensitivity. It affects about 35% of these patients and then esophageal motor abnormality, which affects about 15% of the patients. If you haven't performed an upper endoscopy until this point, then this is the time to perform an upper endoscopy. And you do an upper endoscopy and even if it's normal, based on the Rome IV criteria, it is recommended that they perform biopsies, even in the context of normal esophagus, primarily, to exclude patients with eosinophilic esophagitis If the upper endoscopy is negative, then the next step is to perform some type of reflux testing. In patients that were not tested before to find out if they have an abnormal, pH test or they, they were not tested before, demonstrating that they have erosive esophagitis, then it is recommended to perform a wireless pH capsule and if you don't have an access to it, a catheter-based pH test of PPI treatment. If the patients, do have a history of erosive esophagitis or they have a history of abnormal pH test in the past, then it is recommended to perform an impedance plus pH on PPI treatment. In most, most of the time, we probably don't know what these patients have because we treat them empirically, so it is recommended, as I said, to take them off the PPI and perform a wireless pH capsule or a catheter-based pH test.

Dr. Buch:
So, what is the most common esophageal motor disorder in non-cardiac chest pain, and how do you treat it?

Dr. Fass:
So, that brings us, of course, that if all the tests that I've mentioned so far are negative, then obviously you need to do esophageal manometry and today, obviously, we primarily do a high-resolution esophageal manometry. It's very interesting that what's common in NCCP as esophageal motor disorder has evolved over the years. If you pick up studies that were done 30 years ago, 40 years ago, they claimed that nutcracker esophagus and distal esophageal spasm are the most common causes of NCCP, this was done, obviously at the time when we didn't have high-resolution esophageal manometry, but the experts at the time were truly focused in, what I called "spastic motor disorders" as the underlying mechanism for NCCP. We do know, now, that if you do high-resolution esophageal manometry, in patients with NCCP, then in 70% of them, the tests will be normal. In the majority of those that had an abnormal esophageal manometry, the most common finding is hypotensive lower esophageal sphincter. In a recent high-resolution esophageal manometry study, it was found, also that ineffective esophageal motility was the most common motor disorder in these patients. And that goes very well with the fact that gastroesophageal reflux disease is the most common cause for NCCP, and we do see, in a significant number of patients with GERD-related NCCP, abnormalities like hypotensive LES or, ineffective esophageal motility. If you look for, other abnormalities, then, spastic motor disorders are relatively uncommon in patients with, NCCP and they may include distal esophageal spasm, or jackhammer esophagus, but they are relatively uncommon. So, to summarize, it's very interesting that when we look at what is the common finding that we have from high-resolution esophageal manometry in patients with NCCP, it's basically a normal test, it's unlikely that we'll find something abnormal. But in those that it is abnormal, it's primarily hypotensive motor disorders.

Dr. Buch:
Thank you. For those just joining us, this is *GI Insights* on ReachMD. I'm Dr. Peter Buch and today I'm discussing non-cardiac chest pain with Dr. Ronnie Fass. So, Dr. Fass, how do you treat esophageal hypersensitivity?

Dr. Fass:
That's a great question because, at the end of the day, a significant number of the patient with NCCP will have esophageal hypersensitivity as the underlying mechanism of their, symptoms. And these patients, now called by the Rome IV criteria as having functional chest pain, these patients require a different therapeutic approach than what I've already mentioned, now, for example for a patient with gastroesophageal reflux disease. In the case of esophageal hypersensitivity, the main therapeutic approach is to use neuromodulators. You can use other approaches, although they haven't been tested, as well as neuromodulators in this group of patients. For example, the use of alternative and complimentary medicine. The use of a variety of psychiatric, psychological approaches. in this patient population, neuromodulators or visceral analgesics are considered the mainstay of treatment and they are primarily medications that are used for depressive disorders, but in non-mood-altering doses. They include tricyclic anti-depressants, SSRIs, SNRIs, trazadone, and then a variety of others that were less commonly tested in these patient populations.

Dr. Buch:
And how does psychological comorbidity complicate the picture of non-cardiac chest pain?

Dr. Fass:
That's a very, very important question, because in the majority of these patients, especially those with functional chest pain, there is

evidence for an underlying psychological comorbidity. The most common ones are depression, anxiety, and somatization. In fact, panic disorder is considered to be one of the most common reasons that drive patients with chest paint to seek medical attention in the emergency department. And if you look at one of the biggest areas of research in the field of NCCP, it's psychiatry, just because of the close association between panic disorder and NCCP. So, why it is important? Because it is very difficult to improve patient's symptoms if they have also an underlying comorbidity, psychological comorbidity that is not addressed. As a result, any therapeutic approach towards these patients, which includes medical therapy, let's say one of the neuromodulators that I mentioned should also include some type of a psychological intervention. A variety of them have been tested and have been shown to be very helpful in patients with NCCP, such as cognitive behavioral therapy, such as hypnotherapy, there are very good studies about the role of hypnotherapy in patients with NCCP, mindfulness, as well as many other approaches. Those do work in these patients. If you're gonna treat patients with NCCP that have, also, a psychological comorbidity, just with neuromodulators, then the likelihood that they will respond to that intervention alone is very small. You will have to address the psychological comorbidity in order to achieve a higher success rate.

Dr. Buch:
Based on your experience, which areas of non-cardiac chest pain need further research?

Dr. Fass:
I think one of the most important areas as I mentioned is really the functional chest pain. Now, if I look at many other functional esophageal disorders, it is probably one of the most studied ones. That and functional heartburn. But still, there is much unknown in these patient population. All the way from underlying mechanisms, what exactly trigger the esophageal hypersensitivity and at the end of the day, we still don't have any medication that is indicated in this patient population and we do need truly good studies that evaluate medical therapy, some of those that I mentioned, in a large number of these patient to see what is the best therapeutic approach to these patients.

Dr. Buch:
And before we conclude, is there anything else you would like to share with our audience, today?

Dr. Fass:
Yeah, I just wanna say that one of the things that we didn't discuss but I think it's extremely important, if you're a gastroenterologist and you get a patient with NCCP, make sure that they truly have NCCP. One of the biggest mistakes that I've seen is that when you see patients with NCCP or what was referred to you as NCCP, or patient with chest pain that you think that they have NCCP and they were not studied, then that could be a problem in the future. It is very important that patients with chest pain or those that were referred as NCCP that they were initially evaluated by a cardiologist to exclude a cardiac cause for their chest pain. We don't want to miss that. While I truly believe that esophagus is a very important organ, I have to admit that problems with the heart may complicate the course of the patient and they should be treated first, before we consider, for example, anti-reflux medication in patients that presented with chest pain and they were never evaluated by a cardiologist. So, always remember, do not start to address a patient with chest pain as NCCP if they were not evaluated first by a cardiologist or a cardiac cause was not excluded.

Dr. Buch:
Thank you. With those takeaways in mind, I wanna thank Dr. Ronnie Fass for sharing his insight on non-cardiac chest pain. Dr. Fass, thanks so much for sharing your wisdom, today.

Dr. Fass:
Thank you, thank you, very much. It was a great pleasure and a great honor.

Dr. Buch:
For ReachMD, I'm Dr. Peter Buch. To access this episode and others from *GI Insights*, visit ReachMD.com/GIInsights, where you can be part of the knowledge. Thanks for joining us, today.