

Cardio Thoracic Differential Diagnosis - Ref 62SS

with Steve Sandler

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TRANSCRIPT

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Steven Bruce

It's great to have you with us today, we're doing something very, very clinical today with one of the country's best-known osteopath, Steve Sandler. We're going to be talking about cardio thoracic differential diagnosis. Stephen, great to have you with us again.

Steve Sandler

I'm very, very glad to be back.

Steven Bruce

And while you're cutting down on your practice, I'm glad you've got more time to do a bit of teaching for the rest of us.

Steve Sandler

Yes, and some research. I'm doing, just for my own sake, a research paper that is looking at the role of the lymphatic system in recovering from acute disease, and, you know, still used lymphatic pump techniques all those years ago. But there's a fair amount out there that's been published to validate that sort of work and bring it up to date. But it's just a paper that I'm doing for the sake of it, and it will just give some good evidence-based medicine to support us if we're going back into practice, especially if we're treating patients post COVID.

Steven Bruce

Sure, is this new research?

Steve Sandler

That's something I just decided I wanted to do?

Steven Bruce

Right.

Steve Sandler

So, what I've done is I've done a literature review, and looked at what literature there is out there. And I should publish a paper at some stage or use it in another way so that we've got some evidence backed medicine to support a technique that's been used over the years from the great, great, great-grandfather downwards. But now we can actually say, hey, look, this is validated. Some of the papers that I've found that show the lymphatic pump techniques below the diaphragm and above the diaphragm do amazing things to blood values, to all sorts of different ways of appreciating it. So maybe later in the year, I'll come back and I'll present that to you.

Steven Bruce

Oh, well, let's hope so, let's hope so. In the meantime, we're going to talk about differential diagnosis.

Steve Sandler

We are indeed.

Steven Bruce

Where would you like to start?

Steve Sandler

Well, I'll start you with a story. I've always used this story when I talk about differential diagnosis and the cardio thoracic system and you'll see why. It involves a friend of mine, wealthy chap in his late 50s. And he was on holiday with his wife and some friends in Las Vegas. And he was gambling fairly heavily and winning, fairly substantially. And in this big casino, it was set up such that you went into the restaurant and had some food and went out to the gambling tables and came back and went out and came back. And he was winning. And he was winning substantially, six figures, really having great fun. And the big cigars there and the brandy and the champagne, and it's all going on. And he ended up actually winning about \$75,000. Lying in bed that night with his wife he said, wow, what a night. Phenomenal. He said we really took them to the cleaners, good night, darling. Good night. And all the way, as he was trying to get to sleep, he had this pain. And it was in his chest and he's burping and breathing. Oh, his wife said what's wrong? What's wrong? And he said, I think I'm having a heart attack. Oh my god she said, you're having a heart attack. Oh, god, he said, get the doctor. Picked up the phone, American hotel, quick, quick, get the doctor, my husband's having a heart attack. The next thing you know there's a banging on the door, hotel doctor arrives. Oh my God, he says, I think you're having a heart attack. Get on to the hospital. They've got telemetry whereby they're reading his ECG etc. Bring him in, inject this, give him that, in the ambulance, drips, blue lights. And he's saying to his wife, in the garden, near the shed, there's a big stone frog, look underneath it, that's where the money is. Eventually, he gets to the hospital and its chaos. There's people coming in and out and it's all getting worse and worse and the pain is killing him. And it's worse and worse and worse. And eventually a doctor said, stop. We're killing him with kindness. He keeps getting a symptom so we give him a drug. He reacts to that drug and gets another symptom. Nurse, you're responsible for literally temperature, pulse, respiration for the next half an hour in a quiet place, dark, just go in, take his temperature, pulse and respiration, report back in half an hour. He said immediately lights went down, he felt better. Immediately he sat up and gave it the greatest belch he's ever had in his life. The pain went away. So, they did this epigastric study, found he had acid reflux from the cigar and the brandy and all the rest of it. And he was discharged home in the morning. And the bill for that was \$50,000.

Steven Bruce

I'm actually really disappointed Steve, I thought you were gonna tell us the secret to winning \$75,000 in Las Vegas, but anyway, yeah.

Steve Sandler

Right. So, let's talk about the differential diagnosis in the cardio thoracic system. And its very important post COVID because patients are going to either maybe recovering from COVID, which is, as you know, the acute respiratory distress syndrome. Or they could be sitting at home, looking at the computer all day, doing

a lot more sitting, flexion, meals may be more irregular, or they might be not used to eating a meal in the middle of the day, but the wife's cooked it so they're doing that, or they might be exercising more and challenging their musculoskeletal system associated with their breathing and heart rate. And we will get symptoms. And so therefore, it's appropriate to look at this differential diagnosis because it's not as simple as you might think. We're going to be talking about dyspnoe, we're talking about chest pain, we're going to be talking about intra thoracic pain, we're going to be looking at the neck, the chest wall, musculoskeletal pain, diaphragm pain, we were talking briefly about reflux and then we're looking at some of the clinical signs with finger clubbing, etc. Cough, cyanosis and finishing with wheeze. And of course, any questions that pop up, I'll try and answer them to the best of my ability so if we can have the first slide please. Okay, dyspnoe, dyspnoe is the posh word for breathlessness. Breathlessness that's not appropriate. You wouldn't say that somebody who finishes an exercise class and is therefore breathing with attitude, should we say, is inappropriate. It's not, it's totally appropriate. I did an exercise class myself this morning as I do every day. And at the end of it, she takes you through the last five minutes of warm down. And when you can speak normally, then your breathing is fine. So, breathlessness that's not appropriate and it's not abnormal. Pathological breathlessness is the recognition by the patient of an inappropriate relationship between activity and respiratory response. The classic, walking up a flight of stairs. Most of us can walk up and down that flight of stairs, there isn't a problem. The person that gets to the bottom, gets to the lift in their office and they're on the fifth floor and the lift's broken down, after one floor is having difficulty just getting his breath, that's dyspnoe. And if we look at the next slide, we can see the differential diagnosis for dyspnoe is much to think about. So firstly, we can look at lung disease, COPD, asthma, pulmonary embolus, infection, all of these will make the patient have difficulty in, quote, catching his breath.

Steven Bruce

That first one Stephen COPD is probably the easiest to recognise because my experience is through not just through osteoporosis, but also first responding. People with COPD are very keen to tell you they've got COPD.

Steve Sandler

Yeah. And that's because it's now been recognised as a mortality that's much, much higher than we ever thought it was. And it's interesting, you know, we talk about pollution, but people are being advised more and more, stop smoking. But how nice it's been to be able to go for a walk or run outside and no pollution and the skies are clear. So yeah, COPD sufferers have got a lot to thank lockdown for in that sense, but don't forget that breathlessness is also about heart disease, ischemic heart disease, the talk is about the cardio thoracic system. And the more and more we should be thinking about cardio thoracic as opposed to heart problems or lung problems. The more the two become interlinked. And if you have a heart that's not beating adequately to supply the lungs with decent quantities of blood, then the lungs can't shift that blood out to the periphery. Anaemia, the forgotten dyspnoe, you know, oh, I'm knackered. I'm tired all the time. And I really have difficult to get my breath sometimes. Really? You know, how anaemic are you, madam, you know, you're 35 years of age, 40 years of age. What's happening in your menstrual cycle? Oh, I think it may be pre-menopausal, because it's all changed. How is it changed? Oh, the blood loss is much, much more than it was and I'm passing clots. Okay, fine. Excess blood loss, excess clots? Who's replacing it? What

are you doing about your diet? And that's just, that's a form of dyspnoe. Metabolic disturbance with diabetic acidosis, that's commonly associated with people who are obese. Then you have the fever of dyspnoe. You can all imagine somebody laying in bed, sweating and having a difficulty with their breath. The big thing now is it COVID. So, I think that that's the problem that's important. And then psychogenic hyperventilation. I remember once going to pick up one of my kids from a teenage party. And as I got there, there was a whole flap going on. And a girl had collapsed on the floor and she couldn't breathe. Looking around, there was nobody else that had any clue what was going on. And I said, you know, what's actually happening here, has she had anything to drink or excess drugs or whatever, no, she was breathing, she wasn't cyanosed or anything. But she just couldn't catch her breath. And I said to the lady of the house, get me a paper bag quickly. She got me this paper bag and we got the girl to breathe in and out of the paper bag. Everything went away because she was blowing off more carbon dioxide than she needed to. So that was about a panic attack. And that was psychogenic ventilation.

Steven Bruce

That's interesting. I know you've done a couple of our first, or one of our first aid courses at least and it used to be the treatment of, course for panic attacks was a brown paper bag, but it's no longer, you're not supposed to do it any longer.

Steve Sandler

Oh, that's interesting.

Steven Bruce

And the sole reason for it is that if you miss recognise or miss diagnose asthma as a panic attack, then you're going to make them worse.

Steve Sandler

Okay, I hope it won't happen to me again but if it did, I won't do it.

Steven Bruce

If anyone can get the diagnosis right it ought to be you. But if you get the diagnosis right it's the right treatment.

Steve Sandler

Okay. Then we have chest pain. Now, next slide. That's good. Chest pain is common. Chest pain is common. But it's not always a killer. It's difficult to pin down the cause of chest pain, because there are so many causes. They exist in different systems and any of them can cause chest pain. So, they can coexist. They get even more complex when you remember from your anatomy that the heart, the great vessels, the oesophagus, the chest muscles and the structures around the higher of the lungs all share the same afferent pain fibres. So therefore, if we look at the anatomical classification of the differential diagnosis of chest pain, you've got a start. You've got an entry into this diagnostic maze. Next one. Okay, if it's the heart, is it the myocardium? Or is it the pericardium? People tend to forget the pericardium as a cause of pain. But it is an

important cause of pain, the myocardium obviously could be ischemic. So, if there's peripheral vascular disease, if there's hyperlipidemia. These, I always think of the Victorian sewage pipes being clogged up by fat from Chinese restaurants. You know, that's a pretty good description of what's happening in your arteries if there's hyperlipidemia. An infarction. Now, what's happened is that the fat has blocked the pipe and nothing's getting through. An itis. Okay, what's the itis? This is an itis of the myocardium. So, myocarditis. But the word itis is always inflammation. What's an itis of the thyroid, a thyroiditis? What's an inflammation of a muscle, a myositis? What's an inflammation of the lung, pneumonia? It should be a pneumositis. That's the one that catches you out. So, you've got these common reasons ischemic heart disease, infarction, or an inflammatory condition of the myocardium.

Steven Bruce

What would produce that?

Steve Sandler

I beg your pardon.

Steven Bruce

What would produce myocarditis?

Steve Sandler

Oh, it could be an infection or it could be an inflammation, but it's an inflammatory condition and responds well to NSAIDs more than anything else.

Steven Bruce

Yeah.

Steve Sandler

Okay, can I have the next one, please? Okay, some of the common sites of pericardial disease. The pain is, can you see me moving my mouse about?

Steven Bruce

No.

Steve Sandler

Okay, well then don't worry about that. Common sites of disease, substernal, slightly to the left of the sternum and it might fall into the epigastrium. Round about the xyphoid cartilage. That's classic pericardial pain. Patients talk about sharper pains rather than dull achy pains, but pericardial pain, if it's going to go up into the neck, out into the arm down into the fingers, that's not pericardial pain. Pericardial pain stays where it sits, here. And this is the one that can be mistaken for indigestion. Oh, you see somebody rubbing his chest oh, oh, and then he might give a belch. But the pain won't go away. If the pain does go away, then it was indigestion, probably. Okay, next one, please. Cardiac referred pain, classically, we talk about the left

side of the chest, going down the inside of the arm down towards the little fingers. So, there's the classic left side of the chest. But if you turn the patient round, it will go down the back of the neck down towards the scapula. And it doesn't radiate through. But it appears to go over the top, and then down the back. On the front it can spread across both sides. It will certainly be retrosternal and into the xyphoid. But look here, this sort of pain. So, patients that are coming in with this cardiac referred pain, it's a big broad spread of pain. It's not simply, it's here and goes up into the neck and then down into the arm, it can spread all over. But more importantly, it can go into the back, especially over the one shoulder or shoulder movements etc. make no difference. So, it's not necessarily musculoskeletal pain. They're not necessarily talking about a cough, or any respiratory components to this. This is pain that's made worse with exertion, as all cardiac pain is. The next one please.

Steven Bruce

Just before you, I'm sorry to keep interrupting you, but this one isn't related to what you were talking about. Chris has asked which of those conditions you mentioned would show up on an ECG?

Steve Sandler

Myocardial pain, none of the others would because especially if it's myocardial pain, because an ECG is the electrical activity spreading across the myocardium. And going down through the AV node, SA node, down through the bundle of His. So that's where you're going to get the changes with an ECG. This is before the ECG, this is when you say to yourself, hang on a minute, and then Sandler's famous maxim is applied at this point. If in doubt, shout. I'd rather be proven wrong by a GP saying no, no, no, that's okay. That's not, that's not really to worry about too much. Or an A&E department saying, no, no, no, no, your ECGs are fine. This is probably something else, rather than that stupid idiot. Why did he go on treating your upper ribs when really you should have known this was something far more serious?

Steven Bruce

Just pointing out then that, on our first aid courses, I'm always fond of telling people for good reason, that you're not going to detect a heart attack by auscultation because there are no changes in that regard. Are there any other changes, auscultatory changes which we might pick up in other variations of cardiac pain?

Steve Sandler

Yes, when we get on to some more signs and symptoms, we'll talk about that then.

Steven Bruce

Okay.

Steve Sandler

So, structures that are inside the thorax. Interesting. We tend to think about things like an aneurysm. But the aneurysm can be in the thorax, but it can also be a descending aneurysm. And that will give you thoracic pain because it's attached all the way down until the bifurcation so, think about an aorta, the arch of the aorta which will give you pain here. Patients, I had one patient who described this as, he said he felt

something unzipping, which I thought was very astute, you know, something unzipping. Yeah, that was the layers between, the serous layer and the myocardial layer, sorry, the muscular layer that was just separating as the blood dropped down. Miscellaneous mediastinal structures, the most important thing about the mediastinum is the lymph nodes, and the lymph nodes tumours, if they're swollen, will produce pain. But hopefully the patient will have warned you about that by telling you in his general history that there are reasons for you to suspect there's a lymph node tumour. I mean, I never cease to be surprised in life how patients assume you know what this is all about. And especially with things like lymph node tumours, they might hide things. Are you well in yourself? Oh, yeah, I'm fine. Yeah, I'm fine. Yeah. Are you a smoker? Well, you know, not that much. I see. What does not that much mean? Well, no more than a packet a day. Okay. Have you got a cough? Not that you'd speak of. But you do have a cough? Yeah. Any weight loss? Well, it's always good to lose weight, isn't it? Now this guy is playing the game of If Only, Yes, But. You've got to spot that and think to yourself, hang on a second, what's going on with the big picture here? And something like a lymph node tumour could very well be what you're finding as a metastasis from something else. And then there's the diaphragm. We tend to take the diaphragm for granted. You know, I know my heart's beating at 70 odd beats a minute, how many times a minute does my diaphragm go up and down, go up and down, go up and down, do my ribs go flare, out, flare, you know, if there's a diaphragm inflammatory condition, or if there's a tumour sitting underneath the diaphragm and the liver, in the pancreas, these will all produce pain from an intrathoracic structure, we'll talk about the diaphragm or the pain picture in just a moment. The next slide please. Okay, neck and chest wall, this is going to affect most of us because that's where we're looking at. Don't forget the skin. Don't forget the fact that patients who have got a herpes zoster will have pain that goes around between the ribs. Okay, and you don't always see the rash until the second treatment. When they come in, how are you feeling after last time? I'm not really very much different. And look, this has come up. Okay, taking two steps backwards. I think I understand what that is. And I don't want a part of it. The breasts, again, many women get breast pain when they're premenstrual. But how many osteopaths ask them? Is your pain actually on the breast, in the breast, under the breast? Because if it's in the breast and it's premenstrual, that might very well be a glandular cause of the pain and she's getting a mastitis. Has she been feeding? Is she still feeding? You know, all of these are things where you're, hang on a second, let me just take a step back. What's going on here? And if needs be, you either do a breast exam yourself, if you feel competent in your clinical training to do that, or you write to the GP and say, dear doctor, I think this might be coming from breast as breast pain. I rather value your opinion on examination, the GP will examine them there and then and reassure or say, yes, your breasts are a bit lumpy. I think we might need a mammogram here. Or we might need an MRI or whatever. So, I think that, don't ignore skin and breast pain. Because if you do, you do it at a great, great risk. But then there's muscular pain and intercostal myalgia, something that I know about myself over the last few days, I was doing one of my exercise classes slightly more vigorously than I'd done before with an eight-kilo dumbbell in each hand working away. And that afternoon I said to my wife, that was a bit much and I knew exactly what it was. I could feel the muscle pain through the intercostal, couple of days, fine, I'm done. But it's all part of the differential diagnostic picture that we should be looking at.

Steven Bruce

I think this one's been put in just to, just for my benefit, but creatures are going to ask, we hear a lot about how coronary is manifestly different in women are manifestly different in women. What will be the definitive sign for cardiac pain for women or for both sexes?

Steve Sandler

To me, it's dyspnoe on exertion, chest pain and dyspnoe on exertion. In terms of women, it's very, there's a very good answer to the question. It's not necessarily the site of the pain, okay. It's the fact that women before the menopause have oestrogens and oestrogens have a lipid lowering effect. So that means that she gets her heart attack 10 years after he's dead. So, he will have his heart attack in his 50s. In his early 60s, she will have hers 10 years later. And that's why it's very important at the menopause to look at blood values and to look and see what your cholesterol is doing and your lipids are doing and make the adjustments in your 40s. So that you get a long life, rather than, you know, he drops that at 40 and you get your heart attack at 50 because you've had that barrier, lowering your lipids. So that's the thing I would always pass on. In terms of where at the sight of the pain is, I personally haven't noticed the difference.

Steven Bruce

And for me, Steve, and you'll have heard me bang on about this at some length from courses in the past. The fact that statistically women might get different signs or symptoms or have their heart attacks later is irrelevant. If they've got chest pain, you still have to consider a heart attack.

Steve Sandler

Absolutely.

Steven Bruce

Because you know, just because statistically it's not likely doesn't mean it's not a heart attack. So you have to think about it.

Steve Sandler

It should be your first port of call.

Steven Bruce

Caroline's asked what causes nocturnal angina when the body is at rest.

Steve Sandler

That's almost certainly to do with the fact that when the patient's laying down, we prefer to lay them on the left side, which taxes the heart less, if they're laying on their back, then we're talking about venous return, coming back up from the extremities, beyond the diaphragm. And that can be a problem, especially with obesity, because the weight of the abdominal mass or if they're pregnant, can push against the ascending vena cava and therefore there'll be an ischemic response at the level of the heart.

Steven Bruce

Which is presumably why with a heart attack, you always have patients sitting up. Anyone with respiratory problems will want to be sitting up anyway, they wouldn't want to lie flat.

Steve Sandler

Absolutely. It's interesting how many people say, okay, I'm going to use a soft tissue technique to the neck and shoulders with some nice cervical traction and then work into the trapezius and then going down, and the patient's flat on their back. Why? You know, it's illogical to do that. And you can use these techniques perfectly easily. If you just adapt to whether the patient can lay on their back, you know, certainly treating at 45 degrees, much easier. Much easier.

Steven Bruce

I don't know who this is, JS is the initials I've been given. Could you talk a bit more about the physiology or the neural links between the difference in the referred pain patterns?

Steve Sandler

It's almost certainly to do with dermatomes. Because the dermatomes will display pain at different size. And there's a couple of slides coming up soon, which will answer that question for them.

Steven Bruce

Have you got any slides on the tests that you would use as well? Because if not, there's a question here for you.

Steve Sandler

No, the most important thing about testing, especially about palpation and testing, is that you can't feel anything.

Steven Bruce

Someone's asking what test would determine pericardial pain? I don't know if she means provoke it, because you can't...

Steve Sandler

An X-ray, because with pericardial pain then they may have pleurisy. So, it's all about, hang on a second, I'm not sure what this is. What do I do?

Steven Bruce

Emily has asked is the pericardial pain likely to be worse with rest or with exertion or will there be no difference.

Steve Sandler

Exertion. And in fact, if you stuck your stethoscope on and ask the patient to breathe deeply half a dozen times, you'll hear the leaves as the dry pleural membranes start to rub and that's classic pleurisy.

Steven Bruce

And final one before you move on, Lee says, how about increased vagal stimulation due to sleep affecting the SA nodes causing angina?

Steve Sandler

Well, the vagus is the break of the heart. And the vagus and the parasympathetic work to slow the heart and check the heart down. And if you've got pain associated with an infarct, your hearts gonna be going like the clappers to try and move things through. So, the vagus is working very hard, clearly. But the associated pain, especially with the sympathetic response to thoracic pain will be really rapid, rather than slower.

Steven Bruce

Okay, right. Thank you. I'll let you get back to your slides again.

Steve Sandler

Obviously, we're not going to think we're not going to not think about bone and spinal cord. That's, you know, that's where society seems to have put us, certainly with trauma, with metastases, commonist metastases for bone, going to be lung, breast, and it will be kidney maybe, and certainly prostate in males, but that would be not chest pain. Arthritic pain, again, don't forget the fact that these vertebral joints and these small facet joints will age and, or is it an inflammatory condition in the facet joints? So, we've got axial spondyloarthritis there. Again, with trauma, is it a fracture? Is it not a fracture, you're not qualified to say, but an X-ray is certainly qualified to say? And the commonest fractures that are going to occur are not going to be in the bones themselves but in the ribs. All of that will be made worse with breathing, all of that will be made worse and give you dyspnoe. Because the patient is going to be holding themselves, trying to splint that fracture. Spinal cord. Yep. Don't forget the fact that the spinal cord ends down at L1. So, it's passing straight through with a tension in the thoracic spine. We now know that there are infections that are possible there. I think its staphylococcal infections are the ones that are, I could be corrected on that. Again, nerve root irritation pain, is that a nerve root irritation pain by itself? Or is it a herpes? Is it a shingles case? But these are all things that I would fully expect people to understand that I'm not going to waste your time, elaborate on them, they're included for the sake of completeness. So, can I have the next one. Okay, this is what I meant by this idea of the chord ending at L1, if you look at those three, A, B and C. A is normal. Okay. B is a spine that's just too straight. And C is a spine that's kypholordotic. That's not C1 that's C7. That hasn't come out well on the reproduction. But what that's actually doing is looking to see how much space there is in the spinal canal for the cord. And clearly if you've got something at C1, an older patient who's very much kypholordotic, these are the people that I irreverently called the tortoise patients, because they're the ones that are just moving in a way that the giant tortoise moves and I apologise if I've offended anybody by saying that, but that's just my sense of humour, question mark. But the fact that the cord is being drawn up as the patient has grown from infancy to adulthood, has produced the traction and the cord

will produce traction on some of the nerve roots in the same way. So, the important thing here is if you've got a patient that's normally position A, but you haven't seen them for a year or two, but when they come in and they see you, and you notice that she's now about four inches shorter than she used to be, and she's got this very deep kyphosis, the biggest question, has there been a vertebral collapse. If there is, is it osteoporotic, is it metastatic, what's happened. And then your thinking is going into the right area. The next one, please. Yeah, breast pain. You see, again, we get breast pain from different dermatomes, are going to produce different pain patterns depending on which part of the breast is affected. And it can go all the way down to the fingers, mimicking cardiac pain, that's referred pain in itself, because it's sharing the same structures. Or it could be just a localised pain across the top of the breast, or localised pain at the point where there is a cyst or a nodule, or whatever. So, breast pain has to be carefully supplemented with a very good clinical examination. Now, I don't know whether the schools are still teaching breast examinations or not. It's a while since I've been involved in teaching in one of the academic institutions, we were certainly taught it as an essential part of differential diagnosis of chest pain. But if you haven't been taught it, then you don't play games, you send it off straightaway. The note to the GP says, I think this might be breast pain, I would value your opinion, as simple as that. And that's where breast pain should be addressed.

Steven Bruce

What's the chance of mistaking that referred pain into the fingers for a cervical problem?

Steve Sandler

Again, you see, with a cervical problem, you should be able to side bend and extend and reverse rotate, closing the foramen producing the symptom, you should be able to lift the arm, turn the head away and go back, putting the traction through the tissues on the front of the neck and shoulder producing the symptom. If this is going to be cardiac referral, it will be worse with exertion. You see what I'm doing? I'm building up the pictures. I describe it sometimes with students as, if you give the patient the outline, and then hand them the paintbrush, they'll fill in the details. You know, they'll tell you, oh, it's worse with exertion. It's worse when I poke it. Someone who's got a lump here, who says, oh, I wonder what that is, they're not suffering from cardiac pain. But there are suffering from chest pain. Although I did have one gentleman say to me, I'm very concerned. I've got a lump in my breast. And it's here. And you can feel it. And it's hard and I said, yeah. I'm delighted to tell you that that's actually the sternocostal joint. He said, what's that? I said, you've got another one here and another one here. All the way down. He said, oh my God, that's terrible. I've got so many of them, I said but they're normal. That's where the rib attaches to the sternum and moves like that. Oh, he said, thank God for that. I didn't know. Of course, he wouldn't know, but he thought breast lump. Yeah. Okay, next one. Tracheobronchial pain. Not common, not common at all. These are diagrams that have been done. There was a book called, written by Carl McBride called Signs and Symptoms and that's where I pinched this one from. And he describes faradic stimulation, electric wire stimulation and showing where the pain actually is represented. So, if he stimulated in the middle of the oesophagus, he got the pain up into here, where if he was stimulating lower down, again, the pain came lower down, but the pains were definite isolated areas. And one of the things he said that was quite interesting is pressure on the tracheobronchial area from other structures, for example, an enlarged thyroid and if it's an enlarged thyroid, an enlarged thyroid would push onto the trachea. Acid reflux is an example of tracheobronchial pain,

infections, especially if they're part of an upper respiratory tract infection. You know, a tracheitis and a bronchitis would produce pain, stimulating areas in the trachea and in the large bronchi, would produce sharp areas of pain onto the chest again, the nerve supply and the dermatomal supply is what we're talking about. A laryngeal condition, someone who is a smoker and they're getting a constant irritation to their trachea. Question mark. Is it a simple tracheitis or is there a growing carcinoma that's not being active yet? And then the bacterial, I mean, we're seeing patients, if we're seeing them post COVID, these are patients that have had, if they've been unlucky enough to have an intubation, that could have scratched and traumatised, but if they've got a fever, if there's a cough, if there's a wheezing, if there's a cyanosis, this is all example of potential bacterial infection, especially in the acute stage. So tracheobronchial pain is just worth thinking about in terms of, is there something pushing on? Or is there something irritating from within. Now, the next one is parietal pain. And parietal pain is very interesting, because, again, sensitive to pressure, sensitive to infection, inflammation, so the patient will have a temperature, they will have a difficulty in taking that deeper breath. It's almost panting that is happening. But the thing that's important is that the somatic innervation to the somatic structures gives localised pain via an intercostal nerve, but it can give central pain by the phrenic nerve. Okay, but if you've got a visceral pain, the visceral pain perception is very, very, very poor, the viscera itself doesn't cause the pain. For example, in a lung, if you look at the slide there, on one side, you can see the lung and you can see a mass in the lung, you know, that might be a pulmonary embolus, which will produce a pleuritic pain of the stretch within the pleura. Again, X-rays will show this very quickly and NSAIDs is what the doctor is going to prescribe. Your treatment is very important in the recovery stage, because what you'll be working on are these somatic structures in the ribs, in the diaphragm. And these are the gentle unwinding techniques, the fascia release techniques that are really, really appropriate in these cases. The more gentle you are, the more they will respond. And certainly, in the osteopathic hospitals in America, there's a chap called Brian Degenhardt who runs a group at Kirksville. And he's also responsible for a group that goes across the states of people who are interested in treating visceral conditions with manual methods. And Brian says that the more acute the patient, the less you do, but if they're in a hospital bed, in an American Osteopathic hospital, there'll be in bed, physicians will treat them three times a day for four minutes, you know, and then move to the next one, and then move to the next one. And treating them in short, sharp bursts with very gentle release techniques, he maintains is what gets the difference. And I'm expecting Brian to be producing papers in the future, showing what the Americans were able to do with manual methods during COVID because those patients were admitted to hospitals in the states with acute COVID. But the one thing that they have that they haven't got here is they had osteopathic physicians with hands-on medicine. And hopefully, we will see that those who had osteopathic medicine as an adjunct to whatever else was happening may have recovered quicker. That's the hope. We'll wait for the results and we'll see the future. Again, diaphragmatic pain, again, think about films another wonderful film with Michael Caine, Zulu. Yes. As the guy goes straight through him and out his back, that's gastric reflux. Okay, reflux will go straight through and out the back. The Mickey Rourke film The Wrestler. So, imagine someone giving you a great big bear hug and you're squeezing away and you're trying to breathe. That's respiratory pain. And then Alien Sigourney Weaver, it bursts out of the chest. Okay, that bursting pain is described as cardiac pain, cardiac pain will burst out from underneath the sternum. Just helps me to think about the important differential diagnosis between those three, and the next one, please. And the next one, esophageal pain. Again, we're happy with that. So, let's go on to the next one. Okay,

ischemic pain, crushing, constricting, heavy, pressing, sometimes described as wind, indigestion, but not relieved by a giant belch. Pleura pain is localised, made worse with deep inspiration, pericardial pain retrosternal, left sided component really, made worse with respiration, coughing or as you said before, Steven, the change in posture.

Steven Bruce

Which actually answers a question we've had from I think a couple of people, does pericardial pain subside if the patient leans forward?

Steve Sandler

Yes, it does. Most heart pain will subside if the patient leans forward, and they'll often be sitting there, hunched over. Okay, next one. Esophageal retrosternal boring pain radiating to the thoracic spine. A dissecting aneurysm, similar to an infarct, but much more abrupt, much sharper, and the patient is going to go into shock. They're going into shock because they're literally bleeding into their tissues. And it's hypovolemic shock. And that's a that's a serious emergency. You know, someone's going to get to that very, very quickly. Structural plan, and this is something that we're all quite familiar with. So, I'm not going to say much more about that. So, go to the next one. Peptic ulcer pain, there is some relation to eating, eased by antacids. This is the classic indigestion, a patient who says, oh, I've got terrible indigestion. But this time the Gaviscon didn't relieve it. Okay, what about your general health anyway, do you ever get breathless? I don't want to go upstairs. Okay, so you've now got dyspnoea on exertion and ulcer pain, does this ulcer pain occur when you're not eating? Oh, sometimes it'll occur when I'm just sitting there. But commonly when I get to the top of the stairs, I can get it again then. So, you've got to give them the ability to come back to you with descriptive terms. And that's very, very important. So, the next one. Again, if the pain is continuous, it's an MI or pneumothorax, a tumour or the dissecting aneurysm. None of that's intermittent. But the next one will show that on exertion, it's angina, on breathing it's pleuritic, on nerve movements it's a nerve root involvement, on eating, it might be gastrointestinal. Simple questions, but pointing you hopefully in the right direction. And the next one, please. Finger clubbing. Yeah, this is always a sign of cardiovascular disease or respiratory insufficiency. If you take your two fingers and put them up together, with the fingernails like that, you should be able to see the diamond between the two. If you can't, then that's finger clubbing. So, you ask the patient to take two fingers, put them together like that, and see if he can see a diamond between the two nail beds. If not, then that's finger clubbing that's always a sign of insufficiency and should be referred fairly quickly. There. That's the test that I was talking about. It could be respiratory, and there are the reasons why, bronchiectasis, ling, oh lung abscess that should be. A cancer, TB, some of the chronic conditions with cystic fibrosis, etc. It might be cardiac with congenital heart disease, especially in youngsters, or bacterial endocarditis. Again, so these are some of the things that we should be looking at. Don't forget, in some cases, it's familial. It's not serious at all. But it's not your decision to make that, if you find it, pick it up and send it off, together with a symptom picture as a background, then that's what you should be doing. Okay, and the next one. Cough. Yeah, let's just talk about cough because it's important. It's one of the defence mechanisms of the respiratory tract. And it can be due to irritation, in which case it's a dry cough due to excessive bronchial secretion. It will be a productive cough. Common reasons for cough these days, look outside, what's the pollen count? You know, have you got hay fever, is that producing your cough?

That'll be a very dry cough indeed. But if you've got an infection, that will be producing tissue fluid and therefore, you may get bronchial secretions. Drugs, head injury, anaesthesia, all depress the cough reflex and cause secretions to collect in the airways and that will lead to infection. There's a lot of drugs that you don't necessarily think about, the patients who are taking NSAIDs more than they should be, for longer than they should be, especially if they're codein based, Paracetamol and Codeine all suppress that cough reflex. And it's very important to say to your patients, how long have you been taking that Paracodol? How long have you been relying on codein to suppress your pain? It might be better to get them into the GP to get a stronger analgesic that isn't necessarily an opiate that's going to cause problems with respiration.

Steven Bruce

Have you seen any conclusions on how reliable a cough is as an indicator of COVID-19?

Steve Sandler

No, I don't, because there are people who've had COVID-19. They've had no cough, no fever. But they have had back pain, they have had muscular pain and had flu-type symptoms. But they haven't had a cough and they haven't had fever. It's not common, but it's there. And it's very important when you're screening your patients, before you see them. So, you're coming back to work, patient phones up. Are you back? Yes, I am. Have you had a cough? Have you had a fever? Has anybody in your household had a cough? Or a fever for the last seven days? Just this morning, I was in the practice just going through some paperwork. And the receptionist came to me and said, I've got a man on the line. I don't know whether it's safe to treat him. What do you think? I said, what is it? She said it's a policeman. And his wife is also a police officer. And he said I could make, I can't say for definite, I haven't been in contact with anybody. So, what did we do? I said, is he otherwise healthy and well? Yeah. So, I spoke to the chap. He said, no, no, we're fine. We're healthy. We're well, we're A1. But you ask the question. I said, that's okay. It's not a problem. Come in, and we'll sort out whatever the mechanical symptoms that you're complaining of are in relation to it. So just a very current, be aware, if it persists for more than six weeks, that cough should be taken seriously.

Steven Bruce

Yeah, I'll tell you what I want to know, Steve, if I poke a cotton bud in my left ear, it makes me cough. If I put one in my right ear, it doesn't. Why is that? You're going to tell me not to throw cotton buds in my ears, aren't you?

Steve Sandler

I don't know. I suppose that you don't put cotton buds in any ear? There's other gentle ways, I take your point. Okay, next one, please. Again, if the cough is nonproductive, anxiety, a foreign body trapped in the larynx or the bronchea. If it's just a habitual, nervous sort of cough that they've got, is it interstitial lung disease, upper and lower respiratory tract infections. These are really not signs or symptoms, but they're aid memoirs for me. I'm thinking about a nonproductive cough. What might it be? These are things I'll be thinking of. Whereas the next slide, productive cough. Okay, asthma, neoplasms, bronchiectasis, chronic bronchitis, foreign body, lung abscess, pneumonia, including in that pneumonia is obviously COVID, SARS, but pulmonary congestion, right sided heart failure, all of that will produce a productive cough, a wet

cough, so that little list might be a useful thing to just have by your side, on your desk. So, when somebody comes in, have you had a cough? Yes, I have. You can go through very quickly the productive and nonproductive and hemoptysis, and that will put you into a better differential position, I think. Next one. Hemoptysis, are they coughing up blood? Now that could be an acute infection, bronchitis, bronchiectasis, again, foreign body, especially with kids. Left ventricular failure with some mitral stenosis, a neoplasm or metastasis. That's the one I'm always going to be thinking of. That or a pulmonary infarct. TB, yep. It's coming back into the population again, I'm afraid. We thought we'd got rid of it. But, you know, in the old days, it took two or three weeks to get to the UK from wherever you were coming from. And you were developing your tubercular symptoms onboard ship. These days, you go from city A to city B, arrive 12 hours later into the community. Two weeks later, you're coughing with a tuberculosis infection. You know, so TB is coming back and there are some resistant strains of TB that are coming back. So, again, just for safety's sake, have you got a cough? Yes. Do you produce any sputum? Yes. What colour is the sputum? Sometimes it's pink or even blood flakes. Okay, straight into this differential diagnostic thought pattern.

Steven Bruce

How important is that, Steve? Because actually, if somebody came to my practice and they said they were coughing up blood, I'd be saying, this is no longer for me, you need to go to the GP already.

Steve Sandler

Nothing on that list is for me to treat. But everything on that list is potentially going to walk in with cardiothoracic pain, with lung pain, with a rib pain and with a cough. So that's what that's about. Cyanosis is the next one. Yeah, that again, blue fingers and blue lips. If it's peripheral cyanosis, then we are looking at blood flow that's confined to the nailbeds and the fingers. It's just an abnormally high oxygen in areas where blood flow is restricted. It could be caused by vasoconstriction, just due to the cold, or due to vascular disease in general, a blood flow due to hyper viscosity, is there too much fat in the blood, cardiac output production, the state where the hands and feet are not receiving sufficient blood. But the blood that's being oxygenated is going into the centre. So that's peripheral cyanosis, where they're blue in the fingers and blue in the lips, but they're not blue on their tongue. That central cyanosis where the desaturated blood is being pumped from the left ventricle into the systemic circulation. They're not getting oxygenation into that blood, it goes back to the heart, still dirty and then gets transferred through. So, there's something wrong with a haemoglobin concentration, they're not able to pick up that oxygen. There's a high altitude, that you would be unlikely to come across. But certainly hyperventilation, you would come across that, especially if somebody is panting because there's a reason why there's a rapid ventilation rate. Again, with the newborn, with a kid, maybe there's a patent ductus arteriosus, most unlikely that it will get through a paediatric screen at the hospital before the child is discharged. Might appear as the child starts to run around and become a toddler and starts moving more of themselves. Pulmonary blood flow through diseased or collapsed areas of the lung, again, there's no perfusion and again, COPD, end stage COPD is the common to that. Next one please, Justin. Palpitations, the heart beating irregularly, we can't normally feel our own heart beating. But sometimes a patient might say, I'm very aware, but I can feel this, is it normal? Well, how normal or abnormal is it? If you pick up the wrist, can you feel that palpitation? Is this somebody who is going into fibrillation? Atrial fibrillation is a common problem. And that's why people are taking beta blockers. That's

why people are having pacemakers fitted. You know, they might not have anything more than this heart beating, either a regular irregularity or irregularity following exercise, it can be, for example, someone who has been sitting in a car for a couple of hours, stands up, that's postural hypo tension, his blood pressure drops through the floor and his heart gallops away to try and bring things back up again. But again, it's another symptom that is often accompanied with chest pain. So, you have to ask that question along with the chest pain. So, the next one, please. Yep, there we go. Noncardiac, stress or strong emotions, alcohol, tea, coffee, tobacco, marijuana. Yes, marijuana sends you to sleep. But if it's the wrong person who's actually smoking that, you know, that's going to actually cause a palpitation. Biggest worry for me is an over active thyroid. Thyroid gland, as you've heard me say before, is the body's accelerator pedal. When that's on the floor, it beats, nine to the dozen. If it's an underactive thyroid, the accelerator pedal is off the floor, the whole body slows down. Electrolyte's imbalance, too much or too little potassium, hypotension, various different medications that will cause palpitations, these are all non cardiac and, but ones to worry about there, not worry, to think about there, are emotional disturbances, especially when people are very frightened about COVID. And if they work themselves into an anxiety state, things like coffee, tea, I've known plenty of people who say I only drink decaf now, decaf tea as well as decaf coffee. I feel better for it. You know tobacco, that first drag of the cigarette in the morning, you get that nicotine buzz, that will produce your palpitations, but don't forget the thyroid, thyroids particularly important. Next one please. So, it's cardiac, again, you're looking at MI, you're looking at a higher blood pressure. We're all capable of taking the patient's blood pressure and pulse. We should be doing that very easily. Again, if you think there's atrial fibrillation, don't doubt, shout. Mitral valve prolapse that might occur in degenerative heart disease. Or it might occur secondly to rheumatoid disease when they were younger, and they've had a mitral valve cusp irregularity and growth around those cusps. And now the flaps aren't beating as they're closing. Again, common cardiothoracic disorders, they don't really affect the heart, the heart usually affects the cardiothoracic problems rather than the other way around. But again, inflammation or degeneration of the myocardium, old patients' hearts tend to lose the ability. And it's the older patients who tend to have the pacemakers implanted rather than the younger one. Also, there's this thing with cardiac ablation, in a younger patient, there may be disturbance in rhythm along the SA node down through the bundle of his. And sometimes they can make an ablation, and literally fry off some of the nerve fibres that may establish another pain, another pathway around that ablated area, and that restores into the normal sinus rhythm again. But again, that's something you should be thinking about as interest. Next one. Okay, we're nearly at the end because we're going to wheeze and wheeze talks about an airflow obstruction. It can be a localised narrowing of an airway, a broncheal thing, or it can be generalised asthma, cystic fibrosis, not all patients with asthma have wheeze and not all wheezing patients have asthma. But if you just listen to them, just quietly listening to their breathing with a barrel chest, is that a chronic asthmatic who's going into COPD? If it's not, what's the wheeze about, where is it coming from. And the next slide, I think, which is the last one says that there are local causes, it could be an impacted foreign body, impacted lumps of mucus and localised compression or narrowing of the airways. And the last one, general causes, asthma, bronchitis, and emphysemas. So, I think that's the lot in terms of slides. And I've done my best to just quickly run through very rapidly this differential diagnostic thought process, so that when we go back into practice, and we start to see patients who may have had COVID or any other reason to there being a cardiothoracic

symptomatology, it lays the ground to be able to think through the problems as to what the potentials might otherwise be.

Steven Bruce

Thanks, Steve. Well, I mean, one answer to a question is coming from Matthew Davis, he says that my Q-tip and coughing thing is because there's a different vagal distribution between my ears and several people asked about that. I think one of them said that they cough when, they don't cough when they push the thing in, but they cough when they pull it out the other side.

Steve Sandler

No idea.

Steven Bruce

Somebody's actually asked, how long does finger clubbing take to appear?

Steve Sandler

It's a chronic symptom. It's a chronic symptom. If you see a patient with finger clubbing, my first thought is COPD.

Steven Bruce

Yeah. And any idea of the mechanism that causes it?

Steve Sandler

No. I don't. I'd be very interested if somebody found what the cause was, I've tried to find it. But I've always found textbooks to say COPD is chronic cardiothoracic insufficiency.

Steven Bruce

Right. And you were talking about some research earlier on that was going on in the States and you gave the name of the researcher and somebody has asked for the name of that champ.

Steve Sandler

Brian Degenhardt. He is the professor of OMT at Kirksville. If you do a Google search for Brian Degenhardt, then you'll see him in there. And I can't remember the name of this research group that he's got going on. I've been racking my brains for it. But Brian is somebody who's a very strong, healthy, good hands-on osteopath in the traditional sense and the modern sense.

Steven Bruce

Good. And two final questions, if I may. Sasha asks whether phytoestrogens have a similar lipid lowering effect.

Steve Sandler

They're plant oestrogens. They don't.

Steven Bruce

Jan has said, most of us normally focus on the top number in a blood pressure reading. Are we overlooking something if we're not paying attention to the lower number?

Steve Sandler

No, I think it's a change in both the numbers that's important. So, if 128 is what you're expecting, you're getting 185 over 110? It's the ratio between the two that's important. But in terms of ignoring one in favour of the other, definitely not. Because if you're taking that blood pressure correctly, and you know from your first aid course teaching, that that should be done in different positions then you're looking for the ratio of the change. And if it's there and if, with a little bit of exercise, it's going up and it isn't coming down the way that you would expect it to. If in doubt, shout. I mean, just white coat syndrome, taking the blood pressure raises it. Yeah, yeah. But accept that.

Steven Bruce

Stephen we've gone well over the allotted time for today's CPD, and very kind of you to spend so much of your time with us. And I'll tell you what, if I'd known you were going to use such vivid imagery, the nodding tortoise and the alien erupting from the chest, I might have added some things to your slides without telling you.

Steve Sandler

It's a way of thinking about things and it just amuses me to, to think about The Wrestler.

Steven Bruce

I find that something very helpful in remembering. Anyway, thank you very much indeed.

Steve Sandler

My pleasure. Thank you very much for listening, everybody.

Steven Bruce

Good luck with that research paper of yours and I hope we can get you back when that's finished.

Steve Sandler

Lovely, pleasure. Thanks a lot.