Academy of PHYSICAL MEDICINE

MRI Interpretation

with Rob Shanks and Darren Chandler

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TRANSCRIPT

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Steven:

Good afternoon. Welcome back to the Academy of Physical Medicine for another lunchtime CPD session. We've got something really interesting in store for you today. I'm joined by two osteopaths, Rob Shanks, Darren Chandler, who you may know from their practice 'Spine Plus', but I gather that they only recently, only a week ago set up 'Go To Imaging' as you can see on the slide behind me. And they've got a real passion for what can be achieved through MRIs in particular. Rob, welcome!

Rob Shanks:

Hello Steven. Thank you for having us.

Steven:

I think Darren is still in his cupboard at the moment, but hopefully he will pop out in a minute and join us on the main screen. You and I had a very brief chat a few minutes ago about why you set up 'Go To Imaging'. Can you tell us a bit more about it?

Rob Shanks:

Yeah, absolutely. So the background really for myself and Darren is that, as you rightly said, I'm an osteopath. I qualified 20 years ago now. My mother is actually a physiotherapist, child physiotherapist. So I suppose I've always had this kind of feeling of wanting to know what other professions have to offer, and read around things as much as I could. Darren's similarly minded, and we started working together about 15 years ago in the clinic 'Spine Plus' as you said. And this all came about around 10 plus maybe 14 years ago when we were at a lecture being given by a radiologist, in fact, one of the lead radiologists at the Royal national orthopaedic hospital, a chap called Dr Butts. And we were just 'blown away' really by the stuff he was telling us and talking about. He was mentioning things that we honestly didn't really appreciate or had even heard of, such as Bertolotti Syndrome, intra and extra capsular facet joint injections and pars defects and this and that. And we came away from there thinking, 'gosh', there's a whole sphere of stuff we don't really understand. And then obviously he was going through the MRI scans and explaining what can be seen and what can't be seen in the various different aspects. And we basically just went up to him at the end and said,: - "Listen, we loved the talk, It was amazing. How do we learn more of this, and would you be willing to teach us?" And so then started a very long professional relationship where we've been shadowing him, and literally we are now in weekly if not daily contact with him. And he's just been fantastic, I mean extremely amiable and just generous with his knowledge. And there's things that we've learned about MRI scans that we are really passionate about, and feel should be taught to the wider manual therapy community, physios, osteopaths, chiros, because there's lots of stuff that's missing from the undergraduate training that could enhance the practice of those professions and which could also help safeguard the public. And we're going to go through lots of case histories today to try and illustrate our point.

Steven:

I think there'll be a lot of people sympathetic to what you've just said there Rob, because certainly from my own perspective I'm in awe of people who can go through MRIs as quickly as our tame orthopaedic consultant near here does. He just whizzes through them and says, Ah, look at this, look at that! And most of us, certainly when you come out of undergraduate training when you've just graduated, you have really no idea what to look for on an MRI and you rely on those few lines of text that you get from the radiologist. So where do you want us to start? There's three different types of MRI on here.

Rob Shanks:

Yeah, let's go through those. So most people when they are talking about their patients who have had an MRI scan, it will be the one that's on the left there. So with the standard MRI where the patient's lying on their back, they're non-weight-bearing and the 1.5 to 3 tesla, that's basically the strength of, or the pixelation if you like, the quality of the image that you get. Sothe 3 tesla is obviously higher than 1.5. 3 teslas are quite good for looking at peripheral joints, cartilage detail, surfaces of joints, that sort of stuff. The 1.5 teslas have been around for a lot longer, but I would say for spinal stuff they're still pretty good and in some cases can be slightly superior. They'll show up things such as modic change a 3T may miss. But that's the standard one. Then you've got these other types of scanners where you've got the middle one, this is the open scanner. So for patients who are claustrophobic and don't like the idea of going in those tunnels: - if anybody's had an MRI scan they are really closed, really tight, they're here just in front of your nose, and they make a lot of noise. So it's quite understandable that some patient's need that open scanner.

Steven:

Why is the power so much lower?

Rob Shanks:

Yeah, absolutely. So the lower power: - I don't know the technical reason why, but I'm guessing it's just a much more expensive scanner and machine. And consequently the price tag is higher for those. So let's say, if a standard MRI scan these days you can get for say 200 or 300 pounds, the open scanners will be probably at least twice that. Now the similar one to an open scanner you'll have on the right there a dynamic or an upright scanner. So this allows patients to be imaged, standing or sitting and even in degrees of flexion or extension. Now again, we'll go through examples of that later on where that can really come into its own sometimes with the diagnostic imaging of a patient who predominately only has pain in one particular position. So if they only get sitting pain, it makes sense to scan them when they're sitting rather than when they're lying down. I think the statistics are that about 30% of the time, those weightbearing scans, for the spine anyway, will show pathologies that are missed on the standard lying down supine ones.

Steven:

Yeah.

Rob Shanks:

So if we go to the next slide Steven, here we go. So this is now getting into the nitty gritty of what we see when we open up and we see an image of a spine. And this is what we call a sagittal image. This is the sideways slice coming down the middle of the body, and most people will have heard these terms T1 and T2. We'll come onto the stir in a minute. I think Rajeev did mention briefly some stir sequences in his talk in the week. But I'll explain a bit more in a minute.

Steven:

We've had a couple of talks in the past on MRIs as well where the stir has been introduced, but I suspect you've seen those.

Rob Shanks:

Yeah, absolutely. So, a T2 weighted image is basically where water and fat are both showing up as bright. So if we look at the cerebrospinal fluid down the middle of that spinal canal just to the right of those discs, that's it. So that's the cerebrospinal fluid that's showing up as bright. Now similarly the subcutaneous fat, so just the other side of the spinous processes to these, that's it. So that is also bright. So now we've got fat and water as showing up bright. And the way to remember this, if you think of the formula for water H2O, there's the 2. So you've got T2. T2 is basically water and fat. Now contrast that to the middle screen now. We've got the T1 image. And the difference here is that the subcutaneous fat is still bright, but now you notice how the cerebral spinal fluid now is darkened. So the water is now showing up as dark. And you'll also notice that the bones, the vertebral bodies are slightly differently shaded. You can see a little bit more bone detail. So the T1 image is more appropriate for bones. So again, think of the spelling of the word 'one' and then 'bone', but with the 'b' in front of it. That's how I remember, or how most people remember. T1 good for bones. T2 good for water. So what's the point of all this? The reason is that we want to see the water because you want to see where there is water that shouldn't be there, i.e. Inflammation. So you can have inflammation around the vertebral body, you can have inflammation around the soft tissues, but the problem then can be that sometimes some of those soft tissues will have natural amounts of fat in and they'll have some water in. So then you need to suppress the fat in order to highlight the water. So that's your 'Stir' sequence, and the 'Stir' sequence is a fat suppression sequence. So that basically means that the fat now has become darker. So you'll see on the right hand image that the skin, the subcutaneous fat is now darkened, but the water and the cerebrospinal fluid is now bright. So that's a really useful scan. And the thing to remember however is that you don't always get a stir sequence done as standard. So it's something that you sometimes have to ask for. Now, the advice would be that in any patient who has had a trauma, you really want to be getting a stir sequence done because you could be missing pathology without it. So sometimes they will do that as standard, but unless you ask for it, it may not be done. Okay, lets move on to the next slide Steven. And we can see now this is now moving slightly away from the centre. So the slide on the left is again a sagittal image straight down the middle, and we're now moving slightly lateral and we've got what we call a para-sagittal view. So it's slightly off centre and what we can now see is the, is a neural foramen. So you're starting to see this little key hole sign and you've got the exiting nerve roots. So where it says E N R, these are the nerve roots that are coming out through the lateral foramen.

Steven:

I can point at these, but the audience have got the slide up full screen at the moment so they won't see me pointing.

Rob Shanks:

Yeah. Yeah. Okay. So again, this is a really nice when, if people are looking at scans and loading up the images, you really want to, you know, start perhaps with on the Saturday I and Jenny way the middle slice, have a look at the detail of the discs but then move out to this parasite or two and then look at where, yeah, can you see that the exiting nerve root nicely contained within that he holds in the the frame. And if you, if you're really close to enough, it may not, the detail might not come out on this particular screen, but you can even see the perineal facts. So you have the kind of the nerve and then, and then you have a fat around the nerve and that's the key thing you want to look for to see as any impingement in that arrangement. Yeah. Okay.

Steven:

It's just interrupting you just to reassure the audience that the download for this, the only slides are on handouts which are already available on the recordings page for this this broadcast. So they will be able to get these slides themselves afterwards. And when we come to looking at specifics of individual cases, you're going to share your screen and point at it with your mouse.

Rob Shanks:

Absolutely. Yeah. Dominance, going to site, carb and do some something. The Houston case yesterday, three in a second. We just got couple of let's go to the next slide. Slide number four. Here we go. So this is, this is now what we call the axial slice. So this is the slice, you know, through the middle, through the middle of the body. And there we go. Yep. And what we've got there is you can see the disc in the middle and you can even see the nucleus power post is that central part of the desk that you know, gelatinous hottest static part of the desk, the outer fibres of the onions. We've labelled it all, therefore you obviously. But the thing too, when you're on these images to look for and what do you got to think? You said, look at, if you're looking at the spinal structures, you see what we've got the spinal canal in the middle and you've obviously got the descending nerve roots and the quarter corner coming down.

Rob Shanks:

Essentially you then come out to the side of there and you'll see the exiting the lateral forearm and then you see the exiting nerve roots at that level. And again you want to look at the, look at these. This is quite a normal desk and this is showing quite so the Peyton a three minute, there's no nerve root compression, but if that, if that space gets narrowed then that's when you're potentially going to have trouble and normally so it's possible signs of nerve root impingement and obviously then we've got the facet joints at the back of the spine as processes and then either side of that, the erector spinae muscles as well. Oh fine. Just looking at this slide, I'm reminded of when we had our board, Nick Birch and he had a number of slides and he drew attention to the fact that you can very often see large differences in the size of so S muscle and, and that also can be indicative of something correct with further investigation.

Rob Shanks:

And it's, it's actually, you know, as you say, it's very important, not always of, I've mentioned it, they're going straight to song structures. It's very important to have a think about not just the spine but look around it. So again, we've labelled on here the aorta, the infinity of the IVC, inferior vena cava, as you rightly say, the rest muscles and you only can see coming out which from there, you know, it's not very clear here, but you'll see in certain slides you'll see the kidneys. And it's always important to have a little think about those extra spinal structures as well. Cause I got, what about two questions? Were you already okay, this is just in the system as this. And it is a stunningly obvious question to ask and I have no idea what the reason behind this is. But he wants to know why do people have to go into an MRI scanner head first because they hate it.

Rob Shanks:

Well but the truth is it depends on what part of the body you're having scans. So you don't always have to go in head first. So if you're having, let's say you know, your knee, your ankle or your knee done, they quite often will try and put around the other way. But I think that the truth of it often is people do go and you can say quite deep. And I think it's because the, the mechanics of the, the, the MRI in the middle of that tunnel essentially. And that's where I need to get you to have that, you

know, have that scanning done. And the other question was from Emma, she has asked, can you just re explain again why you need to stir sequence if there's been trauma, right. So basically if, obviously if there's trauma, then you're suspecting there's going to be some inflammation, you know, some, some sweating around somewhere and it's a stir sequence, which is the one that is going to highlight that the most, right? It's because like I say, let's say for example, think of the entire spinal ligaments, but they can have some fatty tissue in them. Oh, they could be, have some trauma in which case would have some water and on the nail on the standard T2 you won't get to see the difference. It would just look up, right. Whatever it was with a stir, you're suppressed the fat. So then anything else that's showing up is going to be potential trauma. Right. Okay.

Rob Shanks:

Okay, let's move on. Let's go to, let's go to the next slide. And so number five. Here we go. Right. So we're getting a little bit of pathology now. So this is, this is actually a case that we saw in clinic and this was of a 50 year old lady who actually came into the UK, was a medical tourist and she was in the UK for a few months. But she had this you know, basically had this sort of psychotic pain going down her left leg that she just couldn't get rid of. And she actually saw a colleague of ours initially and she was having some manual therapy and it was just wasn't shifting. Now at the time off a few sessions, the other therapist was suspecting that she had some sort of disc problem and the symptoms correlated with the disc problem and we thought, yeah, maybe she has, but we thought, well, we better get a scan anyway just to be sure.

Rob Shanks:

And he actually threw up something slightly unusual that we weren't necessarily suspecting first off and that we've labelled it on here. And this is, this is the facet joint cyst. So that little sort of outpouching fluid. Yeah. Just on the rack, the actual image of their steam. So sweet. That's it there. Perfect. Yeah. So that's, that's actually coming from the facet joint itself on the left hand side. And it's essentially you know, just, just swimming within that capsule AIDS and it's pouching out and it's actually hitting the descending nerve roots. So, yep. What we've got here is this is the L four five segment, so the nerve is coming out at that level is L four but the nerve that's going down the canal before it exits at the level below is the L five and you can clearly see if you get your mind around the anatomy, but facet is contacting the L five nerve root.

Rob Shanks:

So that was, that was, you know, very indicative that that was the source of her pain. Just before you go on Robbins on axial slices, we're always looking up the body and I can pretend I know lots about MRIs by saying yes we are, we're always looking at the body and it's about the only thing I know, but MRIs. Absolutely. So yeah, I should have mentioned that. So you were absolutely right. So it's just like confusing. What we're seeing there on the left, on the right hand side is actually the left of the patient so that you know, the head's at the far end and that kind of often we feel like he's behind us. We're in the middle of the spine looking upwards towards the head. Correct. And obviously that the bottom of the screen is there back in the top is the front.

Rob Shanks:

So yeah, just think of it that way. You're looking up. But yeah, so, so w what do you, then you can ask the point where we, okay, what, where did that lead us to? So it meant that obviously we clearly identify the source of the pain and actually we needed to then look at some, some students, well,

different treatment. And in this particular case we referred her over for a high volume site on injection and that was basically to burst assist and which was very successful. We're leading her pain literally within, within one procedure. Okay. I think we're going to, we do one more slide and then I'm a hundred handouts with Darren. If we got to slide number six now. So this is I'll put this up because this kind of illustrates to me pretty, where do I feel the loop? Excuse me, where the loop holes come.

Rob Shanks:

So when we stop, you know, we start off as a referral. It could be the GP, could be the surgeon, could be the therapist as us, as therapists. And then we refer the patient on suit and MRI scan. And the thing to remember is that the, when they go for their scan, they had the meeting greeted by a radiographer, the person that puts them on the, on the, on the scanner. And that radiographer is responsible for putting in those settings. The tier ones, tier twos, the stairs. Obviously if we put it on the report that we want to stir, they'll, they'll do a stirrup. If we haven't mentioned anything like that, well then you know, they may or may not put it on. And bear in mind they're not going to go through a detailed case history like we do. They're not going to examine the patient like we do.

Rob Shanks:

So there's already a little bit of potential for miscommunication, things to be missed here. Is that an extra cost to have a store so you can sort of click a button and it's another report that comes out? No, absolutely not. I mean, you're right in that if you start asking for too many segments, you might end up with a slightly more expensive scan. But in the case of Sturm, I'm pretty sure that it won't cost any extra. It's not, it doesn't take them back much longer to do. So it's well worth asking in most cases. Now the other ones, whether you would always ask Krista sequence for any inflammatory condition you suspect such as RA, she says here. I mean, to be honest, we, we pretty much offer stuff all the time. Yeah, yeah. But the reason why I'm mentioning that is because like I say, if you don't, if you don't ask for it, you, you, you can sometimes not get it.

Rob Shanks:

So it's such a useful, a extra sequence to have for save a note for cost. It's almost always worth mentioning, I would say. Now, the other thing that you've got to bear in mind, so when the radio for radical, if it does this, it's not just the sequences that they're setting, they're also setting the actual segments that are going to be scanned. So let's say for example, you know, you ask for the patient comes to me with thoracic pain and you know, you're, you're asking that, you're telling them that, okay, there's pain around the T 11 well then the chances are they will put those actually on images through these T 11. But if it's got another source of pain, another point of pain and you don't mention it, they might not do those, those, those actual slices. And I saw a classic case where that happened not too long ago.

Rob Shanks:

It's a young, there's a young tennis player who came in and he'd been having months and months of thoracic back pain. And initially you thought always these torn of rhomboid muscle. He's overtraining. We've got, yeah, tweak these exercises. And he was actually it's a field of physio who then picked up on it and said, this patient's not getting better. We're actually further, so in osteopathy, osteopathic referred for the scan and then they came to me and, but the report had, had mentioned a few things. He had a small node and a little bit degeneration around his T six, seven

thoughts. The actual slices had only been done at TLF and it hadn't been done at [inaudible] seven. So this report came back and it was relatively relatively normal. But because I put the images in cause I was quite happy to look at the images myself as straight away, it was identical.

Rob Shanks:

Well hang on. They haven't done actually slices through the area where he's got his pain. So this report actually isn't really that relevant for this patient cause they haven't scanned the right area. Now this last for the rescan and this chap actually ended up being diagnosed with prostate osteotomy and you know, so it was something we nobody had really thought of before. We didn't think he'd have. Everyone's assuming his mechanical is so active is such an athlete. And I think now that illustrates the importance really of knowing the process and being confident to challenge the rapport and being challenging, being able to challenge, well hang on, you need to do another scan here. So again, just looking at this diagram, you know, the radio for them passes the images onto the radiologist and the radiologist then reports on those images. Now again, the thing to remember is that radiologist, medical doctor who's reporting on the scan isn't in communication with the patient. No, they, they don't examine them and they don't even speak to the patient. Again, completely relying on the fact that the radiographer has done the right images, the right sequences and that they're getting the right information from the referral. So the referral letter will go to the radiologist. There's is not detailed enough know, they may not know what to report on and what's relevant.

Steven:

I asked this question of somebody, if you days a weeks ago, I can't remember now, it's all blurring into one over this lockdown period. But surely the radiologist has an input in telling the radiographer what they want to scam.

Rob Shanks:

Well cause the radiographer decided that no, not usually. I mean you're right in a sense. Yeah they are. They can be in the communication, but the flow is this way. Yeah. So he goes to right over for this or the standard way would go, you're right if, if there was a re you know, if the rate of course, Oh, not quite sure, like yes, I can pick up the phone to others and ask for advice. But if you think about, you know, how busy these places can be, this is, this is where the loopholes can be. Okay great. We've got this information, we've got, Oh wait, just wants to see 11 scan. Okay. We suspecting some sort of a disc problem. Okay great. Let's standard it to whatever it would be and that's how things can get missed. And then obviously the report comes back to you as a referrer. And then what can happen often is that we are placing all our, all our weight on that report where we're assuming it's actually a gospel. Whatever's on that report is absolutely correct. There's nothing that's been missed. There'd be no emissions. And sadly, you know, it's just not the case. Darren and I see this on a, on a weekly basis, there's things that are missing that would be, you know, that's the extreme case or the osteosarcoma.

Steven:

Again, I guess as totally ms Mancini own with this book because we want to get on the hero. Is that Darren, can I just ask one question before we move on? If they haven't done an axial slice of whichever area you want, do they have to rescan or can they go back to the original scan and then create the actual slides from that?

Rob Shanks:
No they have to rescan.

Steven:
Okay, let's move on to Darren. Darren.

Darren Chandler:
Hello Steven, how are you?

Steven:
I'm very well, thanks. It's about all these cases where you've caught the radiographers out

Darren Chandler:
Radiologist. I am, I am. I'm going to take you through it. Oh

Steven:
Right. We want to emphasize we're not here to criticize radiographers, aren't we all radiologists?

Darren Chandler:
I mean, we're not, we're not here to criticize anyone really. But I think you'll see from the sort of following slides that I'm about to show you, there is a, a kind of unacceptability really of what gets done sort of on a daily basis. And I think as sort of therapists, we're all trying our best and to get sort of imagery and report back in sometimes the way we do, I think it can be a little bit unfair. So, you know, there's a kind of balance with regards to the radiologists. But you know, let's, let's, let's click on and we'll go to our first case. So we've got case history. Number one, we have a 29 year old male, he was playing football and as he kicked the ball, he sort of instantly had pain down into his leg, into his left leg, and he had sort of about a day later, I started getting that sort of dermatomal numbness within his S one dermatome.

Darren Chandler:
And it had been going on and on and on. He went and saw a therapist and they diagnosed the fact that he had more sort of left lower back, more buttered with the sort of [inaudible], they'd sort of surmise that there was potentially a piriformis syndrome going on and then hence a little bit of lower back spasm. So they treated a few times and unfortunately it wasn't getting any better. And if anything the numbness was progressing. So he came for a second opinion and I sent him for an MRI scan. So I'm going to just bring up here if we can. There's a slide of the radiologist's report. He's number seven and you can see, you know, it's a typical findings really, but it basically highlights that there's no posterior disprotrusion present. There was no canal stenosis and nor was there any nerve root compression identified.

Darren Chandler:
So I think when you're faced with that straight away, you know, if you think it's not coming from the spine, I think as a therapist we then do start to, you know, tech and go down that sort of diagnostic server thinking, okay, is it coming from the pelvis? Is it coming from the pair of formulas, common perineal nerve, et cetera. Is it, you know, as Simeon would say, sort of trigger points in hamstrings,

et cetera. So you can see then you start to go down a specific room and where we feel safe to continue with manual therapy. Don't worry. Yeah, exactly. You know, everything's kind of, okay. So we continue with it. And then on the next slide, I don't know if we've got that one there again, I just want to sort of really get the conclusion here that there is no nerve root compression. So like you say, and we just continue on our route and actually I wasn't kind of quite sure with that. So I then went over and actually looked at the MRI scans myself and if you can bring up in the next slide, which is the sagittal and axial images of that, share your screen so people can see you.

Darren Chandler:

That might be helpful on this one. Okay, let's click on to that. Here we go. So if I bring up that one there, I'm not sure it's happening. There you go. How about that? Yep. You got it. Yep. That's it. Okay, brilliant. So you can see on the left hand side of the screen, we've got a sagittal T too, and it does look, sorry. Let's look pretty much unremarkable. The disarray of good height. Yes. There's a little bit of a kind of narrowing of the L five posterior desk that again is kind of pretty unremarkable. But what we're more interested in is this area here. So again, as rocks, just explain, we're looking at an axial image. Now the green arrow there shows a broad based disc protrusion. Okay. So this is what would be known as an annular protrusion and it's broad based because it's kind of bulging from the right side all the way over to the left side.

Darren Chandler:

But the right the red arrow, sorry, that clearly demonstrates that the grey area between the facet joint here and the annulus fibrosis, you can see there's an irregularity of grey tissue and that's the descending S one nerve root. So the descending S one nerve root on the left there is actually deformed jus to a compression via the annulus and being forced up against the left facet joint. So there's clearly, if we went back to the case history, the radiologist is clearly written that there isn't any disc protrusion and nor is there any nerve root compression. So you can see how, you know, it's so frustrating for us as therapists but equally for the patient because they would then go down this road of potentially having their hamstrings works on, you know, pelvis piriformis and sort of, it's a shame because ultimately it was there in the first place, but for some unknown reason the radiologist has found too.

Rob Shanks:

So do you want to let me share your screen for a second there.

Darren Chandler:

Certainly. Oh sorry. We got the top. There we go. You're back. Brilliant. So you know, it's kind of like Rob says, you know, I would see this if I send 10 scans a week, I'd most probably see this seven to eight out 10 times. Oh, I'm not kidding. Not kidding. It's, it's, it's that prevalent. But the problem is you tend to,

Rob Shanks:

Well not, not necessarily. Yeah, not necessarily disc bulges that hadn't been reported, but subtle findings over. Yes,

Darren Chandler:

That'll change. It's not necessarily like you say with a desk, but it will be just subtle changes that make a difference with regards to why the patient could be potentially suffering their symptoms. So

Rob Shanks:

Yeah, it is. It's happening quite a lot. I think what people are going to find surprising is not that I'm a radiologist might miss incidental things that they weren't looking for. But if you say we think there's a problem with the S one nerve root, the only that they could miss an S one nerve root compression seems very surprising. Indeed. Yes. But I mean, like I say, I mean there's a spot in there. You're actually right. It is a bit shocking and we're not trying to slag off anybody at all, but we're just trying to make people aware of the fact that these things do get missed unfortunately. And even worse than that, you know, you can have very serious spinal pathologies. So I had a case a year or two ago of a lady again in her fifties, like long, low back pain, low back pain.

Rob Shanks:

And the report basically issued. She in, she saw a colleague of mine had sixth street, which was no better fact. She was getting worse. He asked me to review it. Our understanding was that the MRR port was absolutely clear, nothing wrong. I asked her the copy of the report I had to report and on that report and literally was like two or three lines sentence no abnormalities found. And I was instantly suspicious. I thought, hang on. Yeah, this is a, this is a Duff report. This isn't a very good report here because they haven't gone through in the detail. I know I, I asked, I said to the ask if the patients getting the images or the spot of the of the MRI for me, it took quite a while to go through all the loops of doing it cause it was an NHS scan.

Rob Shanks:

Anyway, we came back and we put the scan in and again, long story short, she had an Allstate awesome but that just had not been reported on at all. I mean, literally it was there within the first 10 seconds of me seeing the actual image. Wow, that's not right. I'll send the image over to doctor. But I said, so they just tell me I'm on the right lines here. This is, this is something very serious. He said, yes, a hundred percent you know, and, and that was again, that was a very serious case and, and that lady luckily was then referred onto the sarcoma unit and you know, she got the right treatment, but if that hadn't been challenged, she would have been running, going around. She was being told that it was all psychosocial shifts without counselling pain management all in her head. And it wasn't, it was an Allstate dossier. So it's out there. These things are, and that's an extreme example. We don't see those seven out of 10 times every week. But we do see those examples relatively regularly. You know, we'll have at least I know a few of those a year that come in. No, thank you.

Darren Chandler:

And I think Steven, if you go to the next slide off of that, I actually phoned the consultant radiologist start and sort of, you know, sort of asked him to read reports here and as you can clearly see, you know, here read them, writes on that there is a deformity of left S one nerve root and that he agrees with me that there is a compression from a left sided annular protrusion. So, you know, kind of why wasn't it done in the first place kind of thing. But unfortunately it was there and it's why it's kind of so important for us to just have the basics, I believe understanding of just being able to look at a or an axial and just look to see if the symmetry and the quality of the image and the desk itself is as it should be, et cetera.

Rob Shanks:

Just because you said it's important for us to look at these things. Dawn has sent in a question asking you what's the best method for us to use to look at MRIs in our own clinic? Cause you can't, you can't just take your disc and plug it into your computer and see them. Obviously

Darren Chandler:

You can. What's happened now is since the GDPR rolled, they have put passwords. There's generally the patient's date of birth. But what happens is if you're using a Mac computer, you can use a free software, which is called Horace. So if you download that you can instantly put the CDN. But if since GDPR is password protected, it has actually software built into the CD, which is called like a DICOM viewer. So as soon as you put the CD into any PC, as long as you put the patient's date of birth in unlocked and you just click on daikon and then all of the images come up. So anyone can view them on any, any computer. As long as you've got the password in our clinic, I know we use exactly the same, but yeah. So I'm right. We'll go to the next patient. This is a great patient. This one.

Darren Chandler:

Okay. So it's really, is this, this is like the epitome of sort of MRI scans. Really. We have a 44 year old male who presented in clinic. He sort of reported that you've been having sort of lower back pain, specialty sort of sacred area pain Coxix pain as well as having sort of an old five ridiculous puffy on the right hand side. But the main thing about this patient was, was that it sort of spoke, it was very sort of at the end of his tether, it had it since he was eight years of age, he always remembered having it. It kind of couldn't remember a particular trauma, but it was there and it was a groaning, low grade pain. And he kind of said that you had seen various therapists and you can see on the screen here that because the pain was so localized that first sort of in his sort of early twenties, thirties, he saw an osteopath and they believed that potentially you had to kind of Cox a denier issue.

Darren Chandler:

So they went on to do some internal adjustments and I think he even said he had three internal adjustments. It never worked. Ultimately he then saw a physiotherapist who suspected potentially piriformis syndrome again because he had that deep sort of gnawing pain into the right butter. But again, you know, his pain just, it just never sort of cleared really. And then the chiropractor had seen previous before coming in, it was kind of be under the impression that it was an SSI issue with some torsion. And again, there was piriformis involvement. But one thing to take from this chat was, was that like all therapists, like we all do when we was doing our case history, he kind of slumped forward throughout the entire tone. He was leaning forward on his chair and he said, you know, if only I could be in this position all the time because when I'm flat I have no pain at all.

Darren Chandler:

And if I bend it in such my toes, I have no pain and soul. But as soon as I stand and as soon as I walk, I mean, okay, now I would have thought for a lot of the therapists listening in today, when you hear the words eight years of age, you know there is a part of us that kind of feel that, you know, is this a, you know, a serum negative arthropathy. Is there a kind of ankylosing spondylitis picture? Is there a developmental or congenital issue? So this was kind of all going through my head, but you sort of feel it's very happy when he said in tree, but he's in a lot of pain when he's, he's on movement and that didn't really fit that, you know, ankyspon picture for me. So I sent him for an

MRI scan and if you can bring those two up, that's brilliant. So as you look at this scan here, so we've got a T two Sajid soul and the [inaudible], they look again pretty much unremarkable. He's got a slightly sort of high sacral base. But overall you would say it looks pretty good. I don't know if you've got your cursor there, Steven. If you go to the anterior superior [inaudible]

Steven:

We can only do this if you're sharing, if you're sharing your screen down because I'm

Darren Chandler:

Okay. Okay. I'm going to on a different computer. Okay. Let's let's share that one. Are you with? You got it. No. Yeah. Okay.

Steven:

Zoom sometimes takes its time in bringing up screen shares. We've found, there we go. No, no,

Darren Chandler:

No. Okay. Not yet.

Steven:

No, I'm not seeing it.

Darren Chandler:

Okay. I'll come out of that. Maybe we'll go back to, yeah, where we were. Okay. So for anybody watching the L for vertebra there just in the top left hand corner of it, that's it. Perfect. You can see that it's got a little white area. Yeah. Now that white area on seat two, as Rob just kind of clearly said that, you know, it could be a DEMA and it could be some fatty tissue, but in this case it's showing bright, which indicates that the potentially, it could be a slight bit of fluid in the bone. Now when you see that sign in, let's just say we was to do 10 MRI scans of the lumbar spine, you know, five of those people might have that sign and it's completely incidence or it's kind of a normal finding. But in certain cases such as ankyspon patients, they do present with that little lesion.

Darren Chandler:

Okay. And they can have it in various bodies are four or five or three. So what's happened here is the radiologist has looked at this, seeing that little lesion and then he's been gone on to report the scan. So if you could bring up the next slide, which is the radiologist report and he's kind of quite comprehensive. He actually says that there's some subtle end plate colon marrow signal changes and it's raising the kind of worry that you know, this patient has got an inflammatory arthritis. So he was requesting that we do the HLAB 27 and potentially go on to do a sacroiliac scan. And that would obviously be to rule out whether the patient had Cyprus. So what you're looking at here on the screen is literally what I got back on a report. So it had, there was no nerve root impingement, but it was higher suspicion that he was a serum negative arthropathy patient.

Darren Chandler:

Now that didn't sit too well with me because although I kind of thought about that in the back of my mind, I, you know, like Robert just said, I was the one who him and it was me, that story sort of

happy inflection and pain on standing and extinction. And I would have liked to have seen a little bit more on that rapport, especially talking about the posterior arm of the lumbar spine. And when I say posterior arch, I'm talking about the facet joints, I'm talking about the laminar ligaments and flavour them, et cetera. So I then if we can just quickly go to the next scan. There we go. So I then put the patient's MRI scan in. Now this is just a brilliant picture here. So on the left hand side for everyone watching, we have a so called normal L four five axial segment of another person at the age of 44.

Darren Chandler:

Okay. So we can clearly see here we've got the two facet joints. Steve, his side of the spinal canal. But if you look on the right side, it's, it's our patient that we're talking about. You can clearly see that his facet joints are deformed. They're ASIS, they're asymmetrical. So the one on the right side almost looks like a boxing glove. And the one on the left side looks a little bit like a giraffe's head, but you'll also see the spine as process. It looks very skinny and then it goes quite sort of bulbous. So you can clearly see there's a developmental issue here with just chats facet joints. And if you go to the next slide please, Steven. So this is the L five S one. So again, for a comparison, I've put the axle up on the right of somebody that's you know, so called normal.

Darren Chandler:

And the one on the, sorry, on the left. And on the right hand side, again, you'll see that there's a hypertrophic facet joint of L five S one, a very underdeveloped, left sided facet joint five S one. But more importantly here is, is that on the if you look at the green arrow, that's the nerve root, the exiting L five nerve root and it's spherical, it's round, it's perfect, it's exited the foramena. But on the right hand side where the yellow arrow is, you can see that the L five nerve root is D is compressed because it's gone. The sort of strangling, you know it hasn't got that nice, very cool look to it. So the exiting right L five nerve root is being compressed in this picture. So I think, you know, we need to all sit back at this point. And do you know if he was in my position, Hey, we have this patient for 44 years, there's been suffering with lower back pain.

Darren Chandler:

He's at his wit's end and yet we've just been given a report, which in part is actually quite comprehensive because he managed to spot that small high signal, which could have then taken us towards the end of the soccer thing. But at the same time, as we said earlier, elephant in the room has been completely missed. This chap, poor chap has got, you know, congenital issues, developmental issue with his joints. So again, you know, I've got in touch with the consultant radiologist and if you just bring the next slide up for us please. This was an, an a dander.

Steven:

Can I just stop you for one second? I'm going to ask a favour. You know, we're almost up to two o'clock. Are you guys happy to carry on for another quarter of an hour or so? Yeah. Brilliant. So apologies to the viewers who may have something else planned, but this is just too interesting to stop it. Two o'clock. Just for the sake of the clock, we're going to go on and look at these further images. So is this the one you wanted? Sorry.

Darren Chandler:

Yeah. So thank you. So this is so I spoke to the consultant radiologist and you know, I said sick am I, you know what I actually did say, you know what, you're wearing a bilateral pirate side patch

because hairy very well. Whereas actually, so I like to keep them on their side. And so, you know, he then wrote the agenda and send it into us and this is what he wrote. You know, there is a deformity, there's incomplete bony fusion, which is developmental is then even gone on to say there's kissing spines and there's hypertrophic traffic facet joints. But more importantly there is the L five nerve root block, you know, compression and you know, it kind of sums it up at the bottom. This represents the patient's mechanical symptoms. So you know, if you, if you never, if you never took the trouble or you just didn't have the experience with this chat, it would have been like the, the previous kind of poor therapists in a way because they're there, they were doing their best. But unfortunately we've just been let down really. And I kind of feel like it's a substandard way of reporting.

Steven:

I wonder if you know, in defence of the radiologist, he's probably seeing hundreds of these in a day. He sees what stands out to him or her as a glaring problem. He says, right, that must be, it gets the report out and it goes on to the next one,

Darren Chandler:

A hundred percent. And I've spoken to them about it and they all say that, you know, they're under a lot of pressure. They've got hundreds to Repole and sometimes they just sort of wears over them. But quite often

Steven:

We, we've got a pretty healthy audience watching this today, including a radiographer, Jennifer, and she's made she makes the point here, she said it could take all day for radiographers are produced transactional images on every spinal level. If you need specific levels, you need to write that on your referral. I know she's obviously, you know that, but for the benefit of everyone else watching Jennifer, that's really useful for us to know. Thank you. Can I just drag you back to your slide 11 again? Cause I was looking at that and you talk about this sort of little white area top of L four and it shows up better over there, but there's a white fairly glaring white streak here in the posterior aspect of all of these vertebrae. Is that normal?

Darren Chandler:

That's the artery that feeds the artery.

Steven:

Okay. Right. So it's not, it's not a flaw in the

Darren Chandler:

No, it would be bone itself. So yeah, sometimes it can be very bright as well. It looks like performative.

Steven:

Yeah. Okay. Can I run through a few more questions since I've rudely interrupted you? If you're new to us some time ago, what stir actually stands for?

Darren Chandler:

Okay. So that stands for a short towel. Inversion recovery. Okay.

Steven:

Which doesn't it doesn't really tell us very much, but it's very useful background knowledge.

Darren Chandler:

It's basically an inversion of a T one. So T1 really highlights fat. They invert it, flipped it, and then it really highlights the fluid if you like and suppress suppresses fat. It's just an inversion.

Steven:

Going back to your case history of the chap playing football, I think your first case history, Jonathan Harris, he said, but what did you actually ask the radiologist, whereas you, you obviously you found some extra findings on the scan. Was there enough clinical detail in the requests that you put to the radiologist in order to this? Should they have found what you were looking for?

Darren Chandler:

A hundred percent. So whenever I do to referral I will always write down, you know, patient has got two out of 12 sort of pain left sided lower back with L five or so on. I'll always sort of pronounced the dermatome in which the patient is suffering with. So there was really no excuses from that person.

Steven:

Yeah, we've got a lot of people asking how you get access to a patient's MRI scans.

Darren Chandler:

Well generally because I am the referrer. I've got like this pack system. So if your let's just say an association with an MRI centre to who you censored, they'll will set you up with your own PAC system, biologic systems. So I can communicate with radiologists direct and look at the scans online. But quite a lot of people come in with their CDs, so we just put them straight in and look for.

Steven:

So that leaves the PAC system you're talking about, that's going to be a private system. It won't happen if you're referring people via their GP for a scam.

Darren Chandler:

No, that's right. It's a private system with the company

Steven:

And somebody else has asked you how much it costs. Actually to get a private MRI

Darren Chandler:

Literally ranges from 225 pounds to a thousand pounds, depending on what part of London you're going to.

Steven:

Okay. Well, you're in London. And to answer it from my own perspective there is a an MRI sensor on the outskirts of Birmingham in Solly hole run by Roger Batu who has been into a couple of broadcasts with us. I had a full MRI scan for a patient there not that long ago and that was 500 quid. So I don't, I don't know whether people are in range of that particular place, but it's, I can give them details if they want. The sister showed up earlier on Laura has asked how common system like that or

Darren Chandler:

Well they're, they're not that common, but I mean, I would say you might see in a hundred scans, you might see five, I'd say five. 5 cents. Yeah. Okay. That common really.

Steven:

Right. Okay. We've got a few other questions which I know we're going to answer towards the end of your broadcast, but I suspect you want to move on to the next case.

Darren Chandler:

Yeah, we do one, one, there's a very good case. And Robert yeah, this, this is great. Again, a great case, and this kind of comes back to what Robert was talking about earlier in that here's a patient who has lower back pain because he was drunk and one Saturday night he slipped up, fell on the back of the step and he landed on his lumbar spine. He's had that pain now for six months. He's in a lot of agony and again, he's been to see various patient therapist wasn't really getting anywhere. So we did an MRI scan and it came back completely normal as you can see. Conclusion, unremarkable. So we'll go to the MRI itself and this is why stir sequences are so important. So if you can see on the left hand side, we have a T two T, one in the middle and a stir on the right. I just want everyone to focus their eyes on the subcutaneous fat. So if we look at the spine as processes and we go to the right of that area, you'll see there's a high signal line which is the white subcutaneous fat. Okay. Now if you look at it on seats,

Steven:

Sorry I think I'm afraid because they've got full screen of your slides so they wouldn't see me and they wouldn't see your cursor on the screen. It would be useful but it doesn't seem to be working terribly well thanks to why don't you, because I think this is quite a subtle thing. You might not, they might not know what we're looking at and as she points out so I can't Rob, it's the wrong style with your hand. Just coming from a different source. They've got food and I can't point on it.

Darren Chandler:

Okay, well it all I would say is is that if we concentrate here on the stir sequence, if you look at that subcute screen, that's right, the far right one. If you look at the subcutaneous fat, you can see that there is a high signal of fluid which is running down the back of the suit, her spinus ligament. So you can see the back of the spine as processes. There's this white streak of fluid just in front of the fatty tissue.

Steven:

Justin, can you bring up my shop please? Thanks. So we're looking at splinters processes here and this streak of white coming down being the subcutaneous.

Darren Chandler:

Yeah. If you look at the a T, if you look at L one vertebra and go posterior to it, that's it. Go backwards. Good. Keep going, keep going, keep going, keep going, keep going. Stop there, go up, go up, go up, go up and got stopped. That's it. So what you're looking at there is soft tissue edema. We're looking at in-flight above it. Even just above where you were. Go go to the right. That's it. Go to the right stop. That's it. You got out there. There is soft tissue edema. So this chap has swelling, bruising of his soft tissue. Now if you look at the team to scan and you look at the T one scan, can you see how you can't differentiate that within the fatty tissue? So this is so important to get it across that you must request first sequences when you send the scans because this patient then went on to have a subcutaneous cortical corticosteroid into that tissue and he's pain went completely away and yet you've had it for six months prior. So having him, so without that stir, no one would have, would have had a clue that that was the cause of the patient's pain.

Rob Shanks:

Yeah, you got another one, you got another one here in a fourth coast history with them.

Darren Chandler:

Yeah. So just to, I mean again, just to sort of wrap up on this one again, so the untrained eye I think, and I've done a little video of this on our website, don't get caught out by this and that is to look at the spine straight away. Again, you always want to look around the spine, look at the kidneys, look at the aorta, look at the pelvis, and you'll clearly see here is a 55 year old lady with bilateral pins and needles and numbness with some myotomal weakness in the S one distribution. Every once she saw suspected that she had a disc prolapse, the central canal lesion, but unfortunately for this lady, can everybody see there's a sort of Apple size tumour on the anterior surface of her state from, that's right. Yeah. And you can see in the middle picture the blood supply that it has at the very bottom of it.

Darren Chandler:

And if you go to the stir sequence, the coronal view at the far right, you can see that the stir sequence lights the tumour up like a Christmas tree. But again, unfortunately this was missed by a radiographer who was doing the scan. So we got Sajid sagittals, but we didn't get axial views to go through, through in order to see what the consistency was of the tumour. So, you know, it's something to be aware of. You don't see these a lot, but we automatically think there's a central canal lesion when actually it can be pelvis led and crushing me exiting S one nerve roots as they pass through.

Rob Shanks:

You're proven. So short here are some screws. Oh yeah. So this is a patient of mine, again, a bit of a story behind this one. So this was, and this was a chat with Alan who he came to see me having had a spinal fusion done and he was, and he was still in pain and you know, all the reports coming back from the, from the surgeon, everything was, everything went okay. And that was all, you know, [inaudible] you went according to plan but you still have this persistent pain down his leg and it was

paid. It was a bit better. He was a little bit better than he had been, but he still had this stuff and we just thought, Oh, initially I just need some postoperative rehab and, and stuff. But anyway, again, I then went to the trouble of requesting his images.

Rob Shanks:

Now, this isn't actually an MRI, this is actually a CT scan. The reason why it's a CT scan because the screws on an MRI scan, which [inaudible] factor would come very bright to be able to obscure everything. So you had a CT and again, I think everybody can here. One of the pedicle screws was going right through the middle of the spinal canal. And basically they kind of pulled the wool over his eyes. They didn't admit to it. They ended up the legal case. And they'll have to refer them on to another surgeon who then was trying to sort him out. But again, it's just, it just shows again, and that's another note. It's a bit dramatic, this one, but it's just another in a situation of how I just feel that is important to scrutinize the images. You know, and I'm just coming back to the, some of the earlier points, you know, and the people that you know, writing with now, we're not here at all to try and slag anybody off or criticize anybody off.

Rob Shanks:

And it's absolutely, you're right. You know, the radiographers and the regulars are under immense pressure, especially that in the NHS that don't three huge volumes and they do a great and they do a great job, but it's just, it's really just a way to raise the awareness for us all that there are, you know, there can be loopholes and I just feel as you know, as people who are potentially looking at scans and we certainly referring for scans, we need to know that process. We need to know that our report going is so critical to inform that radiographer to inform that regular just, it's sometimes very easy to assume that, Oh, we know they've got some thoracic pain and they'll just, they'll do whatever slices they need to do. You need to give them an accurate information. But then when you get the scans back and we are the ones who have got the time to really go through those scans, perhaps in a bit more Tom and detail, then you know, then the right drug and the right diligence. So I think if all three are working together in that way, and if, if we get a bit more training, a bit more awareness and preparedness and confidence, look at these scans, more of this stuff will be picked up and it'll just enhance people's clinical practice. No men.

Darren Chandler:

Yeah, I mean, I think it should be taught really at degree level. We should have at least sort of three to six months of basic training on how to understand images from x-ray, CT, and MRI really.

Steven:

So we will know why that's never going to happen because there isn't six months worth of space in the curriculums at the moment. So it's, it's very hard to do that, isn't it, without saying, well, okay, this is going to be part of your subsequent your postgraduate qualifications. There's been a question came in a moment ago from somebody I know there are anonymous, but they're asking what is it you're actually requesting when you send in a request for an MRI, what are you, what are you specifying?

Darren Chandler:

Well, you, you're basically, you're requesting whatever part of the body you're looking for. So if we're talking about spines, we're talking about a lumbar spine scan and you don't have to put down C one

T two axles. They're standard sequences. But one little tip I would give everyone is that they, you know, there's that massive talk in our industry about sacred iliac joints and you know, do they, don't they? Well, like Rob says, always request the stir sequence, whether it be shoulder, whatever elbow. If it's a lumbar spine, you can, you can request an additional coronal stir sequence. That's all you have to write. So lumbar spine MRI with additional coronal stir. So what that means is you get a stirrup of the lumbar spine, you get a coronial of lumbar spine, but you also the sacroiliac joints included. So we can see whether there's any pathological changes in their size along with

Rob Shanks:

Lumbar spine.

Steven:

Well, I suppose this, this one's the $50,000 question is lots and lots of people saying, where do we learn more? What are the reference texts that you would offer to people? And I'm pretty sure that you can offer some help yourself with people understanding MRIs and perhaps other imagery as well.

Rob Shanks:

Yeah. Yeah. So I mean that honest, that's what we've put together, you know, the, the, the go to imaging.com. So we've got, we've got lots of little snippets and videos on there people can go to, we're running some training courses, some webinars so for which are for free. So people can, you know, get involved with us. They can learn from us. We're going to have guest speakers on there as well. And yeah, absolutely. We'd love to better sort pass on some of this knowledge, the experience we've been lucky enough to have on. So to others, just get, go to go to imaging.com and it'll be on there,

Darren Chandler:

You know, Steven and we'd like Stephen, sorry. But we'd like to do sort of MDT meetings really, you know, case history, you know, osteos physios current week. They can share their scans and we can all sit and discuss and, you know, it'd be a great sort of way to interact.

Steven:

And I think you know, it goes without saying really that it's, it's all very well reading a book or going to a, going into a webinar or something like that. But the only way to understand these properly is to see hundreds and hundreds of them. So you start to recognize the normal and therefore the abnormal.

Rob Shanks:

Yeah. It's like, it's a lot of nagging to drive, isn't it? You're never going to learn to drive from a text, but you just got to get in the car and drive, you know, and that's the only way you're going to do it.

Steven:

Yeah, absolutely. Robe Darren, that's really kind of, it's been brilliant. I don't know, you could have gone why I skipped over a whole lot of slides at the end there to get to this one, which is your own URL, your own website and a logo. And I'm there. We've got it. We've got a few more that that are

after this, which we don't have time to go through, but we've got an hour of your time and an hour of the experience that you've gained from doing loads and loads and loads of this. Hopefully, hopefully a load of encouragement for osteopaths chiropractors to get stuck in more so that we can become more expert in looking at these images. Because you know, as like you, like you said, I, I really think it's an oversight in our training that we don't really know what we're looking at until we've, we've done additional work on this, but thank you for your time and hopefully we'll get you back in. Hopefully we can help you out with in some way with getting the training outlets people because we'd love to do that obviously. Thank you. So that's it for now. Thank you guys.