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Speaker Transcript

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'Myofascial Pain Syndrome, Trigger points, their relationship to RSI and their treatment with acupuncture/dry needling'

RSI, overuse syndrome, regional pain. These are lots of different terms to describe the sorts of musculoskeletal pain that we're concerned with. It's been known for a very long time that there are two major causes of muscle pain and it's muscle pain that I want to talk about this afternoon.

There are two main causes of muscle pain. One is repetitive use so that the muscles don't have sufficient refractory time to recover - repetitive movements. The other major cause of muscle pain or myalgia is due to holding a fixed position for a long period of time and, in addition, if it's also against a force.

So those two main aspects of the cause of muscle pain have been known for a long time. These two causes are also associated with myofascial trigger point pain. There is very little written about it in the run-of-the-mill textbooks, and if you look in the literature on RSI there's not a great deal written about it there either.

There is a very large overlap between the sorts of symptoms that patients get with RSI muscle pain and the muscle pain due to myofascial syndrome. What I'd like to tell you about very briefly is a little bit about muscle pain or myalgia and myofascial pain syndrome.

I'm going to talk to you about this from a clinician's point of view because I'm dealing in the clinic with patients with these sorts of symptoms all the time. I started off with this first acetate because it's just to remind us that we are bi-pedal and, though I take the point that somebody else made earlier on that RSI type problems don't just restrict themselves to the upper limbs, that's what I'm mainly going to be talking about as an example. Particularly the fact that we are bi-pedal and the fact

that this has freed our upper limbs to do complex tasks is a major factor in the genesis of this epidemic of RSI or overuse problems.

I'm a specialist in orthopaedic medicine which is now often called musculoskeletal medicine. Musculoskeletal medicine is mainly concerned with these three large groups of musculoskeletal problem.

This is the relative prevalence of the four main types of rheumatic disorder, as classified by the World Health Organisation. The groups that I'm concerned with are; back pain, osteoarthritis and soft tissue disorders. And it's largely, in terms of upper limb problems, RSI-type problems, overuse problems, soft tissue disorders we are talking about.

When I first qualified doctors were actually forbidden to practise with, for example, osteopaths. If you did you were at risk of being struck off. Over the last 20 years things have changed dramatically and, whilst a lot of these therapies such as osteopathathy, acupuncture, herbal medicine were classified as alternative therapies, now they tend to be called complementary.

My own feeling is the best definition of whatever therapy you are using is whether it is effective or not. These days those aspects which are particularly effective, or have been proven to be effective, are rapidly being incorporated into ordinary, medical clinical practice.

So complementary medicine, whilst we always try to be pleasant to our patients, is a little bit more than just saying how nice they are. So complementary medicine includes the meeting point between the orthodox and what used to be called the alternative.

I'd now like to tell you little bit about the background to myofascial pain which is relatively recent. The first main thrust of the current research was conducted between the two world wars in the 1930s. This was conducted by University College Hospital again, in a department run by Sir Thomas Lewis who was a celebrated cardiologist and physician. Most of the work was done by his assistant, John Kellgren, who later became professor of Rheumatology at Manchester.

Kellgren’s work was the first published work to show how tenderness in muscles can cause quite diffuse pain. This hadn't been recognised previously. This is a copy of a paper dated 1938 which was published in the British Medical Journal. The dark areas represent areas of tenderness in the muscles and the hatched areas represent the area of referred pain. What Lewis and Kellgren found was that these tender areas cause these long referral patterns all the way down the limbs; all the way down the leg, all the way down the arm. If they found these tender points they could turn off the pain by injecting with novocaine, a local anaesthetic.

So this was the first time that anyone had demonstrated that tenderness in muscles can refer the length of the limb.

Just about the time of the publication of these papers there was another paper published in America by Mixter and Barr, which was the first paper pointing out that

sciatica, irritation of the sciatic nerve causing pain going all the way down the leg, could be caused by prolapsed discs. To some extent, this work by Lewis and Kellgren was put to the side because people then thought ‘Ah! We've got the answer to limb pain. It's due to prolapsed discs.’

In the lower limb it would be lumbar discs, in the upper limb cervical, possibly upper thoracic discs. You’re all now familiar with the story about that; whilst there are patients for whom disc surgery is the answer for limb pain, it is not a universal panacea by any means and the numbers of patients requiring surgery is right at the tip of the iceberg. So, whilst prolapsed discs are an important cause of limb pain, most of the stuff we are looking at is not going to be amenable to disc surgery. And a lot of the referred pain coming down limbs is actually coming from soft tissue.

I was interested listening to Dr Lynn earlier on. He was talking about one of the tests he was using; the flare test. And in fact it was Sir Thomas Lewis who first wrote up the cause of the flare test which he termed The Triple Response. So it's interesting that there is a continuing connection running through all this.

What I'd like to show you next are trigger point charts. You can get these charts and they show for individual muscles if you have a tender spot - a trigger point, within an individual muscle, the sort of referral pattern that it can cause. And I think when I start to show you some of these referral patterns affecting the upper limb muscles you'll see that it fits in with quite a lot of RSI-type symptoms.

So if we start off just looking at the sternocleidomastoid. This muscle in the front of the neck comes up off the sternum and the clavicle, two heads inserting on the mastoid process at the back of the ear. So you can see that if you have trigger points in the anterior neck, the sternocleidomastoid can refer pain behind the ear causing a sensation of pain in the ear, pain around the face, and around the eye. It can actually cause symptoms almost indistinguishable from a sinusitis over the maxillary sinus, i.e. frontal headaches and pain to the apex of the head.

Very often you'll pick this up in muscle injuries caused in road traffic accidents – whiplash. It can also affect balance. It is not unusual to come across this in patients and no one has picked up the fact that these symptoms are coming from the sternocleidomastoid. It's a very important muscle. It's also a muscle of posture so it's important in terms of RSI because it's a muscle which can come under strain, particularly if you're keyboarding and you're leaning forward. If you grit your teeth temporalis this can cause headaches and stress. The pterygoid similarly.

Moving down to the upper shoulders, the trapezius. Trigger points are very, very common here. Practically everyone sitting here this afternoon has probably got some trigger points.

The thing about trigger points is that they can be latent. That is to say; they are just sitting there not causing any symptoms but if you push hard enough you will find these tender areas. Practically everyone will be tender over the top of the trapezius. The key question is; is it causing symptoms? If it's not causing symptoms it doesn't need to be treated. But there is a typical referral pattern which I'm sure you'll

recognise – across the top of the shoulder, back of the neck, side of head and down mid-thoracic, back.

Again coming on to stress; masseter, another one associated with bruxism - that's clenching and grinding of the teeth. This is associated with facial pain and pain referred into the ear.

Now to trigger points in the cervical muscles, the deepest muscles right down around the facet joints on the laminar of the vertebrae. Semispinalis cervicis can refer up over the back of the head. All these neck muscles can refer up and cause head and neck pain.

Particularly in relation to upper limb problems if we look at the muscles of the rotator cuff. The rotator cuff muscles are muscles around the shoulder girdle that merge to actually form part of the capsule of the joint of the shoulder. They are very important muscles, they can cause a whole range of symptoms and they can cause many of the symptoms which RSI upper limb sufferers will complain of.

The rotator cuff muscles include the supraspinatus. This is the muscle. It overlies the top of the scapula and it's particularly involved in abduction of the shoulder. Trigger points here can cause pain in the shoulder, in the lateral epicondyle, pain referred all the way down into the hand.

Another rotator cuff muscle of the shoulder; the infraspinatus. This muscle lies over the lower part of the scapula. Trigger points here again refer up into the shoulder all the way down the arm. The teres minor, another rotator cuff. Trigger point here causes shoulder pain.

The last rotator cuff muscle is the subscapularis, which is on the front of the scapula. And again this causes pain around the shoulder and going all the way down the arm.

So a lot of patients are coming along with pain that's going all the way down limbs. Obviously one has to exclude nerve entrapment, problems with brachial plexus, there are a few patients that will have significant disc pathology that may be causing pressure on the brachial plexus. The vast majority of patients presenting with these sorts of symptoms do suffer from myofascial pain syndrome.

So myofascial pain is common. It's a common thing. It's easy to find, you only have to look for it. If you don't know about it and you don't look for it, you won't find it.

Moving onto the forearm muscles. Particularly looking at the extensor muscles. You can have trigger points in the extensor muscles here and referring all the way down into the hand.

Now the interesting thing, and again this is following on from what Dr Lynn was talking about; neural tension tests and the movement and gliding between fascial planes of soft tissues: there has to be free movement of nerves. If you have trigger points in the muscle it causes shortening, not of the whole muscle - that would be like a cramp - but of individual fibres. And if you palpate the muscles you will feel

these tight bands which are tender and if you twang them you can get them to twitch, which ordinary muscles shouldn't do. And if you put sustained pressure on them you can generate these referred patterns of pain.

Now in addition to that, they can also contribute to nerve entrapment. So if we're talking about the extensor muscles - and if I've got time by way of an example I'd like to talk about lateral epicondylitis or tennis elbow - in this case it's mainly the radial nerve. The radial nerve passes intimately close through the fascial planes and trigger points in these extensor muscles are associated with nerve entrapment of the radial nerve. That in itself can then go on to cause numbness over the back of the hand, sensory changes and even muscle weakness in terms of the extensor movements.

So it may well be that part of the answer to this tethering of the nerves is that some of these patients - I don't know whether they were examined or not - they might actually have been suffering from trigger points in the forearm muscles.

Higher up I mentioned the brachial plexus. Trigger points can be associated with frank neurological changes due to nerve entrapment of the brachial plexus. The brachial plexus is this large group of nerves which come from the lower cervical/ upper thoracic segments going down to supply the whole of the upper limbs.

In this diagram here; this is the clavicle, sternum, shoulder joint, neck, cervical vertebrae. These are the scalene muscles. The nerves come out between the scalene muscles. This is the brachial plexus, a big bundle of nerves. They pass underneath the clavicle, running through here and this is where they can get entrapped. This is a muscle called the pectoralis minor; it’s a chest muscle attaching to the anterior ribs, going up and inserting onto the scapula. If you have trigger points in the pectoralis minor it can cause shortening of the muscle and an increased risk of causing entrapment of these nerves and a neuropraxia which is like a bruising of the nerve leading to motor weakness and changes in sensation.

There can also be associated autonomic changes, sympathetic changes, changes in sweating, pseudomotor, pilomotor, vasoconstriction and also goosebumps. These are the clinical signs we are looking for in terms of autonomic dysfunction.

And also trigger points are associated with more frank autonomic dysfunction; things like reflex sympathetic dystrophy, which in some patients with RSI can be a problem.

Now the nice thing about this is once you know about them you can actually examine patients quite easily. It's fairly low-tech. All you use is your finger. And so you just palpate. There's a certain technique to this, as there is with everything and you develop your touch as time goes by. And you can also actually start to feel the texture of the tissues, the subcutaneous tissues, the muscles, how the fascia glide. But what you're basically doing is feeling for tender points. Sometimes if it's the edge of a muscle you can just pick it up and pinch it. And if any of you want to try this on the upper part of your trapezius - you can have a go now - I suspect a lot of you will be tender there. So most of it I hope that will be latent and not actually causing you problems.

Pain as you know is a subjective phenomenon. It's what people feel.

There was a faith healer from Deal
Who said that pain isn't real
But when I sit on a pin
And it punctures my skin
I don't like what I think that I feel

So we can't experience another person's pain. But is to some extent we can measure it. It's very rough and ready but you can have these little pressure meters and you push on it and until the patient says ‘Ouch!’. Then you record how hard you're pushing and then you can treat the patient and go back and see if it's any less tender.

Looking at the muscles, the majority of trigger points occur in the belly of the muscle but they can also occur in the attachments. If we magnify that up and look at it here; these are the muscle fibres. Not all of the muscle fibres are contracted and knotted, just some of them are. And these contraction knots represent the trigger points.

Someone was asking about fibromyalgia. The difference between the tender spots you get in fibromyalgia and trigger points is that trigger points are called trigger because they trigger these reflex referral patterns of pain. The tender spots you get in fibromyalgia do not refer pain. They are just discrete, tender spots. However, fibromyalgia patients can also have trigger points.

So how do we treat these trigger points? The simplest way is by stretching the muscle. Muscle stretching is a really good thing for everyone to do. We should all be stretching our muscles, particularly with modern life sitting at desks and not properly moving, exercising our muscles. So muscle stretches, whether you like to do Yoga or Pilates or whatever is your back, we should all be stretching our muscles. Muscle is wonderful stuff. It's the most wonderful tissue in the body. It's 40 percent of body weight. It's the largest single organ. We are totally dependent on it to pump our circulation, to get food moving through our gut and to get us around and about. And it is really magical stuff.

If you exercise and look after muscle it will respond. Studies have been shown of elderly people who have been chair-bound in nursing homes, unable to get out of the chair, unable to go to the toilet on their own. They have been given simple, safe exercises to do. At the end of the studies they have been able to get up out of the chair and go to the toilet. No matter what your age, no matter how bad your muscles are, you can do something to improve them. And this is a really positive message.
It's also about how we abuse them and then we come onto a lot of the causes of RSI.

So in terms of treatment the first thing we have to consider is this rather overused word ‘holistic’; that is look at the patient as a whole person. Being based at a homeopathic hospital, this is very much the sort of thing that we've been doing there for 150 years.

If you then want to go on; in some patients the trigger points have become chronic, more deep-seated, so they need a slightly more powerful treatment. Then you have to actually get into the trigger point. And that involves locating the trigger point and palpating, you fix it with your fingers and then you get a needle right into it.

The good news is that a lot of these trigger points can be treated using dry needling. That is to say, you don't necessarily have to inject anything. You just get an acupuncture needle down into the trigger point and often, as long as it's not too chronic, that will do the business. Sometimes however you do need to inject the trigger point and this is an example of injecting one of those rotator cuff muscles I was talking about. This is this is the infraspinatus. This is the cross-section of the trigger point - it's a bit like a North Sea oil rig. You go down through the skin once and just walk around with a needle tip. What you're trying to get if you can is a little muscle twitch and then you know you're in it. You can inject it with local anaesthetic. Some people use steroids and an interesting development at the moment is the use of botulinum toxin.

I mentioned there hadn't been any good, objective tests until recently. This represents the electrical tracing of a trigger point. So you take a unipolar – that's one, single, thin needle from an EMG machine that will record electrical activity. You put that through into the trigger point. This again is from the left trapezius in a patient with an active trigger point. This needle was put into the same muscle about an inch away from the trigger point. This tracing is quiet, that's the muscle at rest. So we know that the muscle is not being actively contracted. This is the needle inserted at the same time into the active trigger point. And what you'll see is that you've got all these little, spiky potentials firing off. And it is now been shown over the last few years that trigger points are associated with spontaneous electrical activity. So we do have some objective signs of trigger points.

Putting needles into these tender points is not new. This is the British Medical Journal, August 28th 1858. So nearly 150 years ago. This is a report on acupuncture by a Dr Ward from Kensington. If we just look at this case here; case No 1. I'll read it out because it's not very clear.

"A middle-aged labourer came to see me with a chronic rheumatism at the parts about the right shoulder, particularly the deltoid muscle which was so painful that he couldn't raise his arm. I inserted two needles into the muscle, one just below the head of the humerus and the other near the insertion of the muscle and in about 15 minutes he could lay his hand on his head and in a few days he was quite well without a second operation."

That's almost 150 years ago. People were sticking these needles in and you imagine in Victorian times if you're labourer and you can't lift your arm up you're in dire straits. There's no social security. So he goes along, this guy sticks two magic needles in his arm and he goes off. Absolute miracle.

So just to summarise. Clinical checklist for myofascial pain and dysfunction. It's important always to try and make a diagnosis because some of these symptoms can be caused by other things, more sinister things, sometimes cancer of various sorts or other general medical problems. You should always make sure you're not

missing another cause of somatic pain. And then you have to decide if it is myofascial pain is it secondary to some other problem? So this is where the holistic side of it comes in. You need to go into the person as a whole. And then you need to ask where is the primary lesion? If you can find the primary lesion and treat that often the secondary lesions will recover. An example of that is if you find a primary lesion in the infraspinatus - that muscle over the scapula in the shoulder, causing pain going down the arm, you may have secondary, satellite trigger points being activated within the pain referral area. So you could then have trigger points set up in the forearm and then they in turn will cause problems. If you're lucky and you get the major problem, which might be the infraspinatus, and you treat that then these other ones will go of their own accord.

Precipitating factors, are there secondary lesions? These are just all the sorts of questions you're going to ask. It's no use treating someone if they're going to go back and whatever they are doing is going to reactivate. We've made it latent and then they reactivate it. Perpetuating factors, associated factors - it's all self-evident.

The other thing is; it's quite interesting when you actually talk to people about their work. It's not just a straightforward case of saying ‘Do you sit at a desk? What do you do at the desk?’ because everyone is a little bit different and we all have our idiosyncrasies.

So I hope what I've done is to give you a picture about myalgia, that is, muscle pain. Perhaps some of you weren't aware these trigger points could cause a lot of the symptoms associated with RSI. They may also be associated with the sorts of neuro-physiological changes that we've been talking about earlier this afternoon. But I think it's true to say that we still don't know enough about RSI and the important thing is not to get too dogmatic about what's causing it.

This is a quote from Voltaire who says “Only charlatans are certain. Doubt is not a very agreeable state but certainty is a ridiculous one.” Thank you very much.

N.B. Dr Ward was unable to provide the overheads used during his presentation for copyright reasons.