

Neurodynamics and the neuromatrix

► In April this year, I attended the inaugural Neuro Orthopaedic Institute (NOI) conference in Nottingham, UK. And what a conference! I learned a lot, and it was enormous fun. When crossing the world to attend a conference, for me, certain criteria need to be filled: excellent audio-visual quality; engaging speakers, preferably humorous; and groundbreaking, preferably earth-shattering, content that is instantly usable in the clinic when I return home

For me, this conference delivered on all of the above criteria. Apart from the high-quality of the scientific papers, most of the presenters would be very successful on the stand-up comedy circuit: it certainly worked for me! Bring on those hormones of happiness.

The keynote speakers, Herta Flor, Professor of Neuropsychology and Clinical Psychology, University of Heidelberg, Germany; Elspeth McLachlan, Co-Director, Spinal Injuries Research Centre, University of New South Wales; Michael Coppieters, Senior Lecturer in the Department of Physiotherapy, University of Queensland; Lorimer Mosley, National Health and Medical Research Council Senior Research Fellow, Prince of Wales Medical Research Institute, Sydney; Mick Thacker, Program Director, Pain and Science Society, King's College London; and David Butler, Director, NOI and Clinical Educator, Adelaide were supported by specialists in pain science and management from around the world.

A key tenet of the conference was that biopsychosocialism and pain science should be underpinning and informing everything we do in the clinic. This is an essential paradigm shift for all primary practitioners. We play a key role in our patients' perception of their problem and their attitudes to treatment and recovery. Drs David Butler and Lorimer Moseley; Tim Beames (Kings College London); Esther Williams (Warwick Medical School, UK) and Adriaan Louw (NOI, USA and Stellenbosch University, South Africa) all alluded to the adverse affect of using negative words and imagery when talking to our patients. Evidence was presented for the efficacy of educating our patients in the mechanisms involved in the perception of pain (Marianne Fourie, University of Johannesburg, David Butler, Tim Beames). Therapeutic neuroscience education should be the rule, not the exception. This was shown to have beneficial and lasting effect and patients actually want this, particularly pre-operatively (Adriaan Louw).

Neuroplasticity, learning and memory in chronic pain was also the topic of keynote speaker Prof. Herta Flor.

Where chronic pain does exist, the concept of Graded Motor Imagery in the treatment of such common chronic pain states as CRPS, phantom limb pain, and lateral epicondylitis was postulated and defended with some fascinating research (Lorimer Moseley and his 'rubber hand' phenomenon).



An interactive session conducted at the NOI conference.

Dr Mick Thacker talked about the immune system's role in the production of pain. The immune system produces 'self-antigens' which, under some stressful situations, become the basis of a neuro-immune response that initiates or amplifies ongoing dysfunction.

Sean Gibbons, from Newfoundland, believes that there is a sub-group of chronic pain sufferers who have impaired sensory motor integration that can also lead to general learning difficulties. He developed a screening tool called 'The Motor Control Abilities Questionnaire' to assess patients. He also regularly assesses two-point discrimination (stereognosis), which is often impaired and has immediate ramifications on how this group will cope with a normal 'core strength' or 'posture correction' program.

Clinically, there were lots more sample bags to take home:

- graded motor imagery, used with chronic pain patients, although challenging to integrate into a busy practice, is well worth delving into because it is backed up by excellent research and it works!
- mobilisation of the first rib in patients with median nerve biased ULNT problems (Gerard Green, University of Coventry)
- Anton Harms, from Melbourne, has developed a simple brace for patients needing a restriction of elbow extension to avoid kindling via the medial nerve while working
- Ben Boyd discussed the careful use of SLR in patients with T2DM or peripheral neuropathy

because they show diminished protective responses to end-of-range movements, and may therefore be harmful and compromise the validity of the results

- Bob Nee's research at the University of Queensland showed us that a positive ULNT does not necessarily mean the patient has neuropathic pain, but a negative test definitely rules it out
- mild constriction of a nerve at the periphery may have long-term effects, physiologically, further up the line (in the DRG) (Michel Coppieters)
- Hannu Loumajki (Switzerland) presented a battery of six simple, commonly used movements that can be used to screen for altered brain representation causing poor motor control.
- the mirror box is one facet of graded motor imagery, and when used doing bi-manual arm movement in spastic hemiplegics produced a more normal moment on the affected side, possibly due to improvement in the mismatch of actual visual feedback and the afferent output.

This is a précis of what was a thoroughly enjoyable (apart from the damned volcano), enlightening and useful three days. I will definitely be at the next NOI conference in 2012.

More details are available on the NOI website: www.noigroup.com.au.

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