**The use of neurodynamics in the assessment and treatment of adverse neural tension**

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I had the opportunity to attend MT-3, Maitland Intermediate Spinal Seminar, this past October. During the weekend long course, assessment and treatment of the cervical, lumbar and thoracic spine were reviewed. For those of you unfamiliar with the Maitland approach, Maitland believes in treating the patient’s comparable sign. A clinician is able to attain the comparable signs through thorough assessment of one’s A/PROM, passive physiological intervertebral movements (PPIVMS), combined movements, and CPAs and UPAs. During this course, neurodynamic testing was reviewed and discussed as another source for our patients’ pain, and thus, another treatment option.

Neurodynamics is the study of the mechanics and physiology of the nervous system. There are mechanical and physiological aspects of the nervous system, pathomechanics and pathophysiology. Pathomechanics is the mechanosensitivity of the attachments, branches and tunneling of the nervous system. Often times, these structures tend to be the source of pain in our “stiffness” dominant patients. In contrast, pathophysiology involves the vascular supply to the nervous system. It is believed that our “pain” dominant patients suffer from an inflammatory response and or altered axonal plasma flow. Adverse neural tension occurs when there is entrapment or compression of the nervous system affecting the mobility and ability to transmit tension in the nervous system. As physical therapists, we are able to assess neural tension through base testing. The base tests most commonly used include passive neck flexion, SLR, SLUMP and prone knee bend, in the lumbar spine. In the cervical spine, upper limb tension testing is used to assess tension of the median, radial and ulnar nerves.

Assessment of dural tension in our spinal population is important because the dural sleeve of the nerve root extends beyond the neural foramen by approximately two inches. This results in tension that can affect the nerve root both proximally and distally. The most common sites of dural adhesions occur at C5, T6 and L4. If a base test reproduces the comparable sign, then the test may be used to help treat and alleviate tension in the nervous system.

Once it has been determined that dural tension exists through administering a base test, the clinician can then choose to use that base test as a treatment option for their patient. The base test, if not used as a treatment technique, can be useful during the re-assessment of the patient to ensure the proper treatment technique was chosen. When using a base test as a treatment option, the therapist must identify whether they are treating a “stiffness” or “pain” dominant patient. Our “stiffness” dominant patients generally respond well to flossing and gliding the proximal segment, utilizing grade III and IV mobilizations. Our “pain” dominant patients may tolerate flossing and gliding of the distal segment, with grade I and II mobilizations, staying short of the pain.

An example of a treatment technique involving neurodynamics is lumbar rotation with SLR. In this instance, the patient presented with positive dural tension of their sciatic nerve through assessment of SLR. Here the clinician positions the patient in supine, the involved leg adducted across their body, keeping the knee extended, as in a SLR. The clinician is facing the patient, placing one hand on the patient’s shoulder and the other on the pelvis. The clinician begins to oscillate the pelvis to create lumbar spine rotation.

In summary, adverse mechanical tension in the nervous system may be due to entrapment or compression of the nervous system, thus affecting the mobility and ability to transmit tension in the nervous system. Neurodynamic testing may be a useful tool in both the assessment and treatment of our spinal population complaining of radiating and referred pain. Use of nerve glides based on positive dural tension test may help to alleviate symptoms associated with referred pain due to an adherent dural structure. Determination of grades of mobilization, amplitude of mobilization and number of oscillations of the involved structure are determined based on the classification of the patient, pain versus stiffness. In our pain dominant population, beginning distally, short of pain with grade I and II mobilization may be beneficial. In contrast, our stiffness dominant population can begin proximally, with joint mobilization/stretching into the barriers of resistance.

Reference: Maitland-Australian Physiotherapy Seminars. 1985-2017. MT-3: Intermediate Spinal