The Movement System Impairment, Manual Therapy and Biopsychosocial Approach to Neck pain: are similarities and differences complementary or competitive?

The Traumatic Neck Pain Perspective

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Motor vehicle-related injuries send more than 4 million people to hospital emergency departments every year!

CDC; Naumann et al., 2010

$100 Billion in medical and rehabilitative costs
At the core of this complex and wide-reaching matter is a simple question...

What, if anything, has been injured?

Converging evidence available indicating the presence of a peripheral lesion in some individuals following whiplash injury (Curatolo et al., 2011)

There is also evidence to indicate that a 'lesion' may not be a prerequisite for some of the clinical features of patients with whiplash associated disorders (WAD). (Sterling et al., 2011)
Operating within a biopsychosocial model facilitates appreciation of all features in assessment and management.

Potential pathologies:
- Pain mechanisms
- Psychological responses
- Personal factors
- Morphological changes
- Work and occupational factors
- Other social factors

WHAT DO WE KNOW?

Courtesy of Gwen Jull

Carroll et al., 2008
We still need some help…

An increased probability of developing chronic mod/sev disability was predicted in the presence of 1) older age (> 35); 2) initial higher levels of NDI (> 40%) and hyperarousal symptoms on PDS (> 6) – PPV 71%

The probability of full recovery was increased in younger individuals with initially lower levels of neck disability – PPV 71%

N = 262
Clinical observations of muscle degeneration in chronic whiplash

Flexor muscle fat in chronic whiplash (2010)

Extensor muscle fat in chronic whiplash (2006)
Classification tree illustrating the determination of the condition based on average MRI fat in cervical extensor musculature.

Average Fat < 0.24

Idiopathic Neck Pain
23

Whiplash
79

TEMPORAL DEVELOPMENT OF SUCH CHANGES

1 month 3 months 6 months

MVC

n = 44 WAD
n = 17 Controls

Elliott et al., 2008

TEMPORAL DEVELOPMENT OF SUCH CHANGES

n = 44 WAD
n = 17 Controls

Elliott et al., 2011
ASSOCIATION WITH INITIAL PAIN INTENSITY

&

POSTTRAUMATIC STRESS DISORDER

Elliott et al., 2011

RECALL –

Mechanisms

Is there a better and more rapid measure?
**WATER/FAT DEPHASING**

MR signal is a composite of fat and water in the imaging voxel

water and fat resonate at slightly different frequencies

...with prelim results
In preparation

25% of population

- Recovered
- Mod/Severe
- Control

In < 1-week, 2-weeks, and 3-months

19 subjects with chronic fibromyalgia and 14 healthy controls

Conclusions: Alterations in intramuscular ATP, PCR and fat content in FNS probably reflect a combination of inactivity related to pain and dysfunction of muscle mitochondria.
- measures for helping to characterise the patient at risk for trajectory of chronic pain-related disability…

- informing best clinical practice through novel Ax and Mx regimens that…

avoid stigmatizing the patient as having - what some would say is a - psychosomatic illness with non-injury, or non-organic factors

Bone and Joint Decade, 2008; Dufton et al., 2012
N.B. For vast majority
- Advise them to allow natural recovery to occur
- Circumventing delivery of unnecessary, and costly treatments (Lamb et al., 2012) that have been suggested to contribute to iatrogenic disability (Cote and Soklaridis, 2011)

And then... exploration and development of more informed treatment strategies aimed at improving health and function for high-risk patients with neck disorders... and other musculoskeletal conditions...

Lamb et al., 2012; Cote et al., 2011

Jull et al., 2007; Pain; Lamb et al., 2013, Lancet; Michaleff et al., 2014