

RESEARCH RELATIONSHIPS RENEWAL

re:connections



Workshop Session 2

Pain

**Moderator: Assoc Professor Janet Keast
Professor Michael Cousins
Dr Gunnar Wasner
Dr Peregrine Osborne**

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Re:connections Forum
Sydney Convention and Exhibition Centre, Darling Harbour, Sydney**

Key points discussed

Prof Michael Cousins AM, Director, Pain Management Research Institute, Royal North Shore Hospital

- Impact of pain: some people say they would rather have their spinal level go up if they could eliminate the pain.
- Common international terminology needed, therefore established internationally-accepted taxonomy.
- SCI pain study with 5-year follow up (100 patients, initial 6 month study)
 - Musculo-skeletal pain - 59% (65% at 2 wks, drops, then rises); poor correlation with earlier times, therefore probably different causes e.g. degeneration, overuse;
 - At level of injury – 41% - similar at 5 years (correlation at 1 month & 1 year); 60% severe/excruciating;
 - Below level of injury - 34% - similar at 5 yrs (correlation at 3 months & 2 years); correlation with tetraplegia - 38% severe/excruciating;
 - Visceral - 5% - 75% severe/excruciating.
- Need to better understand mechanics e.g. How does pain occur if the link is severed/impaired? Exaggerated sympathetic response.
- Discussion of pain types & treatments – some are better understood & treated now.
- All pain has physical (due to disease processes), environmental and psychological facets. Therefore we need to address all aspects. Pain becomes a disease and needs to be treated in its own right.

Dr Gunnar Wasner, Spinal Injuries Research Centre, Prince of Wales Medical Research Institute

- Sensory dysfunctions in SCI: focus on understanding the mechanisms and role of peripheral nerves.
- Intensity/pain stimulus paradigm: ability to assess degree of deficit (using thermal thresholds established for below-level injury).
- Findings: lesion of the spinothalamic tract is essential for development of neuropathic pain to occur; use of capsaicin-induced sensitisation indicates preserved function of primary afferents, therefore role of peripheral nerves.
- Therapeutic use: topical lignocaine at level of injury showed impact on pain.

Dr Peregrine Osborne, Group Leader Pain Management Research Institute, Royal North Shore Hospital

- Rat studies undertaken to explore the role of abnormal activity of neurons close to or above the lesion and preservation of elements of spinothalamic tract in amplifying pain.
 - Studied changes in spontaneous activity (cells activated without input). How has the wiring changed? Disappearance of pain sensing fibres two weeks after T13 trans-section above injury level; followed by return of fibres (unexpected finding – where are they coming from?)
 - Studied the way sensory nerves in the spinal cord respond to stimulation. Failure to reduce electrical activity can increase excitability.
 - Nerve cells lost the ability to 'turn off'.

- Rat studies into role of brain in amplifying pain. Findings: dysrhythmia.
- Phantom body pain in paraplegics: human studies using MRI to explore mechanisms. Findings: changes in the way the cortex is activated; activation extends beyond normal area. Now looking at below-level neuropathic pain study and are at the stage of recruiting subjects.