

Pain – mechanisms and management

I. Neurobiology of pain

a) Normal biology

1. Anatomy, physiology and pharmacology of pain sensing cells
2. Anatomy, physiology and pharmacology of spinal cord
3. Pain pathways ascending to brain (cytoarchitecture, neurochemistry)
4. Descending pain pathways and organism own mechanisms that control pain

b) Pathobiology

1. Chronic inflammatory pain and pain resulting from injury of nerves (neuropathic pain)
 - Mechanisms in peripheral nerves
 - Spinal cord changes and central sensitization
 - Sprouting, map reorganization, altered gene expression

II. Experimental approaches, assessment and treatment of pain

1. Clinical pain
 - Ethical guidelines of studies in humans
 - Experimental models of pain
 - Examples of acute and chronic pain conditions in humans (postoperative pain, arthritis, neuropathic pain and cancer pain)
2. The concept of chronic pain as a disease rather than a symptom (e.g. phantom pain)
3. Ethics of animal pain experimentation
4. Animal models of pain (acute, inflammatory, neuropathic, cancer) with presentation of methods to measure pain in animals. Transferability to clinical pain
5. Pain definitions
6. Pain genes
7. Gender differences in pain and its relief (analgesia)
8. Treatment of acute and chronic pain
 - Main groups of analgesics and mechanisms of their action
 - Site of analgesics' action (central, peripheral; tolerance, side effects)
 - New emerging pain therapies
9. Visits to Pain Clinic
10. Participation in pain patient conferences

Active student participation required	yes	
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Readings

Mandatory:	Not required
Further:	During each class there will be a presentation and discussion of 2 recent articles.