INTRODUCTION - A CONCEPTUAL OVERVIEW OF PAIN

LEARNING OBJECTIVE

Understand the latest concepts in pain science and them as part of you clinical reasoning, diagnostic decision making and management strategies for the chronic pain conditions that present to you every day in practice

What is Pain?

• A protection system.

• A noxious stimulus is one that is capable of producing tissue damage.

• The receptors and primary sensory neurons that respond selectively to noxious stimuli make up the nociceptive system.

Key exercise in thinking:

If you were designing a protection system, how would you wire it up?

What basic responses are needed in response to a noxious stimulus?

1.

2.
Central Connections for Nociception

The second order neuron - accessing the central pain pathways

Reflex connections onto lower motor neurons

Noxious stimulus
Pain As An Output Behaviour

Pain is now being viewed as an output behaviour in response to the need for protection. Output from central pain neuromatrix can alter the function of sensory, motor and autonomic systems.

Peripheral Sensitisation

An up-regulation of the relationship between stimulus and response in the primary nociceptor. This results in primary hyperalgesia, which occurs at the location of the injury.
Central Sensitisation

An up-regulation of the relationship between stimulus and response for nociceptive neurons in the central nervous system (spinal cord and higher pain pathways). Secondary hyperalgesia refers to spreading of pain away from the site of the original injury. Allodynia refers to usually innocuous stimuli now becoming nociceptive.

Descending Inhibition

Outputs of the central pain neuromatrix that project down via brainstem centres such as the PAG and nucleus raphe magnus to inhibit the second order neurons of the pain pathways.

References:


