

First 2008  
VIVA 3

Describe the physiology of pain with respect to its mediators and pathways

### “Please define pain”

“an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or describes in terms of such damage”

### “Describe the pain pathway”

First via nociceptors, which are located peripherally and centrally and respond to noxious stimuli from thermal, mechano and chemical stimuli. Information is transmitted back to the spinal cord via the dorsal root ganglion in sensory neurons (c-fibres and a-deltafibres) to the dorsal horn (rexed 1-5). Most of the information is then conveyed via the spinothalamic tract to the thalamus and the information is interpreted by the cortex.

### “What is peripheral sensitisation?”

Nociceptive stimulation also results in a neurogenic inflammatory response with the release of substance P, deurokinin A and calcitonin gene related peptide (CGRP) from the peripheral terminals of nociceptor afferent fibres. The result is a reduction in the threshold for firing of the afferent nerve and the so called peripheral sensitisation

### “What is central sensitisation?”

three main mechanisms

wind up which is mediated by NMDA receptors which are ‘wound up’

wide dynamic range neurons, causing stimulation of rexed 5 being sensed as pain

long term potentiation due to repetitive stimulation, resulting in increased pain sensing efficacy

### “Please describe gate theory”

is modulated by substantian gelatinosa - a-delta fibres increased SG which inhibits pain vrs c fibres

### “Compare and contrast bupivacaine versus lignocaine”

both are amide local anaesthetics,

Bupaiv it is racemic (hence levobupivacaine its L enantiomer)

local anaesthetics it blocks sodium channels

it has higher potency (lipid solubility) than lignocaine

it has longer duration (protien binding increased) than lignocaine)

is is slow acting (it has a pKa which is 8.1)

has a reduced cardio vascular : CNS ratio hence is toxic quicker

### “Describe the anatomy for an epidural insertion”

as adjacent

