Clinical Reasoning for Western Acupuncture

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The Layering Model for Clinical Reasoning

• History & Development
  – Target different ‘levels’ of nervous system
  – Target pain/tissue mechanisms
  – Physiological basis for clinical decision making

• Limitations
  – Body-centred
  – Mechanistic

Outline

• Review of current ‘layering’ model

• Expansion of model using evidence from ‘brain-body’ medicine

Peripheral Effects?

Yes

Needle locally (deqi)

Add ‘nerve to’ point

No

Do not needle injured tissue

Spinal (segmental) effects?

YES

Needle 10-15 minutes

Do you want to needle around injury?

YES

Needle local points

No

Needle points in other tissues sharing segment

Spinal (Segmental) Effects?

No

Needle tissues in alternative segments to the damaged tissue

Dry needling

Needle 20-30 minutes for supraspinal effects
Segmental Progressions?

- “Load” the segment
- Add a “nerve to” point
- Choose a ‘spinal point’ at target level

Supraspinal Effects?

- Nocice for 20-30 minutes, strong stimulation
- Intrassegmental points
- TCM analgesic points
- Sensory homunculus
- LD
- Moderate stimulation for 10-15 minutes
- Choose segmental points
- Avoid ‘big’ points

Segmental Sympathetic Effects

- Needle segmental sympathetic NS on trunk
- Needle points in muscles sharing SNS segment
- Continue to treat somatic NS

Increase sympathetic outflow?

- Strong MA or LF EA
- Needle at spinal sympathetic region supplying target tissue
- Points in limb muscles sharing nerve supply

Decrease sympathetic outflow?

- Needle spinal segment weak stimulation
- HFLI TNS or EA
- Increase PSNS Needle (or TNS) BL10 and BL28
- Ear or Scalp acupuncture

Increase sympathetic outflow to organs?

- Needle segmental level of target organ
- Abdominal wall (ST, CV)
- Para spinal muscles (BL, GV, HGJ)
Acupuncture and the brain-body interaction

- The body and mind are not separate, and we cannot treat one without the other. Research has shown that the body can and must be healed through the mind and the mind can and must be healed through the body.

– Dr Candace Pert
  Author of "Molecules of Emotion"

Brain-body (Mind-body) Medicine

- Psychology becomes Physiology
- Emotions are manifested in the body
  – Fear, grief, anger, joy, depression
- Physiology of emotion links mental states and physical disease (Cannon 1928)
- ‘Rebirth’ of Neuroscience (Lane et al 2009)
- Brain imaging

A-B-C-D Model of Brain-Body Interaction

- Sensory-discriminative
  - S1 & S2
- Affective-emotive
  - Insula
  - Anterior cingulate cortex
  - Prefrontal cortex

Brain integration centres

- Sensory-discriminative
- Affective-emotive
- Prefrontal cortex

Figure 3: The sensory-discriminative pathway comprises an essential link between the body and the brain. The affective-emotive component of pain is mediated by the insula, anterior cingulate cortex, and prefrontal cortex. The figure illustrates the neuroanatomical basis for these connections.
### Emotional integration centres in brain

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<th>Centre</th>
<th>Description</th>
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| **Amygdala** | - Associated with fear and anxiety  
- Integrates genetically programmed and learned associations with sensory information  
- Gives positive & negative emotional significance to events  
- Adverse signaling & negative emotional states |
| **Insula** | - 'Interoceptive' cortex  
- Receives nocioceptive & thermal and visceral inputs |

### Emotional integration centres in brain

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| **Anterior Cingulate Cortex (ACC)** | - Integrates stimulus intensity, mood, emotion, attention & autonomic responses  
- Strongly interconnected with other limbic structures  
- Conscious emotional processing, thinking or reflecting on feelings, resolving emotional conflicts |
| **Prefrontal cortex (PFC)** |  |

### Emotions and the brain

- **Emotive processing centres in brain**
  - Receive inputs from brainstem via dopaminergic, serotonergic and noradrenergic projections  
  - Output via brainstem, autonomic, endocrine and immune systems (HPA axes)  
  - Interactions between cortical and limbic structures allows for conscious awareness of emotions

### What happens in the body

- **Negative emotions**
  - Cardiovascular  
  - Gastrointestinal  
  - Somatic pain  
  - Immune system  
  - Hormone imbalances

- **Positive emotions**
  - Increase levels of serotonin, melatonin, beta-endorphin in brain  
  - Increases non-specific ‘placebo’ effects of

### Acupuncture and the brain

- **Limbic-paralimbic neocortical network**

- **Brain default network (task negative)**
  - Hui et al 2009, Liu et al 2010

- **Modulated brainstem nuclei**
  - Nucleus raphe magnus  
  - Locus ceruleus  
  - Nucleus cuneiformis  
  - Periaqueductal Gray

- **Modulated limbic regions**
  - Amygdala  
  - Hippocampus
• Real v sham on opioid binding availability in fibromyalgia patients
• Regions of increased binding potential
  – Cingulate cortex, insula, caudate, thalamus & amygdala

• Expectancy & experimental pain
• Diminished positive expectation reduced AA
• Spatially specific
• Needling – peripheral to central modulation

Chakras – Physiological entities?
• Chakras associated with endocrine organs
• Correspondence between concentrated areas of neuropeptide receptors and classical chakras
• 'mini' brains

Chakras & SNS

Emotional integration centres?
YES

ST 36, LI 4, LR2, 3, ST 44, PC 6, SP 6, GB 34, 40 LU 5
Du 20, Shenmen, LI 4, LI 11, Sp 6, Liv 3, GB 34 and bilateral St 36

30-40 min & driving stimulation

Specific homeostatic/immune points
Review

• Expansion of CR Layering model to include 'holistic' model
• Based on neuroscience research – ‘brain-body’ medicine
• Thinking and feeling can affect physiological responses in body

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