Presentation 9 – Dane Cook

Functional Imaging of Pain in Veterans With Unexplained Muscle Pain

Principal Investigator: Dane B. Cook, PhD

Co-Investigators:

NJ WRIISC: Benjamin Natelson, MD

UMDNJ-NJMS: Bharat Biswal, PhD and Wen-Ching Liu, PhD

Rationale

Unexplained muscle pain is a serious problem for many Gulf Veterans (GVs)

- 4th most frequently reported symptom (IOM report, 1996)
- Reported twice as frequently in GVs than non-GVs (Kang et al., 2000)
- Serious adverse consequences on the veterans personal and professional lives (Kang et al., 2000)

Numerous studies have described the problem, however little research aimed at determining cause

Key Questions

Are GVs with unexplained musculoskeletal pain more sensitive to experimental pain stimuli compared to healthy GVs and GVs with rheumatoid arthritis (RA)?

Do GVs with unexplained muscle pain exhibit an exaggerated brain response to sensory stimuli compared to controls?

Do GVs with unexplained muscle pain fail to exhibit activity in brain areas known to be involved in pain inhibition or modulation?

Design

- **N=54 Participants**
  - n=18 GVs with unexplained muscle pain
  - n=18 GVs with RA
  - n=18 healthy GVs
- **Testing over 2 days**
  - Day 1 = pain sensitivity testing and MRI training (Mock MRI at WRIISC)
  - Day 2 = brain imaging while receiving painful and non-painful stimuli

Analysis

- Sensory data will be examined for group differences and psychophysical curve estimates will be used to determine pain sensitivity in GVs
- fMRI data will be processed and analyzed using statistical parametric mapping techniques (SPM)
- Whole brain and region of interest analyses will be used to determine CNS sensitivity and nociceptive modulation in GVs with unexplained muscle pain compared to healthy and RA GVs