Validation of a Pain Assessment Tool (CPOT) in Critically Ill Patients with Delirium

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Pain Assessment in the ICU

• 2013 Clinical Practice Guidelines for the Management of Pain, Agitation and Delirium:
  • pain be routinely assessed using a validated pain assessment tool (Grade: +1B).
    • Behavioral Pain Scale
    • Critical-Care Pain Observation Tool (CPOT)

• Currently available pain assessment tools have systematically and consistently excluded delirious patients from validation studies
  • Delirium can affect upwards of 80% of ICU patients
  • A significant barrier exists in adequately assessing and managing pain in delirious patients
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<th>CPOT</th>
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| Facial expression | No muscular tension observed  
| | Presence of frowning, brow lowering, orbit tightening, and levator contraction  
| | All of the above facial movements plus eyelid tightly closed  
| | Relaxed, neutral 0  
| | Tense 1  
| | Grimacing 2  |
| Body movements | Does not move at all (does not necessarily mean absence of pain)  
| | Slow, cautious movements, touching or rubbing the pain site, seeking attention through movements  
| | Pulling tube, attempting to sit up, moving limbs/thrashing, not following commands, striking at staff, trying to climb out of bed  
| | Absence of movements 0  
| | Protection 1  
| | Restlessness 2  |
| Muscle tension | Evaluation by passive flexion and extension of upper extremities  
| | No resistance to passive movements  
| | Resistance to passive movements  
| | Strong resistance to passive movements, inability to complete them  
| | Relaxed 0  
| | Tense, rigid 1  
| | Very tense or rigid 2  |
| Compliance with the ventilator (Intubated patients) | Alarms not activated, easy ventilation  
| | Alarms stop spontaneously  
| | Asynchrony: blocking ventilation, alarms frequently activated  
| | Tolerating ventilator or movement 0  
| | Coughing but tolerating 1  
| | Fighting ventilator 2  |
| OR |  |
| Vocalization (extubated patients) | Talking in normal tone or no sound  
| | Sighing, moaning  
| | Crying out, sobbing  
| | Talking in normal tone or no sound 0  
| | Sighing, moaning 1  
| | Crying out, sobbing 2  |
Research Objectives

• We intended to investigate the validity of the CPOT for the detection and evaluation of pain in non-comatose, delirious adult ICU patients

• Primary Outcome:
  • To describe the discriminant validity, internal consistency and reliability of CPOT in non-comatose, delirious, adult ICU patients

• Secondary Outcome:
  • To describe, the agreement between CPOT and
    • The nurses subjective assessment of pain
    • Objective physical criteria
Methodology

**Study Design:**
- Prospective, cross-sectional, non-interventional validation cohort study

**40 Consecutive Adult Patients:**
- CAM(+) at baseline and at the time of assessment
- RASS > -3 (non comatose)
- Unable to self report pain
Results

- 40 patients \((median \text{ RASS} = 0, \text{ mean APACHE-II} = 19)\)

- Discriminant Validity:
  - Comparison between baseline and non-painful stimuli
    - Mean Difference = 0.15 ± 0.53, \(p = 0.083\)
  - Comparison between baseline and painful stimuli
    - Mean Difference = 3.13 ± 1.56, \(p < 0.001\)
  - Effect Size
    - Cohen’s D is 2.0

- Internal Consistency
  - Chronbach alpha = 0.778

- Inter-rater Reliability
  - Kappa (total score) = 0.669

- Percent Agreement
  - CPOT vs Nurse: 80.5% agreement
  - CPOT vs physiologic parameters: 67.5% agreement