Nociception Coma Scale Revised allows to identify patients with preserved neural basis for pain experience

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Introduction

Disorders of consciousness (DOC)

- Severely brain-injured patients **unable to communicate**
- **Unresponsive wakefulness syndrome** (UWS; periods of eye opening + reflexive movements) and **minimally conscious state** (MCS; purposeful responses without functional communication)[1]

→ Major **ethical and clinical concerns** regarding assessment and management of pain

Nociception Coma Scale-Revised (NCS-R)

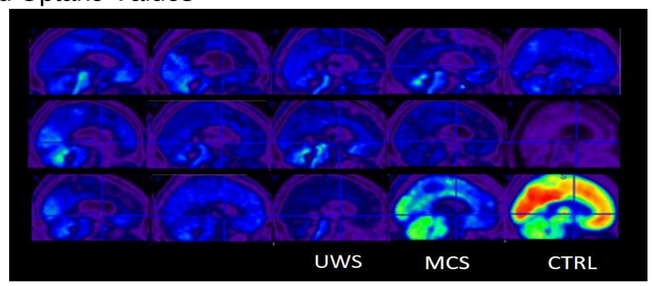
- Developed to **assess pain** in non-communicative patients with DOC[2,3]
- **No reliable cut-off score** to determine potential experience of pain and need for treatment

Aims of the study

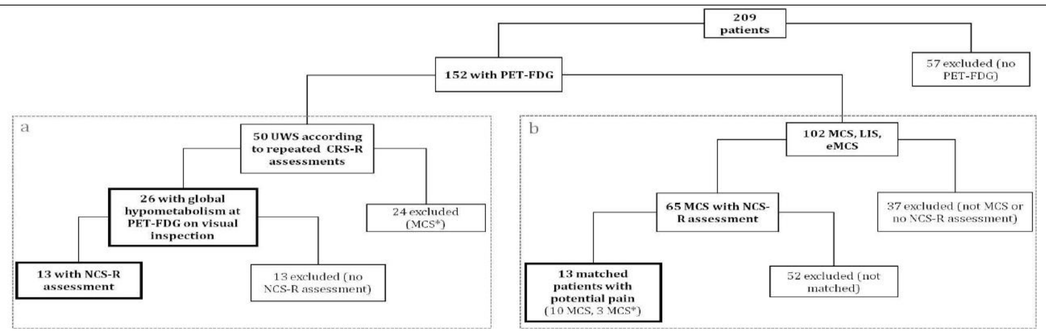
- Determine a **NCS-R cut-off** score supporting preserved neural basis for pain experience in DOC

Methods

Patient with **UWS confirmed by the FDG-PET** (n=13) : **behaviorally diagnosed** as UWS with a **global decrease of brain metabolism on FDG-PET** based on visual examination of the FDG-PET Standardized Uptake Values[4]



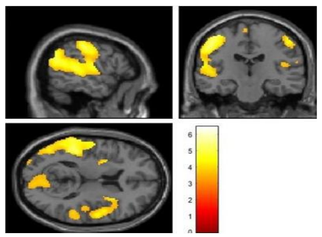
1. **Highest NCS-R total scores** in this group used to determine **NCS-R cut-off score**
2. Comparison of **brain metabolism** of these patients (UWS < cut off) with patients with DOC and an NCS-R score ≥ cut-off (DOC ≥ cut off) and controls, both matched for age, gender (and etiology for patients).

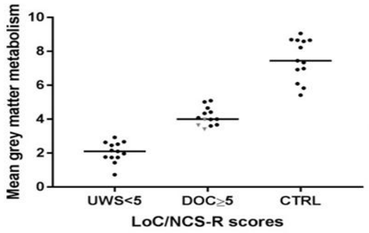


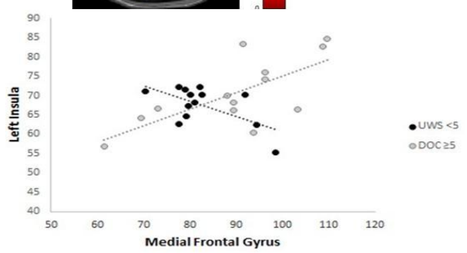
Results

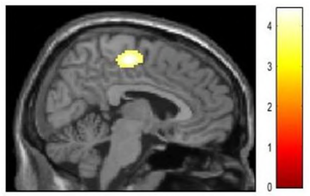
1. Highest score observed = 4; **cut-off score = 5**
2. **Brain metabolism comparison**

- Metabolism in the **left insula** in patients with DOC ≥ 5 when compared with UWS < 5
- Connectivity between left insula/medial frontal gyrus in patients DOC ≥ 5 compared with UWS < 5









Conclusion

- Our data suggest that the cut-off score of 5 can be helpful in pain management in DOC patients.
- Future studies should focus on patients showing scores below this cut-off to better characterize their profile and improve cares.

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References: (1) Posner JB et al., 2009 ; (2) Chatelle C et al., 2012 ; (3) Schnakers C et al., 2010 ; (4) Stender J et al., 2014.

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