

**Evaluation of nociception using quantitative pupillometry and skin conductance in critically ill unconscious patients: A pilot study**

*Sara FRATINO<sup>1§</sup>, Lorenzo PELUSO<sup>1§</sup>, Marta TALAMONTI<sup>1</sup>, Marco MENOZZI<sup>1</sup>, Lucas Akira COSTA HIRAI<sup>1</sup>, Francisco A LOBO<sup>2</sup>, Chiara PREZIOSO<sup>1</sup>, Jacques CRETEUR<sup>1</sup>, Jean-François PAYEN<sup>3#</sup>, Fabio Silvio TACCONE<sup>1#</sup>*

*§equally contributed as first authors*

*#equally contributed as senior authors*

*<sup>1</sup> Department of Intensive Care Erasme Hospital*

*Université Libre de Bruxelles*

*Route de Lennik, 808*

*1070 Brussels (Belgium)*

*<sup>2</sup> Department of Anesthesiology*

*Centro Hospitalar do Porto, Porto, Portugal.*

*<sup>3</sup> University Grenoble Alpes*

*Department of Anesthesia and Critical Care*

*CHU Grenoble Alpes, 38000, Grenoble, France*

**Supplemental Table 1.** Characteristic of the patients according to concordance in nociception detection between Skin Conductance Algesimeter and Automated Pupillometry. Data are presented as mean  $\pm$  SD, median (25<sup>th</sup>-75<sup>th</sup> percentiles) or count (%).

	CONCORDANT (n=26)	NOT CONCORDANT (n=25)	p values
Age (years)	56 (43 - 63)	66 (54 – 71)	0.02
Male, n (%)	15 (58)	17 (68)	0.57
ICU admission to assesmeent, days	2 (1 – 3)	3 (2 – 6)	0.08
<b>COMORBID DISEASES</b>			
COPD/Asthma, n (%)	4 (15)	5(20)	0.73
Heart Failure, n (%)	6 (23)	5 (20)	1.00
Hypertension, n (%)	14 (54)	13 (52)	1.00
Diabetes, n (%)	7 (27)	2 (8)	0.14
Immunosuppression, n (%)	3 (12)	1 (4)	0.61
Liver cirrhosis, n (%)	2 (8)	1 (4)	1.00
Chronic renal failure, n (%)	4 (15)	5 (20)	0.73
SOFA score on admission	9 (8-12)	10 (8-12)	0.53
<b>LIFE-SUPPORT THERAPIES</b>			

CRRT, n (%)	4 (15)	4 (16)	1.00
ECMO, n (%)	2 (8)	2 (8)	1.00
<b>DRUGS</b>			
Opioids, n (%)	20 (77)	19 (76)	1.00
Sedatives, n (%)	21 (81)	17 (68)	0.35
NMBAs, n (%)	10 (39)	5 (20)	0.22
Vasopressors, n (%)	19 (73)	15 (60)	0.38
Inotropic agents, n (%)	3 (12)	2 (8)	1.00
<b>Brain Injury, n (%)</b>			
Brain Injury, n (%)	17 (65)	15 (60)	0.77
<b>ICU mortality, n (%)</b>			
ICU mortality, n (%)	11 (42)	8 (32)	0.57
<b>BASAL VITAL PARAMETERS</b>			
MAP, mmHg	83 (71 – 99)	84 (69 -100)	0.70
Heart Rate, bpm	85 (72 – 107)	79 (70 – 88)	0.13
Respiratory Rate, bpm	22 (13 – 30)	22 (18 – 30)	0.50
Arterial Saturation, %	98 (95 – 100)	97 (96 – 99)	0.69
Temperature, °C	36.3 (35.0 – 36.9)	37.0 (36.8 – 37.4)	<0.01
GCS	3 (3 - 3)	3 (3 - 3)	0.39
<b>BASAL NOCICEPTION PARAMETERS</b>			
<i>Pupillometry Values</i>			

Size, mm	2.7 (2.1 - 3.3)	2.7 (2.4 - 2.9)	0.97
Constriction Rate, %	18 (13 - 24)	23 (15 - 27)	0.21
Constriction Velocity, mm/s	1.22 (1.03 – 1.93)	1.66 (0.98 – 2.36)	0.40
Anisocoria	2 (8)	1 (4)	1.00
<i>Algesimeter Values</i>			
Area huge peak,	0 (0 – 0)	0 (0 – 0)	0.31
Peak/Sec (NSCF)	0 (0 – 0)	0 (0 – 0)	0.96
Average Rise, $\mu$ Ss	0 (0 – 0)	0 (0 – 0)	0.16
Average Peak, $\mu$ Ss	0 (0 – 0)	0 (0 – 0)	0.96

COPD = chronic obstructive pulmonary disease; ICU = intensive care unit; AP = automated pupillometry; SOFA = Sequential Organ Failure Assessment, CRRT = Continuous Renal Replacement Therapy, ECMO = Extracorporeal Membrane Oxygenator, NMBAs = Neuromuscular Blocking Agents, MAP = mean arterial pressure; GCS = Glasgow Coma Scale, NSCF = number of skin conductance fluctuations per second