Measuring electrical activity of the diaphragm on the ICU

Gepubliceerd: 03-09-2014 Laatst bijgewerkt: 15-05-2024

-Surface electromyography (sEMG) of the diaphragm can detect patient-ventilator dyssynchrony -sEMG of the diaphragm correlates with the Eadi signals of a transesophageal EMG catheter -sEMG changes with increased physical activity on the ICU -…

Ethische beoordeling	Positief advies
Status	Werving gestart
Type aandoening	-
Onderzoekstype	Observationeel onderzoek, zonder invasieve metingen

Samenvatting

ID

NL-OMON20779

Bron
Nationaal Trial Register

Verkorte titel
SEDICU

Aandoening

patient-ventilator dyssynchrony, prolonged mechanical ventilation, muscle weakness, weaning

Ondersteuning

Primaire sponsor: Academic Medical Center, Amsterdam
Overige ondersteuning: Academic Medical Center, Amsterdam

Onderzoeksproduct en/of interventie

Uitkomstmaten

Primaire uitkomstmaten

-Correlation of transcutaneous sEMG of the diaphragm with airway pressure and flow to

detect -patient – ventilator dyssynchrony
-Correlation of transcutaneous sEMG of the diaphragm with EAdi signal of NAVA catheter.
-Changes in sEMG signals during increased physical activity
-Correlation of sEMG fatigue parameters with clinical parameters of fatigue during weaning from mechanical ventilation

Toelichting onderzoek

Achtergrond van het onderzoek

Patients on the intensive care unit often need mechanical ventilation. Mechanical ventilation is harmful for the diaphragm. This leads to diaphragmatic dysfunction and weakness. One of the causes is patient-ventilator dyssynchrony (PVD). PVD is a frequent problem on the ICU, but detection demands expertise and time. PVD can lead to prolonged mechanical ventilation and ICU stay.
In patients with diaphragmatic weakness, weaning from mechanical ventilation has to be done carefully. This time-consuming process leads to a prolonged stay on the ICU, which is associated with an increased risk of infections, mortality and increased costs.

Optimized monitoring of diaphragm function might be able to detect patient-ventilator dyssynchrony and might accelerate the weaning process and diminish the length of mechanical ventilation and ICU stay.

The electrical activity of the diaphragm (EAdi) can be detected by three electromyography (EMG) methods: transcutaneous EMG, intramuscular EMG and transesophageal EMG. Transcutaneous electromyography, also called surface electromyography (sEMG), is the least invasive method. In this pilot study we aim to investigate the additional value of sEMG signals of respiratory muscles during ICU admission in adults.

Doel van het onderzoek

-Surface electromyography (sEMG) of the diaphragm can detect patient-ventilator dyssynchrony

-sEMG of the diaphragm correlates with the Eadi signals of a transesophageal EMG catheter

-sEMG changes with increased physical activity on the ICU

-sEMG fatigue parameters correlate with clinical parameters of fatigue during weaning from mechanical ventilation

Onderzoeksopzet

Recordings of 15 minutes to maximum 4 hours (depending on research question)

Onderzoeksproduct en/of interventie

Surface electromyography of the diaphragm and intercostal muscles

Contactpersonen

Publiek

Postbus 22660, C3-329
Janneke Horn
Amsterdam 1100 DD
The Netherlands
+31 (0)20 5669111

Wetenschappelijk

Postbus 22660, C3-329
Janneke Horn
Amsterdam 1100 DD
The Netherlands
+31 (0)20 5669111

Deelname eisen

Belangrijkste voorwaarden om deel te mogen nemen (Inclusiecriteria)

-Consecutive patients admitted to the ICU of the Academic Medical Center Amsterdam

-Age ≥ 18 years

-Expected duration of mechanical ventilation for ≥ 48 hours

-Informed consent

Belangrijkste redenen om niet deel te kunnen nemen

(Exclusiecriteria)

-(Suspected) neuromuscular disease (other than ICU-AW) or cervical spinal cord injury

-Known phrenic nerve injury

-Contraindication for electrode placement (e.g. severe skin infection at electrode site)

Onderzoeksopzet

Opzet

Type:	Observationeel onderzoek, zonder invasieve metingen
Onderzoeksmodel:	Anders
Blindering:	Open / niet geblindeerd
Controle:	N.v.t. / onbekend

Deelname

Nederland

Status:	Werving gestart
(Verwachte) startdatum:	08-09-2014
Aantal proefpersonen:	120
Type:	Verwachte startdatum

Ethische beoordeling

Positief advies

Datum:	03-09-2014
Soort:	Eerste indiening

Registraties

Opgevolgd door onderstaande (mogelijk meer actuele) registratie

ID: 40797
Bron: ToetsingOnline
Titel:

Andere (mogelijk minder actuele) registraties in dit register

Geen registraties gevonden.

In overige registers

Register	ID
NTR-new	NL4615
NTR-old	NTR4766
CCMO	NL50006.018.14
OMON	NL-OMON40797

Resultaten