

TECHNOLOGY OFFER:

High reliability prediction of fluid/vascular responses and estimation of pleural pressure changes in patients

BACKGROUND

There are some clinical situations, such as for hemodynamically unstable patients, where a clear prediction of response to fluid administration is essential for treatment.

Moreover pleural pressure needs to be evaluated, not only in mechanically ventilated patients for adjustment of their ventilation, but also in non-invasive ventilation and in some other situations where intra-thoracic pressure needs to be finally evaluated.

Functional non-invasive monitoring has improved quality in intensive care interventions, but is only used in response prediction to volume changes. Therefore the current technology available for prediction of response to fluids administration in different clinical situations at intensive care and other non-continuous monitoring situations in clinics has some limitations.

The effect of respiration on the cardiovascular system has been physiologically studied, but it needs to be finely quantified in order to be used for monitoring and diagnostics for patients with a broad number of clinical situations such as: pulmonary hypertension, systemic hypertension, shock, ARDS, vasoactive response evaluation....

Here we present a method that can measure with high accuracy the respiratory effects on the cardiovascular system and circumvent all these limitations.

TECHNOLOGY DESCRIPTION

The invention, based in an advanced analysis of cardiopulmonary interactions, consists in a method that allows to quantify with high reliability the effect of respiration on the hemodynamic signal in patients with or without mechanical ventilation, even in situations in which the patient suffers from cardiac arrhythmias.

The method allows to predict how the patient will respond to the administration of intravenous fluids or to evaluate the state of arterial blood

tone or the change of pleural pressure due to respiration.

Therefore, the method provides hemodynamic monitoring optimization.

ADVANTAGES:

- Non-invasive method with easy implementation in monitoring devices.
- High accuracy of prediction of fluid response.
- Evaluation even in no rhythmic cardiac or respiratory frequencies.
- Can evaluate arterial tone.
- For use under mechanical ventilation or in a punctual monitoring.
- It can evaluate pleural pressure change during respiration.

CURRENT STAGE OF DEVELOPMENT

The technology is validated in an animal model and is currently in scientific validation using patients monitoring data.

A first prototype system is under development by the scientific/clinician team.

GOAL

License agreements and/or co-development and commercialization agreements with monitoring companies for the further development and commercialization of products derived.

PATENT

Priority European patent application February 2018.

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