Effects of changes in global blood flow on mean systemic filling pressure and heart performance.

Published: 11-08-2014
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To predict the influence of PEEP on Pms and eH.

Ethical review	Approved WMO
Status	Pending
Health condition type	Other condition
Study type	Observational invasive

Summary

ID

NL-OMON41501

Source
ToetsingOnline

Brief title
PEEP and mean systemic filling pressure

Condition

- Other condition
- Heart failures
- General system disorders NEC

Synonym
Critically ill, Respiratory insufficiency

Health condition

Mechanische beademing

Research involving
Human

Sponsors and support

Primary sponsor: Catharina-ziekenhuis
Source(s) of monetary or material Support: Catharina Ziekenhuis;standaardbehandeling binnen ziekenhuisbudget;geen extra kosten

Intervention

Keyword: Global Blood Flow, Heart Performance (eH), Mean Systemic Filling Pressure, PEEP

Outcome measures

Primary outcome

Pms measured at baseline, changes in Pms during increases in PEEP.

Secondary outcome

Not applicable

Study description

Background summary

The assessment of the cardiovascular state in critically ill patients is subject to difficulties in terms of the fact that several hemodynamic parameters, for example mean arterial blood pressure (MAP) and cardiac output (CO) supply insufficient information about the circulating volume and cardiac performance. There is a clinical need to adequate determination of intravascular volume status. However, in determining the fluid status of a patient, the lack of appreciation of the venous side of the circulation persists today, which is greatly due to the inability to appropriately assess the venous side of the circulation. The importance of the venous part of the circulation is moreover reflected by the fact that an increase in venous resistance does reduce CO many times more than a similar increase in arterial resistance. Mean systemic filling pressure (Pms), which is defined as the pressure equal to the pressure which would be measured if the heart should suddenly stop pumping and all (arterial and venous) the pressures in the entire circulatory system should be brought to equilibrium instantaneously, is a good, complete and reliable reflection of the total intravascular fluid compartment. Application of positive-end-expiratory-pressure (PEEP) is used in almost all patients requiring mechanical ventilation in order to avoid lung collapse and impairment of arterial oxygen saturation. However, application on PEEP also decreases venous return and therefore results in a decrease in cardiac output.

Therefore, this manoeuver also reflects an important clinical objective.

Study objective

To predict the influence of PEEP on Pms and eH.

Study design

Prospective, observational study

Study burden and risks

Incremental levels of positive end-expiratory pressure with tidal volumes less than 8 ml/Kg is a very frequently used bedside strategy as part of a protective manoeuver for lung alveolar recruitment in mechanically ventilated patients. There are no risks involved in this procedure because it is a well tolerated manoeuver without any great hemodynamic effect. Small risk of bleeding at femoral artery puncture site.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

All mechanically ventilated patients post-cardiac surgery pre-operatively equipped with a PICCO®.

Exclusion criteria

Circulatory assist devices, pulmonary contraindications, high abdominal cavity pressure, hemodynamic instability.

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-08-2014
Enrollment:	20
Type:	Anticipated

Ethics review

Approved WMO

Date:	11-08-2014
Application type:	First submission
Review commission:	MEC-U: Medical Research Ethics Committees United (Nieuwegein)
Approved WMO Date:	15-06-2015
Application type:	Amendment
Review commission:	MEC-U: Medical Research Ethics Committees United (Nieuwegein)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL47907.060.14