APOPTOSIS OF ALVEOLAR EPITHELIAL CELLS DURING MECHANICAL VENTILATION IN CHILDREN

Published: 30-11-2010 Last updated: 20-05-2024

To measure markers of several pathways of apoptosis in broncho-alveolar lavage fluid in time during MV in children.

Ethical review	Approved WMO
Status	Pending
Health condition type	Respiratory disorders NEC
Study type	Observational invasive

Summary

ID

NL-OMON30000

Source ToetsingOnline

Brief title APACHI-study

Condition

• Respiratory disorders NEC

Synonym

programmed cell death in the lung, pulmonary epithelial cell apoptosis

Research involving Human

Sponsors and support

Primary sponsor: Academisch Medisch Centrum **Source(s) of monetary or material Support:** Ministerie van OC&W

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Intervention

Keyword: Alveolar epithelium, Apoptosis, Children, Mechanical ventilation

Outcome measures

Primary outcome

Soluble death receptor ligands sFasL (relatively to sFas) and TNF*/TRAIL (by

ELISA)

Granzyme A and B, cleaved cytokeratin 18 (by M30 based ELISA)

Active Angiotensin Coverting Enzyme and Angiotensin II as a parameter of death

receptor apoptosis

Total protein, IgM and Albumin, total cell and differential count.

Secondary outcome

n.a.

Study description

Background summary

Apoptosis, a form of programmed cell death, plays a key role in many human disorders, and is also an essential process during organogenesis, including the development and maturation of the lung after birth. As a consequence, disruption of the tight regulation of apoptosis in the lungs of infants and young children may contribute to both short and long term respiratory dysfunction. Mechanical ventilation (MV) although frequently life-saving, can also be deleterious to the respiratory system. The pressure driven oxygen delivery to the lungs during mechanical ventilation may lead to ventilator-induced lung injury (VILI). Several mechanisms contribute to VILI, including inflammation and apoptosis of alveolar epithelial cells. Only a

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limited number of in vivo clinical studies have evaluated markers of alveolar epithelial cell apoptosis in relation to MV in adult patients.

Apoptosis of the alveolar cells can be studied in vivo ventilation in epithelial lining fluid (ELF) of the alveolar epithelial compartment. In mechanically ventilated children ELF can only be acquired through in bronchoalveolar lavage (BAL).

We hypothesize that the role of apoptosis during MV may have different consequences in children than in adults. Insight in the extent and pathways of apoptosis during MV in children is highly necessary because it may contribute to less injurious techniques of MV or even to new therapeutic strategies to prevent short-term and long-term detrimental consequences of MV in this vulnerable age group

Study objective

To measure markers of several pathways of apoptosis in broncho-alveolar lavage fluid in time during MV in children.

Study design

Observational cohort study

Study burden and risks

No complications of any kind are expected from the BAL sample collection procedures. Patient burden will be minimal

Contacts

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Postbus 22660 1100 DD Nederland **Scientific** Academisch Medisch Centrum

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age Children (2-11 years)

Inclusion criteria

All children younger than 5 years of age who are admitted to the PICU for mechanical ventilation

Exclusion criteria

- PaO2/FiO2 ratio <33.3 kPa (250 mm Hg)
- Platelets < 50*109/l, APTT or PTT > 1.5 normal value
- No permission form parents or care takers

Study design

Design

Study type: Observational invasive	
Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Basic science

Recruitment

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NL	
Recruitment status:	Pending
Start date (anticipated):	01-08-2006

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Enrollment:

Type:

100 Anticipated

Ethics review

Approved WMO Application type: Review commission:

First submission METC Amsterdam UMC

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 CCMO ID NL13101.018.06