Regulation of apoptosis in cultured airway epithelial cells of infants

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To examine the apoptotic response of isolated and cultured airway epithelial cells of infants to a wide variety of cytotoxic agents and potential apoptotic stimulants ex vivo. These include oxygen, nitric oxide, peroxynitrite, cigarette smoke…

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

Summary

ID

NL-OMON29743

Source
ToetsingOnline

Brief title
Apoptosis in the lung

Condition

- Respiratory disorders NEC

Research involving
Human

Sponsors and support

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

Intervention

Keyword: apoptosis, development, infant, lung

Outcome measures

Primary outcome

Evidence for apoptosis: caspase-3 activity, annexin-V binding and morphological studies.

Apoptotic pathways: RNA of the Bcl-2 and IAP family of pro- and anti-apoptotic factors, RNA and protein analysis of Fas/FasL and caspase-8 and -9 activity.

Secondary outcome

none

Study description

Background summary

Apoptosis, a form of programmed cell death, plays a key role in many human disorders. In addition, it is an essential process during organogenesis, including the development and maturation of the lung after birth. Disruption of the tight regulation of apoptosis in the lungs of infants and young children may therefore contribute to both short and long term organ dysfunction. It has been shown that exposure to several environmental factors (under which oxygen and nitrogen radicals), but also viral and bacterial respiratory pathogens leads to a higher extent of apoptosis of the respiratory epithelium. There is however, limited knowledge about the effects of this on the developing and maturing lungs and airway of young children.
The extent of apoptotic reactions in the lung of children upon exposure to these factors is very likely different in comparison to adults. In addition, these factors may also lead to disruption of the normal development and maturation of the respiratory system with the abovementioned consequences for lung function. In this study we propose to perform ex vivo experiments with isolated and cultured airway epithelial cells of infants on this subject.

Study objective

To examine the apoptotic response of isolated and cultured airway epithelial cells of infants to a wide variety of cytotoxic agents and potential apoptotic stimulants ex vivo. These include oxygen, nitric oxide, peroxynitrite, cigarette smoke extract and viral and bacterial respiratory pathogens.

In addition, we aim to investigate the influence of (sex) hormone status and differences with adult airway epithelial cells.

Study design

Observational study ex vivo.

Study burden and risks

Sample collection will be performed by non-bronchoscopic bronchial cytobrushing, performed immediately after endotracheal intubation, before start of the elective surgical procedure. In addition 2 ml blood will be collected from an arterial or venous catheter for serologic testing for human respiratory viruses. Based on the existing literature no complications of any kind are expected from the sample collection procedures and patient burden will be minimal.
Because this study focuses on the regulation of apoptosis of the respiratory epithelium of children only subjects in the specified age group can be included. The subjects have no direct potential benefit of participation, but the results of this study are beneficial to children in this age group in general.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Children (2-11 years)

Inclusion criteria

Age: 2 - 24 months.
Endotracheally intubated for elective surgery for non-pulmonary disorders at the Academic Medical Center in Amsterdam.

Exclusion criteria

Age under 2- or above 24 months.
History of pulmonary disorder.
No permission form parents or guardian.

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled

Recruitment

NL

Recruitment status:	Pending
Start date (anticipated):	01-06-2006
Enrollment:	30
Type:	Anticipated

Medical products/devices used

Registration:	No

Ethics review

Approved WMO
Application type: First submission

Review commission: 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	ID
CCMO	NL12124.018.06