Neonates with reduced neonatal lung function have systemic low-grade inflammation - DTU Orbit (19/01/2019)

**Neonates with reduced neonatal lung function have systemic low-grade inflammation**

**Background:** Children and adults with asthma and impaired lung function have been reported to have low-grade systemic inflammation, but it is unknown whether this inflammation starts before symptoms and in particular whether low-grade inflammation is present in asymptomatic neonates with reduced lung function. **Objective** We sought to investigate the possible association between neonatal lung function and biomarkers of systemic inflammation.

**Methods:** Plasma levels of high-sensitivity C-reactive protein (hs-CRP), IL-1β, IL-6, TNF-α, and CXCL8 (IL-8) were measured at age 6 months in 300 children of the Copenhagen Prospective Study on Asthma in Childhood2000 birth cohort who had completed neonatal lung function testing at age 4 weeks. Associations between neonatal lung function indices and inflammatory biomarkers were investigated by conventional statistics and unsupervised principal component analysis.

**Results:** The neonatal forced expiratory volume at 0.5 seconds was inversely associated with hs-CRP (β-coefficient, −0.12; 95% CI, −0.21 to −0.04; P < .01) and IL-6 (β-coefficient, −0.10; 95% CI, −0.18 to −0.01; P = .03) levels. The multivariate principal component analysis approach, including hs-CRP, IL-6, TNF-α, and CXCL8, confirmed a uniform upregulated inflammatory profile in children with reduced forced expiratory volume at 0.5 seconds (P = .02). Adjusting for body mass index at birth, maternal smoking, older children in the home, neonatal bacterial airway colonization, infections 14 days before, and asthmatic symptoms, as well as virus-induced wheezing, at any time before biomarker assessment at age 6 months did not affect the associations. **Conclusion:** Diminished neonatal lung function is associated with upregulated systemic inflammatory markers, such as hs-CRP.

**General information**

State: Published

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Number of pages: 8

Pages: 1450-1456

Publication date: 2015

Peer-reviewed: Yes

**Publication information**

Journal: Journal of Allergy and Clinical Immunology

Volume: 135

Issue number: 6

ISSN (Print): 0091-6749

Ratings:

BFI (2019): BFI-level 2

Web of Science (2019): Indexed yes

BFI (2018): BFI-level 2

Web of Science (2018): Indexed yes

BFI (2017): BFI-level 2

Scopus rating (2017): CiteScore 6.94 SJR 5.049 SNIP 2.6

Web of Science (2017): Impact factor 13.258

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 6.87 SJR 5.618 SNIP 2.901

Web of Science (2016): Impact factor 13.081

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): CiteScore 6.62 SJR 5.739 SNIP 2.849


Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): CiteScore 6.61 SJR 4.969 SNIP 2.935


Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): CiteScore 7.1 SJR 4.917 SNIP 3.069

Web of Science (2013): Impact factor 11.248