Correlation between neutrophil gelatinase-associate lipocalin (NGAL) and lactoferrin in the fetal intestine

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Introduction

- Numerous proteins found in neutrophil granules are the main mediators of their biological functions [1].
- NGAL and lactoferrin are components of secondary neutrophil granules released by degranulation following activation of the granulocyte [2, 3].
- The diagnostic significance of NGAL and lactoferrin presence and their changing concentrations in the fetal intestine has not been yet established.

The aim of the study:

To assess the concentrations of NGAL and lactoferrin in meconium, which is the intestine-specific clinic material formed during the intrauterine development and passed by a newborn soon after birth.

Materials and methods:

The concentrations of NGAL and lactoferrin were measured using commercial ELISA test kits (Immunodiagnostic AG) in serial meconium portions (n=81) collected from 20 healthy full-term neonates.

Results

- **The mean (+SD) concentration of lactoferrin [µg/g] was 45.07+78.53 and that of NGAL [ng/g] 1.93+2.46.**
- **The correlation coefficient between the two proteins was r=0.50; p<0.0001.**
- **In 45 meconium samples with the concentrations of lactoferrin<25 µg/g no correlation was found between lactoferrin and NGAL concentrations (r=0.093;p=0.55).**
- **In 36 meconium samples with the concentrations of lactoferrin>25 µg/g, the correlation coefficient between the proteins was r=0.83; p<0.0001.**
- **The total intestinal accumulation of lactoferrin [mg] and NGAL [µg] in the developing fetus, i.e. the sum of their measurements in serial meconium portions, was 0.76+0.75 and 0.028+0.021 respectively, and the correlation coefficient was r=0.65,p=0.0018.**

Conclusions.

- **Meconium lactoferrin and NGAL measurements may provide information about neutrophil activation in the fetal intestine.**
- **Meconium lactoferrin concentrations exceeding 25 µg/g were associated with significantly increased NGAL concentrations which suggests that the same stimuli may induce both parameters.**
- **Further studies are required to elucidate the physiological role played by the two proteins found in the fetal intestine for the development in utero and after birth and establish their diagnostic role as biological markers.**

This work was supported by a grant "Research Project funded by the National Centre for Science, No DEC-2011/01/B/NZ7/00648".

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