"CHANGES IN SERUM PROTEIN EXPRESSION IN SMALL-FOR-GESTATIONAL-AGE NEWBORN INFANTS AT DIFFERENT GESTATIONAL AGES"

**Introduction**

**SMALL FOR GESTATIONAL AGE**

- Most newborn (NB) classed as small for their gestational age (SGA) show subsequent catch-up growth, but many still display long-term comorbidities, including a number of *pathologies* that influence growth, metabolism and/or the development of other disorders.
- It is unknown whether there are quantitative/qualitative *differences* serum proteome in normal newborn or adequate for gestational age (AGA) and SGA.
- Therefore we propose a study of proteomics to identify the existence of these differences.

**Object**

"To detect changes in the serum proteome in SGA-NB vs. AGA-NB during the first month of postnatal life."

**Subjects**

- 88 NBs. In each group longitudinally serum samples were taken: at birth, after 7-10 days, and after 28 to 30 days.

**Results**

Differences were found in the expression of 33 proteins, all identified.

1. Present in SGA
2. Absent in SGA

33 Proteins

- 20 Identified
- 5 Up-regulated in SGA
- 5 Down-regulated in SGA

**Conclusions**

1. Significant differences between SGA-NBs and AGA-NBs at different ages were found for the expression of proteins involved in phospholipid synthesis, protein ubiquitilation, lipid transport, antimicrobial activity and the innate immune response.
2. In SGA-NBs, expression of LPIAT1 and SERPIN1 may be an adaptive response to protect the brain in an adverse fetal environment, recalling Barker’s fetal programming theory.
3. This is the *first study* to evaluate changes in the serum proteome of SGA-NBS as a function of gestational age: 1, 7 and 30 days after birth.

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