ADIPONECTIN LEVELS AS EARLY MARKER OF INSULIN RESISTANCE IN CHILDREN BORN SMALL FOR GESTATIONAL AGE IN OUR COHORT

AINAM GUPTA*, SANGEETA YADAV*, S. RAMJI*, T. K. MISHRA#

Pediatric Endocrinology and Adolescent Health unit - Department of Pediatrics * & Department of Biochemistry #
Maulana Azad Medical College and associated Lok nayak and G.B.Pant Hospital, New Delhi, India

Introduction

NO CONFLICT OF INTEREST. NO FUNDING

- Adipokines are crucial for fetal as well as early postnatal growth[1]
- Recent studies have found Adiponectin and Leptin to have major role in altering insulin sensitivity[2]
- India has huge burden of Low Birth Weight (LBW), incidence being 30%
  70% of LBW are Small for Gestational Age (SGA)[3]
- Approx 85% SGA achieve catch up growth(CUG) by 2 years[4]

SGA (with CUG) → INSULIN RESISTANCE ↓↑ LOW ADIPONECTIN

- So, Low Adiponectin can be used as a new surrogate marker for Insulin resistance and adult metabolic diseases
- No Indian studies available

Aims and Objectives

PRIMARY: To evaluate Adiponectin levels in term SGA at 15-18 months age
SECONDARY: To evaluate its relationship with postnatal catchup growth (CUG)

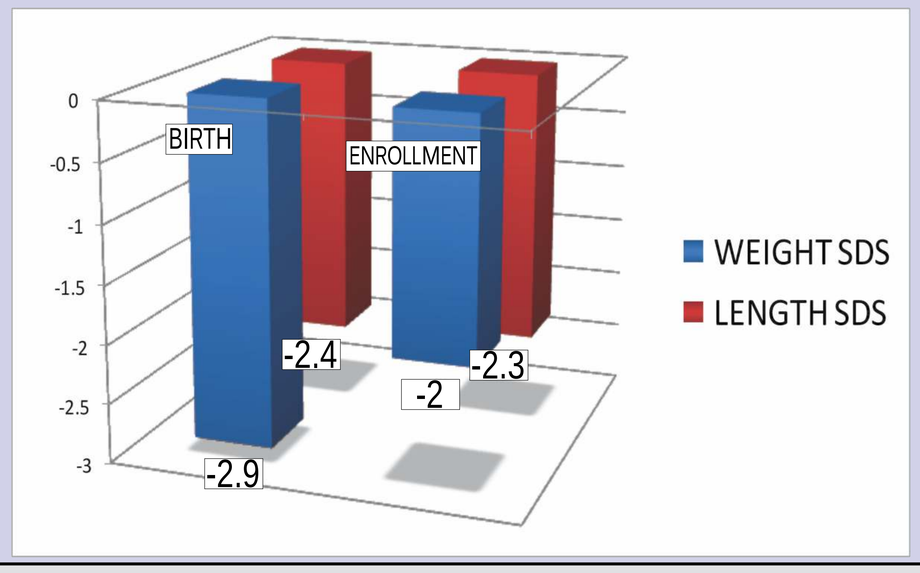
Materials and Methods

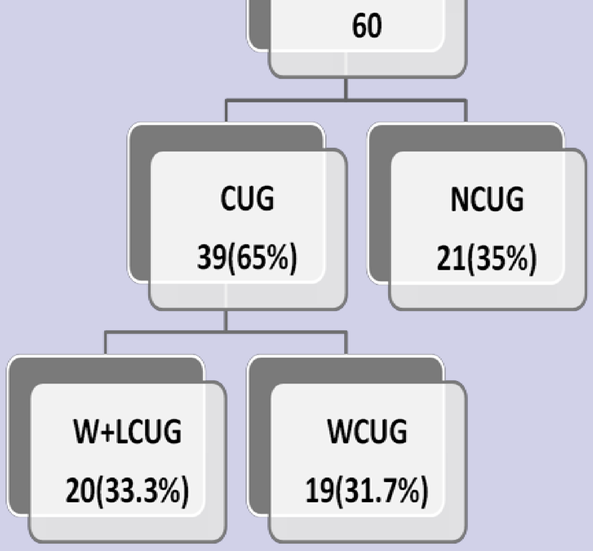
- Approval by institutional ethical committee taken
- Study group-60 term SGA children (birth weight< 10th percentile) at 15-18 months age
- Cross sectional observational study
- IEM, major anomaly and chronic illnesses were excluded
- Birth data recorded from discharge document
- Current anthropometry measured at inclusion
- Data analyzed for CUG as gain in weight/length SDS or both >0.67 SDS[5]
- WHO growth charts taken as reference
- Informed consent taken and instructions given for overnight fasting
- Adiponectin levels measured using **Avibion Human Adiponectin (Acrp30)** Enzyme- Linked Immunosorbent Assay (ELISA) Kit

Results

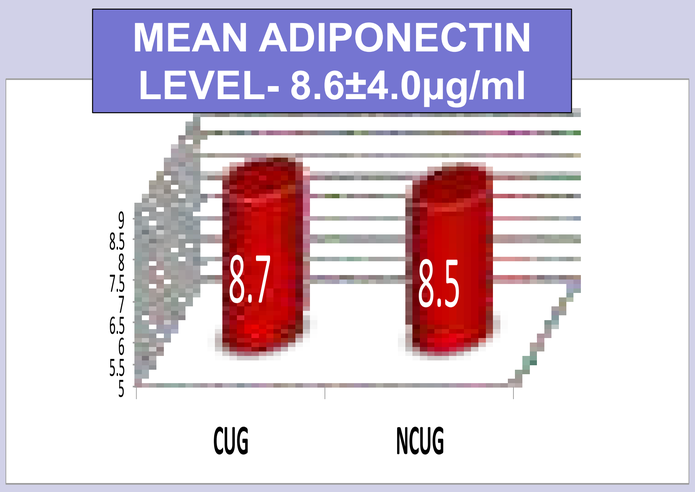
GESTATIONAL AGE	38.4± 1.2 weeks
ENROLLMENT	16.9 ±1.2 months

- **65%(39/60) showed CUG**
- **35%(21/60) had no catch up**
- **All 39 showed catch up in weight**
- **ONLY 20 (1/3 of total) had LCUG**





Adiponectin levels similar in CUG (8.7±4.4µg/ml) and NCUG (8.5± 3.4 µg/ml), p=0.94



Conclusion

- Approx 2/3 of our SGA(39/60) had shown CUG
- All 39 had shown WCUG but only 33% had catchup in length which is low as compared to 85% in western studies[4]
- The altered ratio of low LCUG and high WCUG along with low birth weight is associated with extreme CVD risk in later life
- Adiponectin levels were low among both CUG and NCUG

Study	Birth weight SDS	Birth length SDS	Current weight SDS	Current length SDS	Fasting Adiponectin (g/ml)
Our Study 2013	-2.89±0.59	-2.41±1.36	-2.0±0.98	-2.3±1.1	**8.6 ±4.0**
Bozzola et al[6]2010 29 term SGA at 1 yr	-2.45±0.75	-1.82±0.85	-1.93±1.6	-1.9±0.5	**35.5 ±8.8**
Iniguez et al[7] 2006 65 term SGA at 1yr	-2.08±0.07	-1.67±0.11	-0.8±0.1	-0.9± 0.1	**21.6 ±0.6**

Our study cohort had lower mean Adiponectin levels than western studies

LOW ADIPONECTIN LEVELS IN OUR INDIAN POPULATION
↓
FURTHER reinforces inherent susceptibility of Indian population to develop
↓
Insulin resistance
Metabolic syndrome
and Adiposity in later life

- RECONFIRM INTRAUTERINE ORIGIN of adiposity, metabolic syndrome, and hyperinsulinemia in Indian Population[8]
- Might reflect ethnic variation in our population as no normograms for Adiponectin levels available in India
- The present study is first of its kind from India and no data available for comparison

➢ Therefore, further research is needed for Indian population

Recommendations

- Further studies to establish baseline Adiponectin levels in Indian population
- Regular follow up of SGA in high risk clinic and recognition of CUG and weight gain
- Periodic evaluation of metabolic parameters
- Limitation of excessive weight gain in SGA by promoting breast feeding can be advocated as early life style change

References

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