

Introduction

Nowadays, the low weight and height newborn (preterm or with intrauterine growth restriction) is considered as a public health problem. It is estimated that nearly 13.7 million term newborns fall in the low birth weight category, standing for 11% of all newborns in developed countries. Intrauterine Growth Restriction (IUGR), taken as a birth weight below the 10th percentile, accounts for 75% of infant mortality . Extreme Prematures (<1000 gm), usually also less than 30 weeks gestational age, have a lower number of glomeruli and thus would be at a major risk of glomerular lesion, including also inadequate nutrition and nephrotoxic medication . The effect of IUGR over the kidneys has been demonstrated in animal experimentation consistent in a diminished number of glomeruli and glomerular hyperphiltration, considered as a predisposing factor for early hyperfiltration , proteinuria and arterial hypertension.

Objectives

Main : To describe a relationship between gestacional age and birth-weight with traditional renal function measurednts in children with 5 years of age from the program Kangaroo Mother House Alfa, Cali.

Specifics: 1. To correlate serum creatinine, uric acid, urinary Prot/Creat, FENa, and renal ultrasonid in children at5 years old with their birth-weight and gestational age. 2. To adjust the described correlations for covariates, such as anthropometrical measurements and gender. 3. Use urinary biomarkers as renal to classify renal risk - CKD

Expected outcomes : We will determine the outcomes of patients with IUGR, in terms of renal function , systolic and diastolic blood pressure, kidney length and the presence or absence of proteinuria in the first five years of life after a traumatic event as extreme prematurity as, in an cross sectional analysis , in terms to initiate prospective and collaborative study in the region.

Methods

Study population : the study population will be children admitted and followed up in the program **Kangaroo Mother House Alfa- Cali**, during the last five years , Oct 2011 to Nov 2012 .

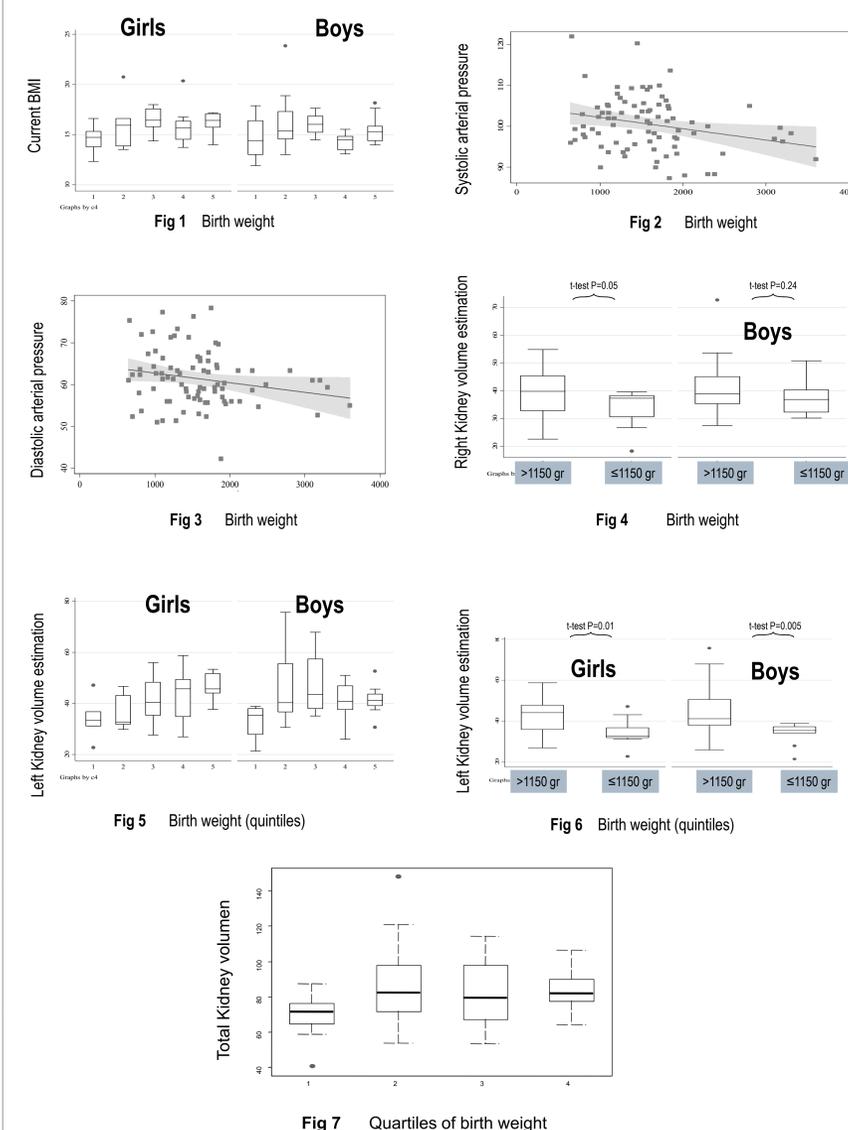
This is a descriptive study, where there's going to be a transversal cut by age group; it is planned to take children about 5 and 7 years of age (± 3 months) 100 patients each one with 100 respective controls, and to apply to them the measurements and variables proposed: anthropometric and blood pressure measurements , bloodsamples for electrolytes, Phosp , Mg , urea ,creatinine using the standars lab methods, and for serum and urine creatinine we used an Enzimatic method.

Methods (cont.)

We obtain urine samples for urinary biomarkers : N-GAL, KIM-1, L-FABP and NAG and they were frozen at - 80 °C in a dedicated freezer in the research lab (these urine samples will be sent to BW&H Boston to Dr J Bonventre lab).

The Inclusion Criteria were Patients admitted and being followed up by the program **Kangaroo Mother House Alfa – Cali** belonging to 5 , 7 years of age (± 3 months),with information on their weight and gestational age , and without congenital and renal abnormalities. Consent from the parents to participate ,and approbation from ethical Committee was obtained.

Results



Results (cont.)

We recruited 86 SGA patients , 52.3% male gender with mean age 59.9 months with SD 2 , mean GA 31.3 weeks and SD 3.1 , mean birthweight 1570 grs and 618 SD , mean present weight 17 200 grs and mean present height 107.2 with SD 4.1 . There were not differences in the laboratory tests .

Fig 1. Relationship of birthweight ´s quintiles and BMI , by gender . The relationship is evident in girls , but not enough clear in boys , specially for the quintile 4 in boys (it observes a little bit in girls) . It is possible that this quintile represents better the IUGR newborns , and not only the prematurity .

Fig 2. Relationship between sistolic blood pressure and birthweight .

Fig 3. Relationship between diastolic blood pressure and birthweight .**Fig 4.** Differences between borns less or equals 1150 grs and right kidney volume ,by genders.

Fig5. It is evident in girls and boys.

Fig 6. Evident relationship in both genders

Fig 7 we show the relationship between quartiles of birth weight and total kidney volume, measured in children 5 years of age. Both right and left kidney volume measured by ultrasonography were added , and patients in the first quartile were <1150 grams of body weight at birth. The *P-value* for the comparison among quartiles was 0.02.

Conclusions

We are recruiting the 5 years (+/- 3 months) controls .The data from urinary biomarkers in both grupps will be added and analyzed in the final report.

1. There is a relationship of birthweight ´s quintiles and BMI in girls . It was not possible differentate between IUGR or prematurity.
2. We couldn´t find significant alterations in the laboratory tests like FENa, prot/creat urine ratio.
3. There is a slight relationship between systolic blood pressure and birthweight less 1250 grs (not significant) 4. The most significant finding is less kidney volume , specially left kidney , in patients less than 1250 grs ($p < 0.02$).
5. Maybe using urinary biomarkers , as it is planned in the research protocol, we can find others significant predictors of renal alterations.