

Evaluation of kidney dimensions in preterm infants at various gestational ages

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ABSTRACT

Anthropometric characteristics are indicators of growth, development and health situation. The aim of the research was defining the kidney dimensions in preterm infants at various gestational ages. Knowledge of these measurements may earlier diagnosis of a variety of abnormalities. Kidney dimensions (maximum longitudinal length, width, and anteroposterior diameter) in relation to gestational age, were determined in 120 preterm infants (48 females and 72 males), with gestational ages from 15 to 25 weeks. A highly significant correlation was found between renal dimensions and gestational age

Key words: premature, infants, kidney, anatomy

INTRODUCTION

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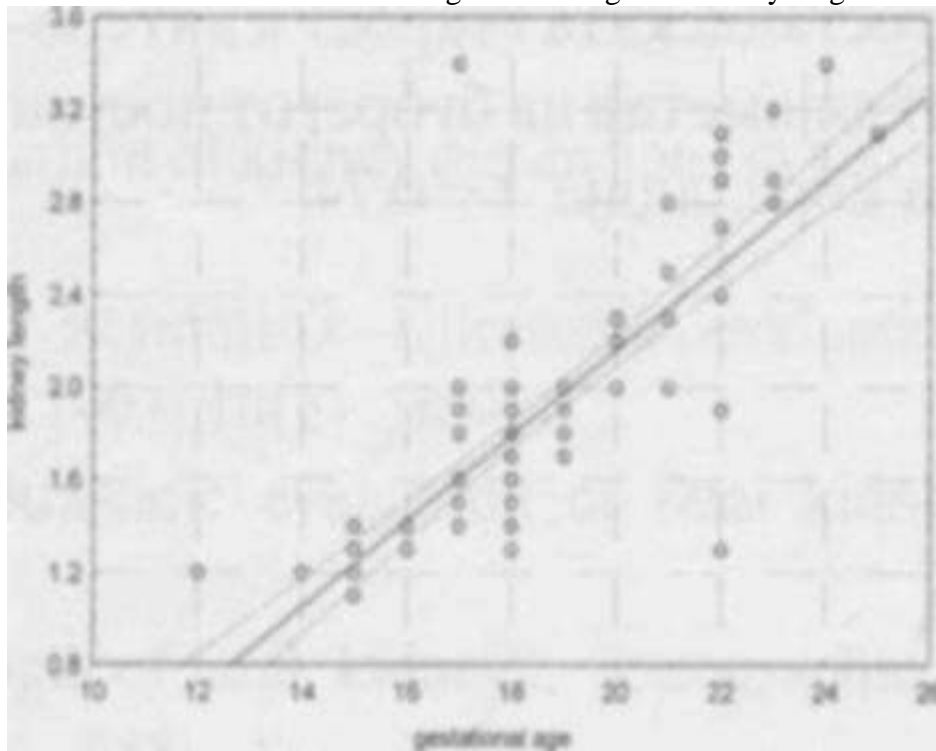
MATERIAL AND METHODS

The material for this investigation was taken from GAK, Clinical center, Skopje and contained 120 preterm infants of both sexes (48 females and 72 males) with gestational ages from 15 to 25 weeks. We measured their 240 kidneys with standard anthropometrical procedures. Kidney dimensions (length, width and anteroposterior diameter) were compared with gestational age. We applied the inspection / dissection method, as the best procedure in the research of the autopsy material. Statistical analysis was done by using standard statistical methods with a commercial computer program statistica -stat-sofit. Values $p < 0.05$ were considered significant (s), $p < 0.001$ very significant (vs), and $p > 0.05$ insignificant.

RESULTS

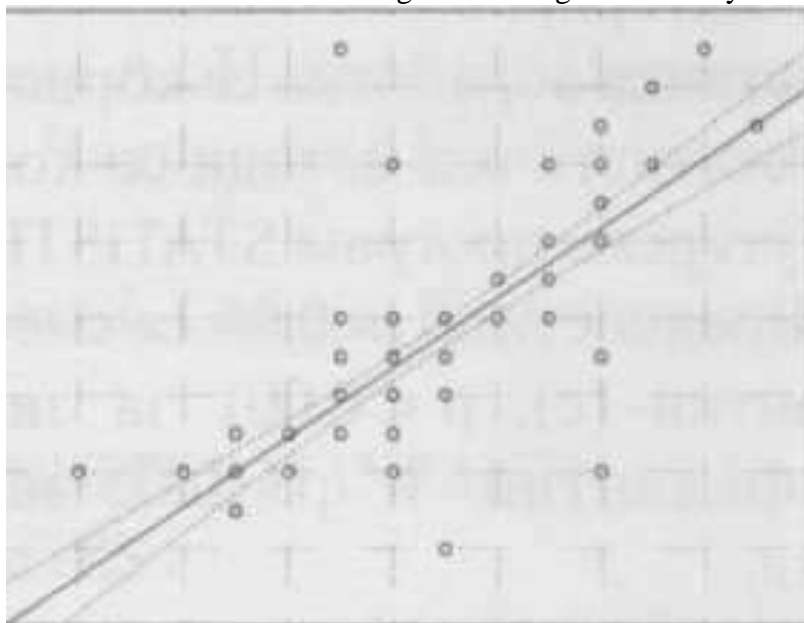
Kidney dimensions (length, width and anteroposterior diameter) in relation to gestational age were determined with Pearson- coefficient of correlation.

Table 1. Correlation between gestational age and kidney length



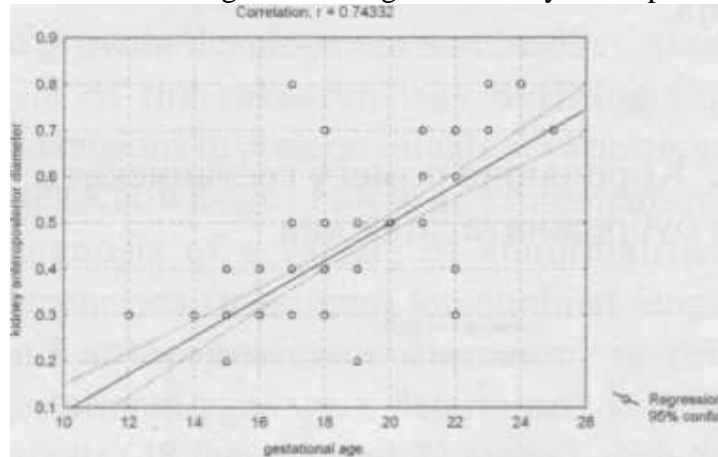
Analysis with Pearson- coefficient of correlation shows highly significant correlation between gestational age and kidney length $r = 0,82$.

Table 2. Correlation between gestational age and kidney width



A highly significant correlation between gestational age and kidney width $r=0,78$

Table 3. Correlation between gestational age and kidney anteroposterior diameter



A highly significant correlation between gestational age and kidney anteroposterior diameter $r = 0.74$

Discussion

Kidney dimensions in relation to gestational age, were studied by many authors. So Gupta AK, Anand NK, Lamba IM (1), (length, width and anteroposterior diameter) were measured within 48 after birth in 100 healthy neonates within gestational ages from 26.14 to 41.28 weeks and birth weights from 540 to 3250g. On linear regression analysis, a highly significant correlation was found between renal dimensions and gestational age. ChiaraA, Chirico G, Barbarini M et al (2), kidney volume in relation to gestational age, birthweight, and height were determined in 21 infants, 58 females and 63 males, with gestational ages from 23 to 43 weeks (mean 33.3) and birthweight from 430 to 4600 gr (mean 1982 gr). In the infants studies mean volume of the right kidney was 6.6 ml (range 1.5 to 15.6 ml) with no significant difference. A highly significant correlation was found between the volume of the both kidneys and gestational age. And many other authors were working to this problem.

CONCLUSION

In the analyzed series of 120 preterm infants, a highly significant correlation was found between : gestational age and kidney length, gestational age and kidney width and gestational age and kidney anteroposterior diameter. Knowledge of these measurements may earlier diagnosis of a variety of abnormalities.

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