11

ATHEROSCLEROTIC LESIONS OF FETUS AND NEWBORN WHO DIED BY DIFFERENT CAUSES

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Atherosclerosis (AS) is a progressive illness with onset in childhood, and the main cause of death in Western civilization. AS earliest lesions are usually seen in children under one year of age and small children, manifesting as a lesion called fat grooves. Aim: To find and characterize anatomically and pathologically AS lesions in fetuses and newborns. Methods: We studied 13 aortas obtained from autopsies; each aorta was opened lengthwise and examined macroscopically, fixed in 10% formaline and stained with hematoxylin and VanGieson. They were then examined microscopically. Some sections with lesions were fixed in 3% glutaraldehyde for scanning or transmission electronic microscopy. Macroscopic studies: number of lesions, localization, size, color, prominence or not and degree of delimitation. Microscopic studies: type and ultrastructural characterization of AS lesions. Results: Six out of 13 aortas presented lesions (46%); 9 were gray lesions, 100% were well-defined, 9 lesions were not elevated; 91% measured less than 4 mm. The most frequent localization was in abdominal aorta (64%). The great majority of the opposing lesions corresponded to fat groove, some were incipient fibrous plaque. These lesions did not differ from those described in adults either in conventional microscopy or ultrastructure. Conclusion: It is worthwhile mentioning the large amount of AS lesions in the studied aortas. We believe that AS lesions could be a non-pathological process present in arteries of medium and great caliber in human beings at early stages in life.

12

NEONATAL MORTALITY: PRELIMINARY RESULTS FROM A PERINATAL PATHOLOGY DATA BASE

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Objectives: To know the lesions associated with neonatal death in our population. To propose a classification of these lesions, and correlate them with gestational age, birth weight, and age at death. To analyze some characteristics of the mentioned lesions. Material and Methods: Study sample: A total of 732 neonatal autopsies, performed between July 1979 and December 2000. Classification of autopsy results: 1) Satisfactory (S): the observed lesions can explain neonatal death (S x AP: only by autopsy; S x AP + CH, by AP plus clinical history; S x AP + K: AP plus karyotype; S x CH: only by clinical history. 2) Poorly satisfactory (PS): the observed lesions cannot explain death. 3) Without diagnosis (WD): without lesions nor clinical history that can explain death. Classification of lesions associated with neonatal death: Asphyxia (A); lesions secondary to low birth weight (LBW); unspecific infections (UI); specific infections (SI); immune hydrops (IH); developmental anomalies (DA); lesions secondary to procedures (T); other (O). Study types: A: autopsy and placental examination; B: external examination of the infant and placenta; AB: only autopsy. Results: Of the total results, 97.9 % were S, and 94% of these x AP. According to the study type, 28.3% were A, 0,27% B, and 67% AB. 55% of the neonates were male. There were 1.6 lesions by patient; 30% had DA, 21% A, 18% LBW, 18% UI, 4% SI, 3% T, 1% IH, and 5% O. Asphyxia predominated among infants older than 37 gestational weeks and above 2500 g; 52% was secondary to lung disease. DA were more frequent among infants older than 29 gestational weeks, with a birth weight above 1000 g, and who died during the first hour of life. UI were more frequent at the highest and lowest gestational ages and birth weights, and from the first postnatal week on; 82% of UI involved the respiratory system. The most frequent SI were candidiasis and streptococcal infections. Hyaline Membrane Disease and Intraventricular Hemorrhage were more frequent in LBW. 67% of T were bronchopulmonary dysplasias. Conclusions: Autopsy is a reliable method to detect lesions associated with neonatal death, as well as a useful tool for assistance surveillance.

13

FETAL MORTALITY: PRELIMINARY RESULTS FROM A PERINATAL PATHOLOGY DATA BASE

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Objectives: To know the lesions associated with fetal death in our population. To propose a classification of these lesions, and correlate them with gestational age, birth weight, and presence or absence of maceration. To analyze some characteristics of the lesions associated with fetal mortality. Material and Methods: Population: A total of 1620 fetal autopsies, performed between July 1979 and December 2000, were included. Classification of autopsy results: 1) Satisfactory (S): the observed lesions can explain fetal death (S x AP: only by autopsy; S x AP + CH: by AP plus clinical history; S x AP + K: AP plus karyotype; S x CH: only by clinical history. 2) Poorly satisfactory (PS): the observed lesions cannot explain death. 3) Without diagnosis (WD): without lesions nor clinical history that can explain death. Classification of lesions associated with fetal death: Asphyxia (A); intrauterine infections (IUI); immaturity (I); immune hydrops (IH); developmental anomalies (DA); other (O). Study types: A: autopsy and placental examination; B: external examination of the fetus and placenta; AB: only autopsy. According to birth weight, the patients were classified as $\leq$ 1000g, 1001 - 1500 g, 1501 - 2500 g, and $\geq$ 2501 g; according to gestational age (GA), as $\leq$ 19 weeks (w), 20 - 27 w, 28 - 36 w, and $\geq$ 36 w. Results: Of the total results, 95.6 % were S, and 94.8 % of these were S x AP. 87.2% were study type A, 4.7 % type B, and 7.6 % type AB. There were 1.1 lesions by fetus; 45 % had A, 23% had DA, 23% had I, 3 % had IUI, 2% had IH, and 4 % had O. The rate of Asphyxia increased with GA and birth weight; 76.2 % was secondary to non-inflammatory placento-annexial diseases, 6.9% was secondary to ovular infections, and 83.3 % of the fetuses were macerated. The most frequent DA were of the nervous and respiratory systems, and more than half of these fetuses were macerated; 80.6% of the immature fetuses had unspecific ovular infections in their placentas. Conclusions: Autopsy is a reliable method to detect lesions associated with fetal death, as well as a useful epidemiological tool for assistance surveillance.

14

BMI DISTRIBUTION IN A POPULATION OF ARGENTINE CHILDREN AND ADOLESCENTS WHO VISIT THE PEDIATRICIAN

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Introduction: Body Mass Index (BMI) is a valuable, regularly used instrument in pediatric practice to determine body fat. BMI tables used internationally are based on percentiles (Pc) for age and sex. The increase in the worldwide prevalence of obesity shows a displacement of children and adolescents towards the higher Pc, with an increase in the concentration of the population above Pc 50. Objective: To determine the BMI distribution of the study sample using the Rolland Cachera BMI Pc. Method: BMI was calculated for a sample of children and adolescents (age range 10 - 19.9 yrs) of all the regions of the country who came to the pediatric visit for any given reason. Pediatricians of the Argentine Society of Pediatrics measured, weighed and calculated the BMI of a randomized sample of participants taken from private and public pediatric offices. The total sample was of 1971 cases (1231 females and 740 males). Relevant sociodemographic data pertaining to the participants and their families were gathered. Results: 65% of the children and adolescents of the sample were above Pc50; 26.5% was overweight or obese (Pc90); 1.4% of the population was under PC 3. The distribution was similar at urban and rural areas, and there were no differences between public and private consultation. 62.5% of the girls and 70.4% of the boys were above PC 50, and the prevalence of overweight and obesity was higher in males than in females (30.5% vs 24.1%; p= 0.0019). There were significantly more parents who reported to be obese among children grouped in the higher percentile. Conclusion: Using BMI we observed a higher concentration of our population in the higher percentiles. The clinical concern is centered in the rapidly increasing prevalence of overweight and obese children.

15

ANTHROPOMETRIC AND RADIOLOGICAL FINDINGS IN PATIENTS WITH HYPOCHONDROPLASIA. CORRELATION WITH PRESENCE OF MUTATIONS IN THE FIBROBLAST GROWTH FACTOR RECEPTOR 3 GENE

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Hypochondroplasia is a skeletal dysplasia with autosomic dominant inheritance characterized by short stature with short limbs, that presents a wide phenotypic variation. In 50–70% of the patients, mutations are found in the FGFR3 gene. Diagnosis is based on the clinical and radiological criteria described by Spranger. Objective: To correlate the anthropometric and radiological criteria with the molecular findings in 21 patients. Patients and Methods: In all patients we measured head circumference (HC), height, sitting height and leg length (LL), and we calculated Z scores. We also performed a blind reading of the X-Rays. The region of the FGFR3 gene that includes prevalent mutations (N540K C→A y C→G) and the majority of the rare mutations (N540T, N540S and I538V) were analyzed by sequencing and allelic specific hybridization (ASO). Median test and Fisher test were used to compare both groups according to the molecular results. We set cut off points for the significant variables with ROC analysis. Results: Whereas a mutation in FGFR3 gene was detected in 14 patients (8 N540K C→A y 6 N540K C→G) (group 1), the sequence was normal in 7 patients (group 2). We found statistically significant differences in HC and LL between both groups. The median in HC was 2.05 (0.80/3.80) (group 1) vs. –0.10 (-2.29/1.13) (group 2); (Median Test p=0,001). The median in LL was –5.15 (-7.10/ -4.00) vs –4.10 (-5.50/-3.30), respectively; (Median Test p=0,033). The cut off point that divided both groups was for HC + 1.13 SD (with a 92.3% sensitivity and 100% specificity) vs. – 5.8 SD for LL (with a 28.6% sensitivity and 100% specificity). No association was found between radiological criteria and presence of mutation or not (NS, Fisher test). Conclusion: In our study sample, while the auxologic findings (greater HC and shorter LL) permitted the anthropometric differentiation of patients with mutations in the FGFR3 gene (group 1), radiological criteria were not useful to predict the presence of such mutation.

16

SHORT-TERM GROWTH OF HEAD CIRCUMFERENCE IN HEALTHY INFANTS

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In the last decade, studies based on daily or weekly measurements of stature in children have suggested that growth is a non-linear and discontinuous process. There are few data in the literature about the daily growth of head circumference (HC). With the purpose of evaluating HC patterns in healthy infants, we took replicate measurements in HC five times a week over a period of 150 days in 9 infants aged 0.32 to 0.84 years at the onset of the study. The technical error (TEM) varied between 0.08 and 0.15 cm. The smoothing technique used was based on the TEM, with a hard rejection criterion. We defined growth as any increment between two consecutive smoothed values higher than 6 times the expected deviation of such difference. Abrupt changes in HC (saltation) were arbitrarily defined as any daily increment greater than 0.3 cm. Results: Eight out of 9 infants showed saltatory growth. The number of days of stasis accounted for 68.5% of the total measurement period (150 days). The mean duration of each stasis period between growth episodes was 4.4 days and the longest period was of 45 consecutive days. The mean number of saltation periods was 2.5, and the largest amplitude was 0.80 cm in one single day. Saltation accounted for 37.2 % of the total growth during the study period. Conclusion: Our findings suggest that HC growth is a discontinuous and irregular process with three phases: stasis, continuous growth, and saltation. This is consistent with short-term growth of stature and lower leg length, and should contribute to the understanding of control and regulation mechanisms of infants growth.