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A PATTERN ANALYSIS FOR ULTRASOUND ANOMALIES IN FETUSES WITH NORMAL KARYOTYPE

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Two hundred cases of double or multiple anomalies (up to five in the same fetus) out of 828 karyotypically normal fetuses with at least one ultrasound finding were enrolled in the present study. One hundred and sixty patterns belonging to 200 fetuses were found. Then, we included in the final analysis only those double or triple patterns of anomalies with frequency more then 1. Thus, 123 cases and 83 patterns were analyzed. A double pattern was intended as any combination of ultrasound findings present in the same fetus. Exact chi square test was used to evaluate the specificity of the association of the most frequent patterns. The association of patterns was expressed as ratio between observed and expected frequency (O/E) ratio. Pattern analysis was used as statistical tool in order to calculate the number of possible associations of ultrasound finding. Anomalies of fluid distribution, as well as Central Nervous System malformations, and facial malformations were among the most significant associations. Among the triple patterns, Cleft Lip + Cleft Palate +Holoprosencephaly showed the highest degree of association. Antenatal diagnosis of ultrasound finding cans benefits by considering the present results.

Key words: ultrasound findings, normal karyotype, observed/expected ratio.

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The extreme Spectrum of Pallister-Hall syndrome. K.H. Greenly[1], R.W. Tyson[2], C.H. Tsai[1]. [1]Division of Genetics Service, The Children's Hospital, Denver, and [2]Department of Pathology, University of Colorado Health Science Center, CO

Pallister-Hall syndrome can result from GLI 3 gene mutation and is characterized by hypothalamic hamartoblastoma, hypopituitarism, imperforate anus, and postaxial polydactyly. It has a wide spectrum of severity, from perinatal lethal to minimally symptomatic. Familial cases with different expressiveness were reported before. We herein report a 22-week terminated fetus, which was a product of a G1P0 16-year-old healthy mother. Initial ultrasound at 20 weeks gestation revealed severe oligohydramnios and a small fetus. Subsequent ultrasound revealed absent stomach, dysplastic kidneys, short limbs, distal dysplasia, abnormal facies and the possibility of Roberts syndrome was discussed. The patient was counseled and pregnancy termination was sought. Cytogenetic studies revealed a normal 46,XY male karyotype and negative study for centromere analysis. Autopsy revealed a normally grown 22-23 week male fetus with hypothalamic hamartoma, polydactyly, imperforate anus and multiple other congenital anomalies. He had small, wide-spaced eyes, bilateral choanal atresia, soft tissue mass of the philtrum, small mouth with soft tissue fusion between alveolar ridges, lips and tongue, abnormal palate with possible midline clefting, micrognathia and simple lowset ears. There were short upper extremity digits with hypoplastic nail bed and bilateral partial duplication and fusion of the fourth digits. The feet were markedly everted with small medially placed great toes. The third, fourth and fifth digits are all short with poor nail bed. All digits had prominent syndactyly. There was anal atresia with blind rectosigmoid colon emptying into the bladder region without rectovesicular fistula. There was bilateral renal hypoplastic dysplasia with disorganization of the cortex. Brain examination revealed hypothalamic hamartoblastoma, 1.0 x 1.5 x 1.0 cm. There was absent cerebellar vermis, absent corpus callosum, probable absent olfactory grooves and tracts and sella turica with no pituitary gland present. Small adrenal glands with disorganization of the adrenal cortex were also noted. Cardiac exam revealed malrotation of the great vessels and cardiomegaly. Pulmonary hypoplasia and oligohydramnios sequence was noted with flexion contractures of the joints. Our patient represents an extreme spectrum of PHS and emphasizes the importance of recognition of fetal syndrome and documented autopsy for genetic counseling.

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Evaluation of Prenatal Screening Program for Down Syndrome -*analysis of 96 cases of Down syndrome for last 10 years*-

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The purpose of this study was evaluation of efficiency of prenatal screening program for Down syndrome using various screening methods (Age: greater than or equal to 35 years old, Serum markers: Triple test, Ultrasonography: abnormal sono findings, Nuchal translucency, Nuchal fold thickness). Total 96 cases of Down syndrome were prenatally or postnatally diagnosed between Jan. 1990 and Sept. 1999. The frequencies of diagnosed Down syndrome were 68 (71 %) in prenatal and 28 (29 %) in postnatal. The mean age of mother of Down syndrome fetus was 33.0±0.6 years old. The frequency rate of Down syndrome was 0.4, 1.3, 0.7, 0.7, 1.6, 0.7, 1.2, 2.2, 2.0 and 2.3 a 1,000 deliveries from 1990 to 1999 (Y=0.28+0.18 year, P=0.01). The percent of prenatal Down syndrome was 0 (0/2), 43 (3/7), 50 (2/4), 25 (1/4), 56 (5/9), 100 (5/5), 71 (5/7), 78 (14/18) and 89 (17/19) from 1990 to 1999 (Y= 12.9+8.9 year, P=0.000). The contribution rate of prenatal diagnosis for Down syndrome was 30.2±5.6 % by age, 18.2±3.4 % by triple test and 51.7±6.3 % by ultrasonography, and was significantly difference among each screen methods (P=0.008). In conclusion, this study shows that our prenatal screening program is highly effective and the frequency rate of prenatal diagnosis for Down syndrome has been increased year by year for last 10 years.

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Antenatal diagnosis of mixoploidy: a case report. Jackson, DN MD, Brown L, MS, CGC, Fetal Diagnostic and Imaging Center, St. Vincent's Health Center, Department of Maternal Fetal Medicine and Fetal Imaging, Billings, MT

Diploid triploid mosaicism, or mixoploidy is a rare perinatal diagnosis. It is characterized by multiple congenital anomalies including mental and growth retardation, facial and body asymmetry, malformed or low set ears, 3-4 finger syndactyly, and ambiguous genitalia (in males). Areas of hyper- and hypo-pigmentation have also been described. The more severe brain, renal, cardiac and ocular anomalies associated with complete triploidy are not apparent in mixoploid individuals. We present a case of antenatal diagnosis by FISH analysis. The index case was a 26yo G2P1 female referred for ultrasound evaluation at 36 weeks secondary to an abnormal aortic arch. Ultrasound findings included echogenic bowel and significant growth deceleration. A 6-week abdominal growth lag was apparent. A review of the patient's records indicated that growth retardation was evident as early as 26 weeks. An amniocentesis was performed for chromosome analysis and lung maturity. Lung maturity was confirmed. FISH was performed for chromosomes 13, 18 and 21 in addition to routine karyotyping. Out of 179 cells, 36 showed 3 signals for chromosome 18. Out of 104 cells, 19 showed 3 signals each for chromosome 13 and 21. Mixoploidy was confirmed by standard karyotype techniques 1 week later. The mother was delivered within 24 hours of receiving the FISH results. Growth retardation, low set ears and 3-4 finger syndactyly were all present at birth. Cord blood and peripheral blood analysis confirmed the diagnosis of mixoploidy. The findings "disappeared" on peripheral blood by 8 wks. Growth restriction has long been recognized as a feature of chromosome abnormalities. We propose that persistent growth asymmetry be considered part of this sequence as well. Review of the prenatal findings of other affected children may help delinete the prenatal phenotype further. The disappearance of the mosaic cell line in the blood makes the prenatal setting the optimal choice.