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NEONATAL OUTCOMES AND THE USE OF GLYBURIDE IN GESTATIONAL DIABETES MELLITUS. R.M. Reynolds, B.F. Kahn, J.K. Davies, A.M. Lynch, L.A. Barbour, Departments of Pediatrics, Obstetrics and Gynecology, Biometrics and Preventive Medicine, and Medicine, University of Colorado Health Sciences Center, Denver, CO.
Background: The prevalence of gestational diabetes mellitus (GDM) continues to rise in the face of the obesity epidemic affecting up to 14% of some ethnic populations. Studies have shown that treatment of GDM with insulin decreases serious maternal and fetal morbidity and perinatal mortality. Oral medications are preferred by patients and this could lead to increased compliance. Glyburide remains unapproved for use in GDM. **Study:** This was a retrospective review of 124 women who were offered glyburide therapy between November 2000 and May 2005. A cohort of 101 women was included for analysis, approximately 50% Hispanic, 33% Caucasian, and 3% African American. Neonatal outcomes reviewed included birth weight, macrosomia, weight > 90%, admission to the neonatal intensive care unit, hypoglycemia, evidence of respiratory distress (RDS), and congenital anomalies. **Results:** Eighty percent of the pregnancies were treated successfully with glyburide. There were no reported perinatal deaths. Overall cesarean section rate was 27% and there were no reports of shoulder dystocia. The macrosomia rate was 7% and 27% of the infants were large for gestational age (LGA) with a mean birth weight of 3,307 ± 490 g. Although 21% were admitted to the NICU, only 8% required IV glucose for hypoglycemia and only 8% were treated for RDS. Three congenital anomalies were noted but glyburide was initiated after 22 weeks gestation. **Conclusion:** Although the study was a retrospective retrieval of data, the management of these patients was standardized. Fetal growth was considered in the decisions regarding titration of glyburide and this may have contributed to neonatal outcomes such as weight, shoulder dystocia, and rate of cesarean section. Given that the relative safety of glyburide has been confirmed, outcomes with glyburide are at least comparable to outcomes with insulin, and oral medications are preferred to insulin and this may increase compliance, glyburide would be another option to treat GDM and therefore improve overall fetal morbidity.

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GEOGRAPHIC AND OCCUPATIONAL RISK FACTORS FOR VENTRICULAR SEPTAL DEFECTS, WASHINGTON STATE 1987–2003. M. Batra,[1,2] C.L. Heike,[1,2] R.C. Phillips,[2,3] N.S. Weiss,[2] [1]Pediatrics, University of Washington and Children's Hospital and Regional Medical Center, Seattle, WA; [2]Epidemiology, School of Public Health and Community Medicine, University of Washington, Seattle, WA; [3]Medical Education and Health Informatics, University of Washington, Seattle, WA.
Purpose of Study: To address the hypothesis that parents' environmental and occupational exposures can influence the presence of a ventricular septal defect (VSD) in their offspring, we conducted a population-based case-control study of infants born in Washington State from 1987–2003. **Methods:** We used birth certificate data linked with hospital discharge information to identify children diagnosed with VSD within the first 2 years of life (N = 3,489) and controls (N = 13,290). From the birth certificate data, we obtained information on parental occupation and county of maternal residence. The latter was categorized according to region (east-west), rural-urban classification, and proportion of farm land and crop land. **Results:** Risk of VSD was greater for infants whose mothers resided in eastern Washington (odds ratio 1.30, 95% confidence interval: 1.03, 1.65). VSD in conjunction with other cardiac malformations (n = 1,205) exhibited a stronger geographical association than isolated VSD (n = 2,284). Analyses restricted to eastern Washington did not reveal a clear relationship between risk of VSD and increasing proportion of agricultural land in the mother's county of residence. Parental occupation in agriculture was not associated with the presence of VSD. **Conclusions:** While these findings suggest regional variation in Washington State in the occurrence of VSD, the basis for this variation remains to be determined.
The first author is supported by UW NIH K30 Program and is a fellow in training.

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NEONATOLOGY WITHOUT INDOMETHACIN OR BOWEL PERFORATION: A 19-YEAR EXPERIENCE. J. Pietz, P. Achanti, E.C. Stepka, S. Mehta, Fairview Hospital, Cleveland, OH.
Objective: Review the use of indomethacin and a strict feeding protocol for VLBW. **Methods:** Review the incidence of NEC, IVH, and bowel perforation as our policies for using Indocin and a strict feeding protocol changed. From 1986–1991, 0/228 VLBW babies had NEC. 0/228 had bowel perforation. From 1991–2001, 0/683 VLBW babies had bowel perforation. Before 2001, our feeding protocol advanced only 4 mL/kg/day for VLBW babies. In 2001, the protocol was liberalized and Indocin use was allowed. In April of 2003, after 2 cases of NEC, we reverted to the original feeding protocol and stopped using Indocin. For 2001–2004 we compare 261 VLBW babies to the Vermont-Oxford network. 10/149 infants received indomethacin in 2001–2002. 0/112 infants received indomethacin in 2003–2004. Two infants had NEC (2/261). The first received Indocin and was on liberal feedings. The second had no Indocin but was on liberal feedings. Both recovered without surgery. Rates of NEC, bowel perforation, IVH, and CLD are shown below. Comparisons to 2003 Vermont-Oxford data are shown below. Our incidence of IVH, SIVH, NEC, bowel perforation, and BPD was lower than network. Studies show prophylactic Indocin is associated with reduced incidence of IVH. In Bandstra's study the early Indocin group had incidence of IVH greater than ours (23% vs 11%). In Ment's study an early Indocin group had an incidence (12% vs 11%) similar to ours. In the last 30 months, we have not used Indocin and we adhere to our feeding protocol. Our NEC rate is again 0%; our bowel perforation rate from 1986–2004 = 0/1172. Our IVH and BPD rates are also low. **Conclusion:** In this NICU using our feeding protocol without Indocin is advisable.

Table 1

1986-2001	2001-2002	04/2003 to 12/2004
1986 ——— 2002	2001 ——— 2002	
No Indocin	Indocin (181/415)	No Indocin
Strict Feeding Protocol	Liberal Feeding Protocol	Strict Feeding Protocol
NEC 0/261 (0%) Bowel Perforation 0/261 (0%) IVH 31/149 (21%) CLD	NEC 2/149 (1.3%) Bowel Perforation 2/149 (0%) IVH 19/149 (13%) SIVH 15/149 9/149 (6.2%) Grade IV 3/149 (2.1%) CLD 33/149 (23%)	NEC 0/111 (0%) Bowel Perforation 0/112 (0%) IVH 10/112 (9%) SIVH 3/8/01 3/112 (4.4%) IVH IV 4/112 (3.6%) CLD 17/112 (16%)

	Expected Vermont-Oxford	Actual 2003-2004 N=112
NEC	(6%)	(.89%)
Bowel Perforation	(2%)	(0%)
IVH	(26%)	(13%)
SIVH	(6%)	(3.4%)
BPD	(29%)	(16%)

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A CASE OF AUTOSOMAL RECESSIVE INFANTILE OSTEOPETROSIS DUE TO MUTATION IN *TCIRG1* PRESENTING WITH MULTIPLE CONGENITAL ANOMALIES. R. Conway, R. Lachman, C. Hurvitz, R. Falk, Cedars-Sinai Medical Center, Los Angeles, CA.
Autosomal recessive infantile osteopetrosis (ARIO) is a rare and potentially fatal disorder of bone metabolism caused by a defect in osteoclast function. The pathologic features are secondary to insufficient bone resorption and usually present in the infancy. Symptoms include sclerotic bones leading to bone marrow compromise with resultant pancytopenia, cranial nerve impingement, hydrocephalus, and fracture. This is an autosomal recessive disorder caused by mutations in either *TCIRG1*, *CLCN7*, or *OSTM1*. Malformations are not a part of this disorder. We present a 6-month-old male, the first child between nonconsanguineous parents, who was referred to our clinic for limb defects. Findings prompting the referral included congenital left upper limb anomalies of syndactyly and radial-ulnar synostosis. There was an ipsilateral anterior rib defect, though there was no clinically appreciable hypoplasia of the pectoralis major. He also had a left low-lying, cross-fused kidney. Besides the limb anomalies, the patient presented in our clinic having signs of hydrocephalus. He had left facial nerve palsy and oculomotor abnormalities. The diagnosis of ARIO was made after hospitalization; radiographs demonstrated characteristic findings of diffuse osteosclerosis and periosteal thickening in all bones. The patient had surgical management for noncommunicating hydrocephalus with good results. The majority of cases with ARIO are compound heterozygotes. Reported homozygous patients most commonly result from a consanguineous mating or come from an isolated population (Costa Rica). Genetic testing of this patient revealed homozygosity for a rare mutation in *TCIRG1*, a subunit of the osteoclast vacuolar proton pump. Because this child was a product of a nonconsanguineous union, this was an unexpected result. To explain the malformations in this case, we postulated either uniparental disomy or a spontaneous contiguous gene deletion on one chromosome that included the *TCIRG1* gene, which then unmasked a hemizygous recessive state. Subsequent sequence analysis of both parents for *TCIRG1* mutations showed that each was a heterozygous carrier of their son's mutation. The presence of the limb and kidney anomalies complicated the diagnosis in this case. No other reported patients with ARIO have had similar birth defects. Without treatment, early demise secondary to bone marrow failure is predicted in nearly all cases. Associated features, natural history, and management recommendations for ARIO will be reviewed.

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AN INFANT WITH CONDUCTIVE DEAFNESS, ONYCHODYSTROPHY, OSTEODYSTROPHY, DEVELOPMENTAL DELAY, AND DYSMORPHISM: IS THIS DOOR SYNDROME? M.M. Martin, A.M. Slavotinek, Department of Pediatrics, Division of Genetics, University of California, San Francisco, San Francisco, CA.
Introduction: DOOR syndrome was an acronym first suggested by Cantwell in 1975 to describe a constellation of findings including deafness, onychodystrophy, osteodystrophy, and retardation. It is a genetically heterogeneous condition with both autosomal recessive and dominant forms. The deafness and onychodystrophy are common to both forms, but mental retardation is a feature of the recessive form. A number of patients with the recessive form have had elevated 2-oxoglutarate levels in plasma and urine and one study showed a correlation between the elevated levels and decreased activity of the 2-oxoglutarate decarboxylase enzyme ($E1_0$). It has been suggested that elevation of this compound may be associated with a more severe, and even lethal, phenotype. We present a patient who possesses the cardinal features of DOOR syndrome but who has additional dysmorphic features. **Case:** The baby was born at 36 weeks' gestation to a 32-year-old G4 P2–3 female. Birth weight and length were both < 10th centile. Work-up for a congenital infection was negative. Relevant findings were an ASD and VSD at 1 month of age and conductive hearing loss at 2 months. At 3 months of age, growth parameters were all less than the 3rd centile. Her exam showed brachycephaly, a large fontanel, narrow and upslanting palpebral fissures, a bulbous nasal tip with anteverted nares, a smooth philtrum, thin upper lip, brachydactyly, hypoplastic thumbs, and hypoplastic finger and toenails. She was developmentally delayed with poor head control. Chromosome analysis showed a normal female karyotype and urine organic acids were normal with no elevation of 2-oxoglutarate. A skeletal survey in the newborn period showed absent and hypoplastic ossification centers of the fingers and toes. Family history was noncontributory. **Conclusion:** The diagnosis of DOOR syndrome is based on clinical examination as the pathogenesis is unknown and there is no cytogenetic or molecular testing. We consider that our patient has DOOR syndrome because of onychodystrophy, delayed ossification of the phalanges, deafness, and developmental delay. In addition, there have been reports of congenital anomalies including septal heart defects. However, the dysmorphism in our patient is not typical of this condition and is unexplained. Conductive hearing loss is also less frequent than sensorineural hearing loss in DOOR syndrome. We believe that our patient may represent a less severe presentation of the autosomal recessive form of DOOR syndrome.

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A LETHAL SKELETAL DYSPLASIA RESEMBLING DESBUQUOIS DYSPLASIA. V.K. Agarwal, K. Bui, D. Salazar, R.S. Lachman, D.R. Witt, F. Field, D.L. Rimoin, W.R. Wilcox, Medical Genetics Institute, Cedars-Sinai Medical Center, Los Angeles, CA.
Desbuquois dysplasia is a rare form of short limb dwarfism with autosomal recessive inheritance characterized by severe short stature of prenatal onset, joint laxity, facial dysmorphic features, spur-like projections of the proximal femora ("Swedish key" or "monkey wrench"), mild vertebral and epiphyseal abnormalities, and advanced carpal and tarsal bone age. Cases may be divided into two groups depending on whether or not typical hand abnormalities are present, which include an extra ossification center distal to the second metacarpal and/or a delta phalanx of the thumb. A recent genome-wide search in four inbred Desbuquois families with typical hand abnormalities demonstrated linkage to chromosome 17q25.3. Exclusion of the 17q25.3 locus in the clinical subtype of Desbuquois dys-