STUDY DESIGN: Supratentorial (midbrain curvature, thalamic height), infratentorial (4th ventricle diameter, brain stemdiameter, ratio of brain stem diameter to brain stem diameter-occipital bone diameter [BSOB]) and calvarial(frontomaxillary facial [FMF] angle) parameters were measured in stored mid-sagittal facial images at 110 to 136weeks of 500 normal and 10 open spina bifida fetuses by 3 blinded examiners.

RESULTS: OSB fetuses displayed a larger midbrain curvature (93.26° ± 6.97° vs. 97.79° ± 10.04°, $p < 0.05$), decreasedFMF angle (84.10° ± 5.44° vs. 78.46° ± 5.82°, $p < 0.001$), smaller 4th ventricle diameter (0.25 ± 0.04 mm vs. 0.18 ±0.05 mm, $p < 0.001$), smaller brain stem width (0.29 ± 0.04 mm vs. 0.23 ± 0.04 mm; $p < 0.001$), and increased brainstem to BSOB ratio (0.64 ± 0.71 vs. 0.73 ± 0.93, $p < 0.03$) than normal controls, respectively. Thalamic height was not-significantly altered. Detection rates of OSB were highest for 4th ventricle diameter and FMF angle (60% and 40%,respectively, at 95% specificity). Brain stem width, brain stem to BSOB ratio, midbrain curvature yielded sensitivities of30% with 95% specificity. Two-dimensional discrimination for pairs of measures combining 4th ventricle diameter withFMF angle increased sensitivity to 90% with specificity of 90.7%.

CONCLUSION: Our findings suggest that supratentorial, infratentorial, and calvarial changes consistent with the Chiari IImalformation are already well established in first trimester fetuses with OSB.

205 Application of different fetal head circumference normality ranges for the identification of abnormal head growth in Zika infected fetuses in a Colombian Cohort

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OBJECTIVE: To determine the optimal method to assess head circumference in a prospective cohort of Zika virus (ZIKV) infected fetuses during the current outbreak in Barranquilla, Colombia.

STUDY DESIGN: Between December 2015 to July 2016, all patients referred to our center for ZIKV symptoms during pregnancy with themselves or their partners were included in this study (n=214). Monthly fetal ultrasound(US) was performed to assess biometrics and brain development. Head circumference (HC) measurements were compared to Intergrowth21 (IG21), Kurmanavicius, Chervenak, and Hadlock standards. Additionally, they were also compared to a historical cohort (2011-2012) of 772 healthy Colombian patients with normal fetuses used to establish the normality for growth in a comparable cohort. HC measurements were classified if < -2 Z-scores (ZS) and -3 ZS cutoffs.

RESULTS: From 214 patients, 13 presented with fetal brain anomalies compatible with congenital ZIKV infection by US. Seven cases have RTPCR+ for ZIKV and results from 6 are still pending. All cases presented with a cluster of findings inclusive of microcephaly, ventriculomegaly, callosal dysgenesis, periventricular calcifications, and different degrees of cortical anomalies. 2 cases were found to have clubfeet, and a single case had an isolated finding of a dysgenesis of cerebellar vermis. All 13 affected cases presented with clinical ZIKV symptoms or partner exposure by 17 weeks (12.15±4.36 weeks). The median age of US findings was 28.6±5.12 weeks, and microcephaly was concurrently observed in some but not all cases (71.4 and 71.4% had HC<2ZS and <3ZS with IG21 standards; 71.4 and 57.1% with Kurmanavicius; 71.4 and 28.6% with Chervenak; 71.4 and 50% with Hadlock and 71.4 and 64.3% using Colombian standards for <2ZS and <3ZS respectively).

CONCLUSION: Based on these results in the largest reported ZIKV-exposed referral cohort to date, the use of 2ZS below the mean as a cutoff to identify those fetuses at risk of developing congenital ZIKV with significant brain malformations should be considered. Different reference standards showed similar detection rates for this cutoff, although malformations were detected prior to microcephaly. These findings suggest that detailed fetal neurosonography improves detection, and should be performed in patients at risk.

206 Cine clips in the prenatal diagnosis of major congenital heart disease

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OBJECTIVE: Prenatal diagnosis of congenital heart disease (CHD) appears to have short-term benefits for the neonate, and may also have long-term benefits in the context of particular critical diagnoses. However, the rate of prenatal CHD detection remains low in the United States, with substantial institutional and regional variation. Recent national and international guidelines recommend extended cardiac views to assist in prenatal diagnosis. As a tertiary care institution in a rural setting, we examined our prenatal detection rate (PDR) from 2002-2015 for quality purposes.

STUDY DESIGN: All cases of major CHD (requiring surgical intervention in infancy/early childhood) diagnosed either prenatally or postnatally at our tertiary care center were identified (n=202). We then focused on major CHD in fetuses and/or infants whose mothers had a prenatal anatomic scan in our obstetric ultrasound unit (n=119). Prior to 2010, cardiac views were evaluated with still images; live scanning by MFM was performed only for detailed exams. Starting in 2011, we added specific CINE clips to the cardiac evaluation for all exam types. PDR in our ultrasound unit was reported by year (birth year for live infants, and date of diagnosis for fetuses without a subsequent live birth). Comparisons were by Fishers exact test.

RESULTS: Prenatal detection of major CHD is summarized in Figures 1 and 2. From 2002-2010, there was substantial variability in PDR by year. An abrupt and sustained increase in prenatal detection of major CHD was seen beginning in 2011, with consistent prenatal diagnosis rates of ≥ 90% from 2011 through 2015 (Figure 1). When the role of CINE clips was examined, prenatal diagnosis was made in only 41.5% of major CHD cases without a CINE clip, but in 90.2% of major CHD cases with a CINE clip ($p<0.001$; OR 13.0 [4.6-37.2] for detection with CINE clips). The relative contribution of CINE clips to prenatal diagnosis of our most frequently encountered major CHD is shown in Figure 2.

CONCLUSION: Our obstetric ultrasound unit instituted a requirement for cardiac CINE clips as part of our fetal cardiac screen in 2011. The CINE clips encompass all of the extended views which have since been recommended by national and international ultrasound guidelines. Our significant and continued increase in PDR of major CHD is strongly associated with our use of CINE clips. Use of CINE clips appears to be a compelling fetal CHD screening tool.