Considering both accuracy and the time required to perform manual segmentations, it appears that five slices is a good compromise when measuring AVol.

Supporting information can be found in the online version of this abstract

P11.02

Feasibility of automated transcerebellar axial plane finder using 3-dimensional volume of the fetal posterior fossa

I. Lee[1], J. Kwon[1], H. Cho[1], Y. Kim[1], Y. Park[1], S. Kim[2], K. Lee[2], J. Yoo[2]

[1]*Department of Obstetrics and Gynecoclogy, Yonsei University College of Medicine, Seoul, Republic of Korea;* [2]*SamsungMedison Research and Development Center, Seoul, Republic of Korea*

Objectives: To evaluate the feasibility of automated transcerebellar axial plane finder program, novel technique using 3-dimensional (3D) volume of the fetal brain.

Methods: Total of 31 singleton pregnancies beween 20+0 and 28+0 weeks of gestation was included. Multifetal pregnancy, oligohyramnios, fetus with central nervous system anomaly were excluded. 3D ultrasound volume of the fetal head was obtained transabdominally with Accuvix V20 Prestige (SamsungMedison Co, Ltd, Seoul, Korea) using 4-8-MHz volume transducer. Volume sweep was initiated in transcerebellar axial plane for measuring biparietal diameter with sweep angle set at 60 degrees. The volume data were subjected to off-line program that automatically manipulated the volume and produced transcerebellar axial plane within seconds. The quality of produced images was assessed by two expert examiners. Automation was considered a success if both experts assured the quality.

Results: The median gestational age at the scanning was 22 weeks. Out of 31 fetal head volumes, overall success rate of 3D transcerebellar axial plane finder was 90.3 % (28/30). Three failed cases were all caused by posterior fossa shadowing at the time of volume sweep.

Conclusions: The automated transcerebellar axial plane finder program reliably produced transcerebellar axial plane using 3D volume of the fetal head. It is encouraging that this novel technique will add objectivity in evaluation of posterior fossa.

P11.03

Low-level 45,X/46,XX mosaicism up to 10% of aneuploidy seems not to be associated with higher prevalence of congenital cardiovascular disease and thoracic aorta dilatation: a prospective study

E. Klásková[1], Z. Tudos[2], M. Procházka[4], J. Dostal[4], A. Sobek[3], J. Zapletalova[1]

[1]*Pediatrics, Medical Faculty of Palacky University, Olomouc, Czech Republic;* [2]*Radiology, Medical Faculty of Palacky University, Olomouc, Czech Republic;* [3]*Infertility Center, Fertimed, Olomouc, Czech Republic;* [4]*Obstetrics and Gynecology, Medical Faculty of Palacky University, Olomouc, Czech Republic*

Objectives: Turner syndrome (TS) affects 1 in 2000 to 1 in 2500 live born girls. The higher prevalence of congenital cardiovascular disease in TS has been observed in several studies. Our study has been focused on the prevalence of risk factors for aortic dissection such as bicuspid aortic valve (BAV), coarctation of the aorta (CoA) and dilatation of the ascending aorta (AoDil) in individuals with low-level 45,X/46,XX mosaicism.

Methods: The study group comprised of 25 women with low-level 45,X/46,XX mosaicism (ranging from 3.3% to 10%), who were referred to two reproductive medicine units from 2009 to 2012 because of infertility and were karyotyped. Ascending and descending aortic diameters were measured by MRI at the level of the right pulmonary artery with the aim to identify AoDil.

Results: We visualised the morphology of the aortic valve during MRI study in 24 of 25 cases. Multiple linear regression analysis didn't prove thestatistical relationship between the level of 45,X/46,XX mosaicism and the prevalence of CoA and BAV, and between the level of 45,X/46,XX mosaicism and the ascending aorta diameters. The only linear statistical correlationwas found between the age of the patients and ASI(p 0,56).

Conclusions: We did not prove the higher prevalence of risk factors for aortic dissection in women with low-level 45,X/46,XX mosaicism without any noticeable features but infertility.

P11.04

Novel automatic coupled ellipse fitting tool for fetal arm adipose tissue quantification in 2D ultrasound images across gestation

S. Rueda[2], C.L. Knight[1,2], J.A. Noble[2], A.T. Papageorghiou[2]

[1]*Nuffield Department of Obstetrics & Gynaecology, University of Oxford, Oxford, United Kingdom;* [2]*Institute of Biomedical Engineering, Department of Engineering Science, University of Oxford, Oxford, United Kingdom*

Objectives: To evaluate a new clinical tool to automatically approximate by two ellipses the fetal arm adipose tissue area in a transverse section at mid-humeral level on 2D ultrasound images across a range of gestational ages.

Methods: Fetal arm adipose tissue was automatically measured on 15 cross-sectional ultrasound images at mid-humeral level from optimally healthy fetuses between 21 and 31 weeks of gestation using a novel image analysis measurement tool (Rueda et al. IEEE ISBI 2013). The measurement tool is based on fitting two ellipses simultaneously to the inner and outer boundaries of the adipose tissue layer. The tool is based on structural and oriented edge information to delineate the tissue boundaries and guide the fitting. The final estimation of the adipose tissue layer is obtained from the area between both fitted ellipses.

Results: The new methodology was compared to manual delineations, measured twice by the same clinical expert on each of the 15 images. The differences between between automatic and the average manual measurements were assessed using a Bland-Altman plot obtaining a mean of -1.86 mm^2 and a standard deviation of 40.46 mm^2.

Conclusions: Good correlation of the automatic method with respect to manual delineations was observed across gestation. This method has the potential as an automated quantitative tool for assessment of fetal arm fat thickness.

Supporting information can be found in the online version of this abstract