



Center For Advanced Fetal Care Newsletter

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Transcendence...

...Aspiration. Inspiration. **Illumination**. It is what keeps one alive and gives purpose and meaning to a hopeful impactful existence... And how applicable that is to our world today where with our technological advances we are transcending all boundaries, converging collective consciousness, maximizing efforts across disciplines, challenging handed-down traditions and dogmas and getting closer to unraveling the secrets of our unknown. This is quite evident in Sklansky's bold suggestion that we **abandon the handshake** in the hospital setting and replace it with another of a multitude of worldly-utilized gestures in an attempt to curtail nosocomial infections. It is evident in the recent breakthrough in the diagnosis of **neuroleptospirosis** by next-generation sequencing where traditional testing failed. It is evident in the audacious work at the unique **floating lab** of the University of Florida (UF) dedicated to decoding the genomic blueprint of the "aliens of the sea" who have unique regenerating powers but who are fragile marine animals and quite difficult to preserve. By transferring the lab to sea, genetic data is collected on site and transferred via satellite to UF's supercomputer for analysis. This pioneering work has uncovered genetic information on over 22 organisms in the ultimate quest for tissue regeneration. With the complementary role of art to science, it is quite evident in the recent decision just taken by the **Metropolitan Museum of Art** to make over 400000 of the masters' **artwork** available 'open access' to humankind in cyberspace. Inevitably, the time shall come when our collective consciousness shall be unified and compiled as one in the ultimate leap for mankind, one that was brilliantly yet terrifyingly portrayed in the movie '**Transcendence**'. As such, we have dedicated this issue to transcendence, bringing you highlights from the **Fetal Medicine Foundation's** World Congress which rose yet again above all standards and expectations. We present to you Nicolaides' latest webinar on cell free DNA. We present to you **ISUOG's** latest consensus statement on NIPT and an update on their most recent and upcoming educational activities. In addition to our usual features, we share with you thoughts on transcendence by the brilliant O. Sacks, MD hoping for a future where humans overcome all differences and peacefully unite in aspiring for sublime **transcendence**...



Transcendence - Harmonia by J. Rentzel

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High Macrosomia Rate in Healthy Fetuses with an Enlarged NT

A recent study by Timmerman et al was just published in **Prenatal Diagnosis** in which the association between first trimester NT, biochemical markers (namely free BHCG and PAPP-A) and birth weight in healthy fetuses was assessed in order to evaluate the ability of these first trimester variables in predicting macrosomia. This retrospective study's population constituted of 6503 term infants with no structural or chromosomal abnormalities who were live born to non-diabetic mothers. Macrosomia was defined as birth weight \geq 95th centile. Multivariate analysis demonstrated that there was a positive correlation between birth weight centiles and NT MoMs, PAPP-A MoMs and maternal BMI. In addition, there was a negative correlation with maternal smoking. In 4.8% of fetuses in this study, the NT was \geq 95th centile. Even though the association between an NT $<$ 95th centile and NT \geq 95th centile did not reach statistical significance, it was more common to have a birth weight $>$ 95th centile when the NT was \geq 95th centile (11% versus 7%). In addition, there was a statistically significant trend towards macrosomia when PAPP-A was \geq 95th centile (P 0.007). The authors conclude that NT and PAPP-A MoMs are significantly related to macrosomia.



ISUOG Consensus Statement on NIPT

With the widening availability of NIPT and its incorporation into routine practice, **ISUOG** issued a recent free open access **consensus statement** addressing the impact of NIPT on routine prenatal ultrasound. The statement stresses the importance of proper counseling and of a first trimester scan (FTS) regardless of the patient's plans to undergo NIPT. Following a normal FTS, the patient may be managed according to risk, invasive testing may be offered based on background risk, or NIPT may be offered as a first line modality. The statement indicates that confirmatory invasive testing is required in case of a positive NIPT and cautions against using NIPT to replace invasive testing in women found to be at very high risk (\geq 1/10) based on combined screening in the absence of a sonographic abnormality. The statement cautions against configuring a FTS risk on a patient who has already undergone NIPT. If a patient has had a normal NIPT and sonographic abnormalities are subsequently detected, the normal NIPT should not modify the indication to offer the patient invasive testing with microarray testing as clinically indicated. The statement concludes with the urgent need for prospective publicly-funded studies to assess the cost effectiveness of the various screening modalities.



Highlights from the Fetal Medicine Foundation's 13th World Congress Held in Nice, France from June 29 - July 3, 2014

Another trend-setting transcendent **Nicolaides Congress** took place in magnificent sunflower-filled sunny Nice with over 2000 delegates from 84 countries glued to their seats 12 hours a day! The congress commenced with the Eurofoetus meeting where the latest trends in fetal surgery were presented. And what was unique this year is that each session commenced with a presentation on the genetics of each disorder, highlighting the complicated weave. The first session was dedicated to twins where all aspects, from epigenetics, to the ideal cutoffs for discordance, to various complications in twins and their management were covered by world-leaders in the field. Professor Prayer from Austria transferred us well into the future discussing MRI for the assessment of fetal brain function and its up and coming role where it is of clear superiority to other imaging modalities. Then there was Benoit who took us on a visual journey of early fetal development from 5 to 13 weeks of gestation shedding light on the developing human fetus while employing the most sophisticated sonographic techniques. Perhaps one of the most interesting boldest approaches was a novel technique presented by Professor Pedreira from Brazil who discussed preliminary promising results on a minimally invasive in utero closure of myelomeningocele. The novel procedure using mesh holds great promise and potential in reversing hindbrain herniation.

Another most memorable presenter was Professor Flake who passionately presented the results of in utero stem cell therapy and the impressive response achieved with SCID. As usual, the outstanding Jani team presented their exemplary work on screening for preeclampsia, NIPT and the role of MRI in cases of CMV. The Barcelona team, and particularly Dr. Sanz-Cortes, presented such superbly conducted research on brain remodeling and altered brain metabolism in cases of fetal growth restriction and congenital heart disease. Last but not least, Professor Lombardi from Italy presented his awe-inspiring work utilizing micro-CT for the postmortem examination of fetal hearts in early gestation. The images and details of the tiniest of hearts were unlike anything we have ever seen, reminding us of the exciting future that awaits us.

Lebanon was again well represented this year with an oral presentation and 7 poster presentations the result of the collaborative work of Abu-Rustum RS, Abu-Rustum SE, Daou L, Fakih C, Kesrouani AK, Nasr B, Shalhoub E and Ziade MF. The countdown has started for next year's congress which shall be quite intense and unique being a joint congress between the **FMF**, Eurofoetus and the **International Fetal Medicine and Surgery Society**.



Benoit on Early Human Development



Promenade Des Anglais

Highlights from ISUOG's Educational Activities Recently Carried out in May and June of 2014 in London, UK and in Sydney, Australia

In May, **ISUOG** held its first hands-on, specialist workshop in its new Education Space in London. The interactive course on **3D/4D fetal echocardiography** using 4D software, directed by Professor Rabih Chaoui, was a huge success so much so that the course had to be run twice to accommodate all the delegates who wanted to attend. The feedback received from the course was excellent and all delegates were provided with a laptop to experience GE Healthcare's '4D View' software and learn how to use the various 3D tools from STIC to static VCI to more advanced features such as TUI, VCI and rendering. Later on, in June, ISUOG's Early Pregnancy course series returned with two popular two-day courses. The first course was carried out in London called '**Early Pregnancy and Infertility**' and it was directed by Professor Tom Bourne and covered topics on diagnosis and prediction of miscarriage and as well as patient care and counselling. The second day of this course, which featured presentations from Professor Nick Raine-Fenning and other leading speakers, covered topics around reproductive medicine and new treatments for infertility.

The second gynecology course '**Early Pregnancy Scanning and Sonovaginography to Detect Endometriosis**' was held in Sydney, Australia and was directed by Professor George Condous. The first day focused on ultrasound evaluation in early pregnancy complications, while the second day focused on ultrasound evaluation of deep infiltrating endometriosis.

ISUOG is looking forward to running three **pre-congress courses** in Barcelona, this September, as well as an '**Ultrasound Plus**' course back in the London Education Space at the end of October. More information about all of these courses can be found at **ISUOG Events**.



www.isuog.org

Highlights from the Fetal Cardiac Symposium at Rush University in Chicago Held June 5-6, 2014. By Karim Diab, MD

The **Rush Center for Congenital Heart Disease (CHD)** at Rush University Medical Center launched its first national conference focusing on fetal cardiology on June 5-6. With its warm summer, Chicago was a perfect location for bringing together experts in the field of fetal cardiology to the Midwest! As the national prenatal detection rate of cardiac defects continues to be suboptimal, the main goal of the conference was to help improve the status of prenatal diagnosis of CHD both at the local and national levels. The **symposium**, in its first year of launching, was a tremendous success and was sold-out with an audience of 160 registrants who came from 32 different countries and states within the USA including countries such as Canada, Brazil, Egypt, Costa Rica, South Africa, India and Saudi Arabia. Although more than 50% of the attendees were physicians, there were about 40% sonographers attending the meeting, likely reflecting the attractiveness of hands-on workshops. The attendees came from various specialties including Pediatric Cardiology, OB and MFM, Neonatology and Radiology. The conference featured a two-day meeting that offered thorough presentations on scanning the fetal heart and diagnosing and managing various fetal CHD malformations. Lectures, given by an internationally acclaimed faculty in Pediatric Cardiology and MFM specialists, emphasized the basics of fetal cardiac scanning coupled with live case demonstrations. There was intensive focus on anomalies of the four-chamber and outflow-tracts views. In addition, the symposium featured a unique two-hour workshop on both days of the meeting which gave the attendees a unique opportunity to scan pregnant volunteers with both normal hearts and cardiac pathology. The symposium included a special session focusing on fetal cardiac and non-cardiac interventions including fetal aortic valvuloplasty and atrial septostomy and current in utero therapy for Twin-Twin Transfusion syndrome. Additional sessions focused on evaluation of fetal cardiac function, the use of 3D cardiac imaging, family counseling and an interesting talk on stem cell tissue engineering for repair of CHD.

Given the recent updates and revisions to the North American guidelines for fetal anatomic ultrasound screening during the second trimester and their focus on cardiac screening, the need for such annual fetal symposia in different regions is a must without any doubt! Keep an eye out for next year's meeting as the registration sold out more than a month in advance this year!! For more information, you can reach **Dr. Diab** or you can visit the symposium **website**.



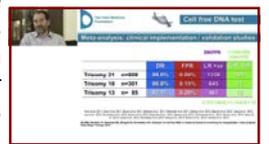
A Full House!



Hands-On Scanning with Karim Diab, MD

CFAFC Recommends Nicolaides on 'Evolution from Maternal Age to cfDNA Testing'

In his most recent June **webinar**, professor Nicolaides discusses the evolution of screening over the past 45 years starting with the 1970's where maternal age was the main consideration for screening, bringing us to today with the introduction of cfDNA in maternal blood. The webinar presents the history of screening where in the 1970's the detection rate of Trisomy 21 was 30% using maternal age alone. In the 1980's, and with the addition of various biochemical metabolites, the detection rate improved reaching 60-70% using various biochemical combinations. In the 1990's, the NT was introduced shifting screening into the first trimester with a detection rate of 75-80%. In the early 2000's, first trimester biochemical markers were introduced which when combined with the NT brought the detection rate to over 90%. Subsequently with the introduction of other first trimester sonographic markers, the detection rate of the 'combined test plus' approached 97% at a false positive rate of 3%. Professor Nicolaides also addresses first trimester screening in twins and stresses the additional benefits of first trimester screening which have led to a shift from second trimester diagnosis to first trimester diagnosis of aneuploidies as well as major structural fetal abnormalities (inclusive of congenital heart defects), and the ability to reassure families early on in gestation as to the well-being of their fetuses. The various sonographic as well as biochemical markers in case of trisomy 21, 18 and 13 as well as triploidy and monosomy X are presented. In addition, the role of the combined test is discussed in the detection of severe fetal growth restriction, preeclampsia as well as in utero fetal demise. Subsequently Professor Nicolaides presents an extensive explanation of cfDNA testing; from the technique, to the importance of fetal fraction and its effect on the detection rates, to the superior sensitivity of cfDNA testing to all other screening modalities. The sensitivity of cfDNA for Trisomy 21 is >99% at a false positive rate of 0.08% from a pooled analysis of 18 studies. Professor Nicolaides stresses that this is a screening NOT a diagnostic test. **CFAFC** highly recommends this webinar to all who are involved in prenatal diagnosis.



THIS AND THAT

Upcoming ISUOG



ISUOG is holding its **World Congress** September 14-17, 2014 in Barcelona, Spain with an intense pre-congress and convention program planned. Three pre-congresses are planned for September 13: fetal echocardiography, updates in prenatal diagnosis and ultrasound in the assessment of gynecological cancer. For more details on the final congress program and for registration information, please visit the **congress website**.

AIUM/WFUMB Abstract Submission



The **AIUM** is planning its annual convention in Orlando March 21-25, 2015. This year the AIUM is hosting **WFUMB** in a unique international convention with participants from around the globe where presenters have the opportunity to share their research with a unique crowd. Abstract submission is now open through September 25 at the **AIUM website**.

Upcoming UCLA Course



The **4th Annual Fetal Echocardiography Symposium** is being planned at **UCLA** on October 18, 2014. This year's symposium promises to build on the success of its predecessors and has a comprehensive program put together by Professor Mark Sklansky addressing all aspects of fetal echocardiography: from guidelines and basic approaches, to image optimization, to first trimester fetal echocardiography, to presentation of various anomalies and hands-on scanning. For more information, check out the **symposium brochure**.

Upcoming LSOG



Mark your calendars for the upcoming Annual International Congress of the **Lebanese Society of Obstetrics & Gynecology** November 13-15, 2014 in Beirut - Lebanon. This year the congress will host the 2nd **Ian Donald** Ultrasound Course and has varied pre-congress workshops and an exciting congress program planned. For information on abstract submission and registration visit the **LSOG website**.

CFAFC News



CFAFC's Reem S. Abu-Rustum participated in the **13th World Congress** of the **FMF** in Nice where she had an oral presentation and 3 poster presentations the result of collaboration with Drs. Abu-Rustum, Daou, Kesrouani and Ziade. She also had a case report published in the June issue of **Neonatology Today**, set to appear in **Congenital Cardiology Today** in September, entitled '**Prenatal Diagnosis of Restrictive Foramen Ovale**'.

Hot-Off-The-Press: Simplified First Trimester Fetal Cardiac Screening in a Low Risk Population. Orlandi et al 2014

Orlandi et al recently published their experience in **Prenatal Diagnosis** on fetal echocardiography in the first trimester. In their prospective study, the authors aimed at early prenatal detection of CHD (congenital heart disease) by evaluating the four chamber view (4CV) and outflow tracts (OFT) with color Doppler. After excluding cases lost to follow up (n=790) and cases on whom the cardiac exam was not feasible (n=141), 4030 cases at 11-14 weeks were included in the study. The patients were all scanned by experienced sonographers using the transabdominal route where neonatal outcome at 6 and 12 months was available on all fetuses. Transvaginal scanning was employed when the image was unsatisfactory. The cohort included 32 cases of CHD (0.8%): 20 major (lethal, requiring surgery or interventional catheterization in the first year of life) and 12 minor (asymptomatic). Using their simplified method of determining fetal situs, 4CV and OFT, the authors were able to detect 90% of the major cases and 42% of the minor cases at 11-14 weeks. There were 2 remaining cases detected in the second trimester and only 1 major (coarctation of the aorta) and 1 minor case (VSD) detected after birth. The authors conclude that using a simplified protocol is an effective screening modality for CHD at 11-14 weeks in order to provide early reassurance to families who have a prior affected child and to allow ample time for proper counselling in case of pathological findings.



4 Chamber View



3 Vessel View



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CFAFC would like to thank Drs. Karim Diab, Faysal El Kak, Assaad Kesrouani, Mark Sklansky and ISUOG Secretariat for their contributions.

**"Imagination is more important
than knowledge."
A. Einstein**

For any interesting case reports, comments, suggestions or announcements to be included in our newsletter, please send an e-mail to rar@cfafc.org.

Oliver Sacks, MD on Transcendence

"To live on a day-to-day basis is insufficient for human beings; we need to transcend, transport, escape; we need meaning, understanding, and explanation; we need to see over-all patterns in our lives. We need hope, the sense of a future. And we need freedom (or, at least, the illusion of freedom) to get beyond ourselves, whether with telescopes and microscopes and our ever-burgeoning technology, or in states of mind that allow us to travel to other worlds, to rise above our immediate surroundings.

We may seek, too, a relaxing of inhibitions that makes it easier to bond with each other, or transports that make our consciousness of time and mortality easier to bear. We seek a holiday from our inner and outer restrictions, a more intense sense of the here and now, the beauty and value of the world we live in".

Sacks on transcendence.



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Upcoming Congresses

COURSE TITLE	DATES	LOCATION	WEBSITE ADDRESS
5th Annual Fetal Echocardiography: Normal and Abnormal Hearts	Sept 4 - 6, 2014	Las Vegas, NV	www.edusymp.com/product/brochure/708
24th World Congress on Ultrasound in Obstetrics and Gynecology	Sept 14 - 17, 2014	Barcelona, Spain	www.isuog.org/WorldCongress/2014/
Mediterranean Society of Ultrasound in Obstetrics and Gynecology	Oct 9 - 12, 2014	Antalya, Turkey	www.ultrasound2014.org
Advanced Sonography Symposium in Obstetrics and Gynecology	Oct 10 - 12, 2014	Boston, MA	www.radcmeharvard.edu/PDF/Advanced_Sonography_14_large.pdf
3rd World Congress on Ultrasound in Medical Education	Oct 11 - 12, 2014	Portland, OR	www.wcume.org
4th Fetal Echocardiography Symposium at UCLA	Oct 18, 2014	Los Angeles, CA	www.cme.ucla.edu/courses/event-description?event_id=2206515
ISUOG's Ultrasound Plus: Thorax, Neck & Diaphragm Anomalies - The Whole Picture	Oct 31 - Nov 1, 2014	London, UK	www.isuog.org/Events/ISUOG+Organised+courses/2014_April_Ultrasound+plus.htm
Prenatal Diagnostics	Nov 5 - 7, 2014	Boston, MA	www.healthtech.com/prenatal-diagnostics/
Annual Congress of the Lebanese Society of Obstetrics and Gynecology	Nov 13 - 15, 2014	Beirut, Lebanon	www.lsog.org.lb
International Congress on Twin Studies	Nov 16 - 19, 2014	Budapest, Hungary	www.etchouches.com/ehome/77754