



Center For Advanced Fetal Care Newsletter

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INSIDE THIS ISSUE

Back to the Future...	1
Cognitive Catch-Up in SGA	1
Isolated Echogenic Bowel	1
FMF Advanced Course	2
IAPM and CNGOF	2
2013 Year of Ultrasound	2
CFAFC Recommends: MRI	3
Upcoming AIUM	3
Abstract Submission	3
CFAFC News	3
Recommended App	3
Regional Meeting LOP	3
Hot-Off-The-Press	3
Update on SANA NGO	4
Upcoming Courses	4

Back to the Future...

2013 has started off on such a high note: from the rapidly spreading global availability of non-invasive prenatal testing with all the reassurance and early certainty that it entails (now available in Lebanon), to the campaign 'YOU: 2013 Year of Ultrasound' dedicated to enhancing medical education at the earliest of stages through the introduction of a portable safe and effective imaging modality, there is so much to be done, so much to learn, so much to try and stay abreast with, and such a responsibility in order to ensure proper implementation and in-depth education for both patients and providers...With this issue, we celebrate CFAFC's 3rd birthday and we are so looking forward to a most exciting future. We have thus dedicated this issue to the "future" with all that is yet to be, from providing reassurance to families with severely growth restricted fetuses as to the cognitive outcome of their fetuses (page 1), to highlights from the Fetal Medicine Foundation's course on 'Advances in Fetal Medicine' (page 2), to a special new quarterly report that shall run throughout 2013 on YOU, the first coming from the University of Central Florida (page 2), to the up-and-coming role of fetal MRI (page 3), to the newly released guidelines by ISUOG on first trimester ultrasound scanning (page 3). In addition to our usual quarterly features, we share with you the accomplishments of SANA Medical NGO for the year 2012, on both the educational and medical fronts, and shed light on all that is planned for the upcoming year 2013 (page 4). And as such, we close by taking you "back to the future", from the cold-harshness of the midst of winter, into the warmth of the sun at the heart of 'summer', by visiting the masters of our past, who ever so brilliantly depict the restless intense energy of the promising future in *their work and art...*



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Cognitive Catch-Up Growth in Severe Small for Gestational Age (SGA)

Major neurologic sequelae and cognitive function are a concern for SGA fetuses. As such, a recent study from Paulson et al, the "Editor's Choice" in the Grey Journal in August 2012 (Am J Obstet Gynecol 2012; 207: 119.e1-5), specifically addresses the SGA fetus' cognitive function. In this study, the authors compared the cognitive function at 9 months of age and kindergarten (age 2 years) for 3633 fetuses of whom 16% had a birthweight at < 3% versus those 84% whose birthweight was ≥ 3%. Though at 9 month of age, the SGA fetuses demonstrated a 12 percentile points lower than their counterparts on the Bayley Scales of Infant Development (P<0.01), there was no further statistically significant difference at age 2 (P=.668). In addition, there was no statistically significant difference in their pre-school performance at age 3.5 years in neither math (p=.880) nor in reading (P=.245). The authors conclude that SGA fetuses exhibit catch-up cognitive functioning by age 2 years, a most reassuring point for medical providers to share with affected families.

Outcome of Fetuses with Isolated Echogenic Bowel (EB)

EB is a marker for aneuploidy, and may signify underlying fetal infection (FI) or cystic fibrosis (CF). When isolated, the work-up and management remain a challenge. And now, 10 years after the report of Kesrouani et al (Fetal Diagn Ther 2003; 18: 240-246), comes another retrospective study, covering a 14 year period, conducted by Mailath-Pokorny et al on 97 fetuses with isolated EB and normal karyotype (Prenatal Diagnosis 2012; 32: 1295-1299) in an attempt to determine whether these fetuses are at an increased risk of adverse outcome in comparison to 400 fetuses without EB. The incidence of isolated EB was 0.8%. Of the fetuses with isolated EB, 82.5% were healthy live births, 6.2% had FI and 4.4% had CF. In addition, there was a statistically significant difference between the EB fetuses versus the controls in terms of intrauterine fetal demise, 8.9% versus 0.5% (P≤0.001), and intrauterine growth restriction, 9.9% versus 1.3% (P≤0.001). The authors conclude that isolated EB is a risk factor for adverse pregnancy outcome and proper counseling and management are necessary in these isolated cases.



Special Highlights from the Fetal Medicine Foundation's 'Advances in Fetal Medicine' Course, Held 1-2 December 2012, in London - UK

From the mastermind behind the NT, on the 20th anniversary of the NT, came a most futuristic 2-day course: 'Advances in Fetal Medicine'. The course was attended by over 800 delegates from 70 countries, where over the course of two full days, a novel format was implemented in which the first day was carried out in the usual intense, challenging, didactic format, typical of Professor Nicolaides. However the second day was carried out in a novel format where challenging case-presentations, covering all fetal organ systems, were presented throughout the day, in an interactive format with the audience, by Berg, Geipel, Kagan and Molina.

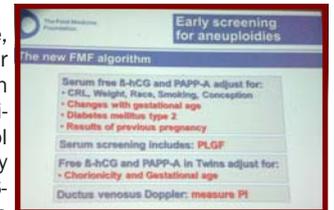
One cannot but be in awe of Nicolaides who on the 20th anniversary of his NT, boldly stood in front of his audience, citing non-invasive prenatal testing (NIPT) as the most brilliant accomplishment yet, and stating that it is far superior to the sensitivity of the NT with a much lower false positive rate. He presented the latest data on its applicability in the low risk population where on 2049 low risk patients presenting for routine screening, the detection rate for trisomy 21 was 8/8, trisomy 18 2/2 and all 1939 euploid fetuses were confirmed as such (Am J Obstet Gynecol 2012; 207: 374.e1-6). He stressed the importance of having an adequate fetal fraction which is directly affected by the placental mass and indirectly affected by maternal body mass index (Ultrasound Obstet Gynecol 2013; 41: 26-32). Professor Nicolaides clearly stated that he hopes that governmental bodies, the world over, would come to recognize the importance of NIPT as a first line screening modality to be made available to all women, hoping that it shall be implemented in a far more expedient manner than it took for NT implementation.

Other highlights from Professor Nicolaides included the new first trimester algorithm incorporating the maternal status for diabetes mellitus type 2, PLGF as a first trimester biochemical marker, adjustment for first trimester free B-HCG and PAPP-A based on chorionicity and gestational age of twins, as well as the incorporation of ductus venosus pulsatility index. Professor Nicolaides also introduced the newly revisited second trimester markers for aneuploidy, based on a recently published meta-analysis of 47 studies between 1995-2012 (Ultrasound Obstet Gynecol 2013 ePub ahead of print) in which the most important sonographic markers, with the highest positive likelihood ratios (+LR), if present alone, are ventriculomegaly (+LR 25.8), absent or hypoplastic nasal bone (+LR 23.3), aberrant right subclavian artery (+LR 21.5) and an increased nuchal fold (+LR 19.2). On the other hand, if there are absolutely no second trimester sonographic markers, then there is a 7.7 fold reduction in background risk (LR 0.13).

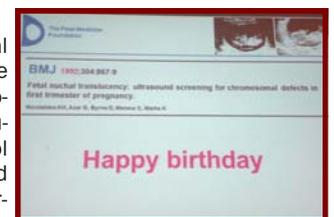
Other outstanding presentation were by Professor Jani on MRI in Obstetrics and Professor Ville on congenital infections. And at the completion of an enlightening 2 days, the attendees were left with the greatest anticipation for the upcoming FMF Annual congress to be held in Marbella – Spain June 23-27, 2013. Details on abstract submission and registration can be found at: www.fetalmedicine.com/fmf/courses-congress/conferences/



Nicolaides Dec 2012



New FMF Algorithm



Happy 20th NT!!

Proceedings of the International Academy of Perinatal Medicine Held 7 December 2012 in Paris - France. By Assaad Kesrouani, MD

On December 7th the proceedings of the International Academy of Perinatal Medicine were held as part of the 36th annual meeting of the French college of Ob-Gyn, CNGOF. Several world-renowned speakers, including Professors Chervenak, Dommergues, Nicolaides, Romero, Tsatsaris, Ville, among many others, discussed and shared their expertise and insightfulness on some of the most challenging topics in maternal fetal medicine. The main theme for the proceedings was maternal fetal conflict of interest, and the speakers explored several aspects pertaining to such ethical issues as ethics of fetal surgery, selective reduction in multiple gestations, management of congenital diaphragmatic hernia, timing of delivery in cases of intraamniotic infection, cancer and pregnancy primarily with respect to therapeutic choices, maternal heart conditions etc...One particularly interesting talk was presented by Salim Aractingi of the Institut National de la Santé et de la Recherche Médicale (INSERM) who discussed his research on the delayed consequences of microchimerism in pregnancy. This up and coming area of maternal fetal medicine addresses the long term implications of microchimerism, the prolonged transfer of fetal cells to the mother, and its potential negative consequences on the incidence of maternal autoimmune diseases and certain types of neoplasms such as melanoma, as well as its positive implications in healing and in terms of maternal recovery post myocardial infarcts. For further details, proceedings and summaries, from the speakers on all the main covered topics are available for download at: www.cngof.asso.fr/D_TELE/2012_AIPM.pdf



Featuring '2013: The Year of Ultrasound'. A Special Report from the University of Central Florida. By Cendan J, Bellew C, Hernandez C, Tirado A and Payer A.



The University of Central Florida College of Medicine is about to graduate its inaugural class and the curriculum is already under revision! The advent of truly portable ultrasound (US) and the rapid assimilation of US in post graduate curricula led us to believe that US training could and should be integrated into the undergraduate program. Our anatomy and clinical exam core faculty discussed a possible plan and conferred with Dr. Richard Hoppmann regarding a workable introductory strategy. We report the successful development and delivery of a sequence of US sessions held synchronously with the relevant anatomic dissection and clinical examinations. For example, when the students are working on the abdominal cadaveric dissection, they are concurrently exposed to the abdominal US exam (with each other as models) and the complete abdominal examination (with standardized patients as models). The students literally wash up from their cadaver dissections and move one floor down in the education building where they develop their US skills in groups of 4 students (1 faculty member assists 2 student groups) and work on their standard examination skills.

US curricular integration is complete for the first year students; the focus has been on identification of critical anatomic landmarks with US, orientation and introductory comfort with the devices. The students report high satisfaction with comments emphasizing the integration and knowledge synthesis effects of learning in the three modalities. The second year clinical examination course is already integrated with other modules; to this we plan to add curriculum incorporating abnormal US simulation.



CF AFC's Technical Recommendation: Fetal MRI by Doris Elia, MD

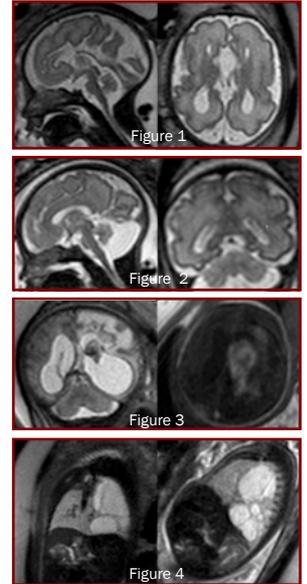
Ultrasonography is the first line imaging modality for evaluating the fetus. This has been a direct result of its ever improving resolution, ability to evaluate in real time, its cost-effectiveness and safety. There are however limitations to fetal sonography primarily related to poor soft tissue contrast and a suboptimal image in obese patients or in cases of oligohydramnios. In addition, there is limited visualization of certain brain structures, particularly the posterior fossa, beyond 33 weeks of gestation. This may lead to inconclusive sonographic findings that may directly prohibit proper management.

The use of MRI for the evaluation of the fetus has been on the rise, however that has considerable limitations mainly related to the availability of skilled radiologists with expertise in the fetus, availability of MRI's, tremendous cost, in addition to limitations in the first and second trimesters. Nonetheless, it has been used to evaluate fetal abnormalities primarily in the central nervous system, gastrointestinal tract, genitourinary tract and the fetal chest. It is believed to be of additive value to ultrasound in roughly 6% of cases (Jani oral communication FMF Dec 2012).

In the brain, MRI may help differentiate complete from partial agenesis of the corpus callosum (Figure 1 is agenesis of the corpus callosum at 32 weeks), it may be of value in cases of midline pathology, ventriculomegaly, malformations of the posterior fossa especially in the evaluation of the vermis (Figure 2 is a mega cisterna magna with a normal vermis at 32 weeks), cases of Dandy-Walker malformation, ischemic changes (Figure 3 is parenchymal ischemia and hemorrhage at 28 weeks), migrational disorders and abnormalities of myelination.

Fetal MRI may help identify the different parts of the bowel hence enabling the localization of a bowel obstruction as well as intraabdominal tumors, and ascertaining renal agenesis in the challenging cases where anhydramnios limits the sonographic evaluation. Fetal MRI has had an extensive role in case of diaphragmatic hernia for the calculation of lung and herniated liver volume, as well as in diagnosing atypical intrathoracic masses (Figure 4 is an intrathoracic cystic adenomatoid malformation of the lung at 33 weeks). In addition, fetal MRI helps characterize neck lesions and aids in mapping out their location with respect to the airway and major neck vessels.

Ultrasound remains the imaging modality of choice for the developing fetus however, in challenging cases with clear indications, and with the availability of the able radiologist, MRI may prove to be of added value and this may translate into better management plans and eventually, improved fetal outcomes.



THIS AND THAT

Upcoming AIUM Annual Convention

The AIUM is set to hold its Annual Convention in New York April 6-10, 2013. The meeting is most comprehensive with an exciting program planned bringing together attendees from various disciplines all of whom are involved in sonography. There will be a full day pre-convention course on ultrasound in medical education, a special session addressing the role of ultrasound in global health, in addition to ultrasound's role as the first-line imaging modality for various medical conditions. For more information visit: www.aium.org/cme/events/ann2013/ann2013.asp



Abstract Submission for ISUOG 2013

The Annual Congress for ISUOG will be held in Sydney, Australia October 6-9, 2013. Abstract submission is now open through May 6. For further details on submitting an abstract and registering for the congress, please visit: <http://www.isuog.org/WorldCongress/2013/>



CF AFC News: NIPT Now Available in Lebanon

It is with much excitement that we announce the availability of NIPT (non-invasive prenatal testing), utilizing cell-free fetal DNA in maternal blood, through the Center For Advanced Fetal Care in Tripoli. This latest of technologies makes available, to select high risk patients, safe and effective non-invasive testing for trisomies 21, 18 and 13, starting at 10 weeks of gestation, with sensitivities of >99% for trisomy 21 and >97% for trisomy 18 at a false positive rate of less than 0.1%. For additional information, please send an e-mail to nipt@cfafc.org



CF AFC's Recommended App

Medline can now be personalized and carried on any digital device with the latest app, 'unbound MEDLINE', available for free at the App Store.



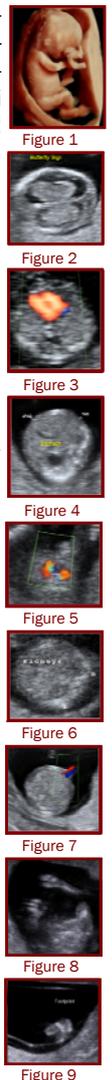
Meeting of The Lebanese Order of Physicians

The Lebanese Order of Physicians in Tripoli is planning its 9th Annual Congress on February 21-23 at the Safadi Center in Tripoli. The theme of this year's meeting is "Novel Diagnostic and Therapeutic Modalities" where a team of international and local speakers will present the latest advances. Saturday, February 23, will be dedicated to Ob/Gyn and such topics as management of twin gestations, major brain and spine pathologies, the fetal heart, first trimester ultrasound, MRI in Obstetrics, stem cell therapy as well as fetal therapy will be covered. For more information, please contact Dr. Roland Tannous, the Congress President, at tpc2020@gmail.com



Hot-Off-The-Press ISUOG Practice Guidelines: Performance of First Trimester Fetal Ultrasound Scan. Salomon LJ et al 2013

The ISUOG Clinical Standards Committee has just released its Practice Guideline for the performance of ultrasound in the first trimester (Salomon LJ, Alfrevic Z, Timor-Tritsch I, Seshadri S, Papageorgiou AT, Tabor A, Chalouhi GE, Toi A, Yeo G, Bilardo C, Raine-Fenning NJ. UOG 2013; 41: 102-113). The guideline provides an extensive overview as to the purpose of first trimester ultrasound scan (FTS), when it should be performed, who should perform it, what equipment is required, how should the scan be documented, its safety, its limitations as well as management in case of multiple gestations. ISUOG recommends ascertaining the presence of an intrauterine gestation with cardiac activity, measuring the CRL to confirm menstrual dates (Figure 1), keeping in mind errors due to hyperflexion at earlier gestations especially at 6-9 weeks. In addition, BPD and AC may be measured as well. Anatomically, ISUOG suggests 10 areas to be included as part of the fetal assessment at 11-13 weeks. 1- Head: presence, cranial bones, midline falx, choroid-plexus-filled ventricles (Figure 2). 2- Neck: normal appearance, nuchal translucency. 3- Face: eyes with lens, nasal bone, normal profile and mandible, intact lips. 4- Spine: axial and longitudinal views of the vertebrae with intact overlying skin. 5- Chest: symmetrical lung fields with no effusions or masses. 6- Heart: regular cardiac activity with 4 symmetrical cardiac chambers (Figure 3). 6- Abdomen: stomach in the left upper quadrant (Figure 4) with visible bladder (Figure 5) and kidneys (Figure 6). 7- Abdominal wall: normal cord insertion (Figure 7) with no umbilical defects. 8- Extremities: 4 limbs each with 3 segments and normal orientation of hands and feet (Figures 8,9). 9- Placenta: normal size and texture. 10- Cord: 3 vessel cord (Figure 5). In addition to evaluating fetal anatomy, ISUOG recommends first trimester screening for aneuploidy, by trained and certified operators, undergoing regular audits for quality control, by incorporating the criteria put forth by the Fetal Medicine Foundation (www.fetalmedicine.com) for measuring the nuchal translucency and other sonographic and biochemical markers for fetuses with a CRL of 48-84mm.





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CFAFC would like to thank Drs. Juan Cendan, Doris Elia, Assaad Kesrouani and Roland Tannous for their contributions to this issue.

CFAFC thanks the 2283 visitors, from 72 countries, for 3308 visits to its website in 2012!

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

Annual Update on SANA Medical NGO's Activities for 2012 and the Plans for 2013

2012 proved to be a most gratifying year for SANA where despite all the political turmoil and safety issues affecting SANA's most-frequented areas of North Lebanon, a total of 22 medical/educational missions were accomplished.

SANA provided complete antenatal care, inclusive of obstetrical sonography, to 208 expectant mothers (not counting patients seen during training), and nearly half as many additional patients received medical consultations. SANA served the neediest areas of North Lebanon in the Akkar Valley and the mountains of Dinnieh in collaboration with World Vision International (WVI), the Governmental Hospital of Seer Al Dinnieh as well as local charities and NGO's. In addition, in November, SANA partnered with Medecins Sans Frontiers (MSF) and has since carried out three medical missions with MSF providing prenatal care to Syrian refugees.

On the training front, at the end of August, SANA commenced the training of 12 Midwives and Obstetrical Nurses who are in charge at the Governmental Hospital of Seer Al Dinnieh where they perform two thirds of all deliveries without an obstetrician in attendance. So far 7 of 11 full training days have been completed and the trainees have completed the 6 Step approach to performing an obstetrical ultrasound exam in accordance with ISUOG Outreach Guidelines. The trainees have already put their newly-learnt skills to use by diagnosing twins, inutero demises among other conditions in their daily practice. SANA is now ready for the next phase, which will be a focused approach on each organ system covering both normal and abnormal anatomy. In addition, SANA has commenced training for the MSF staff in January 2013 and the first session has been completed which focused on the constituents of prenatal care. Plans are underway with WVI for training as well. More details and updates on SANA's activities are available at www.sanango.org from which there is a link to SANA's facebook page.

With many lessons learnt and obstacles overcome, SANA is looking forward to 2013, planning to expand its outreach and care, both on the medical and educational fronts. Last but not least, SANA extends its sincerest appreciation to ISUOG and ISUOG Outreach for all their guidance, and to all of SANA's partners and supporters without whom none of this would have been accomplished.



Seer Al Dinnieh



First Day of Scanning



2nd Day: Trainees Training!



Waiting to be seen by SANA

Upcoming Congresses

COURSE TITLE	DATES	LOCATION	WEBSITE ADDRESS
33rd Annual Meeting of the Society of Maternal Fetal Medicine	February 11-16, 2013	San Francisco, CA	www.smfm.org/Annual%20Meeting%20Page.cfm?ht=me
36th Annual Advanced Ultrasound Seminar: Ob/Gyn	February 14-16, 2013	Lake Buena Vista, FL	www.aium.org/cme/events/sem2013/sem2013.aspx
9th Annual Congress of the Lebanese Order of Physicians Tripoli	February 21-23, 2013	Tripoli - Lebanon	www.atebba.org
Advanced Sonographic Techniques for the Diagnosis of Congenital Anomalies & Fetal Echo	March 1-2, 2013	Berlin, Germany	www.isuog.org/Events/ISUOG+Organised+courses/
Annual Convention of the American Institute of Ultrasound in Medicine	April 6-10, 2013	New York, NY	www.aium.org/cme/events/ann2013/ann2013.aspx
9th International Symposium of ISUOG	April 11-14, 2013	Cartagena, Colombia	www.isuogcolombia.com
17th International Conference of the International Society of Prenatal Diagnosis	June 2-5, 2013	Lisbon, Portugal	www.ispdhome.org/2013/
Ultrasound Meets Magnetic Reasonance	June 4-8, 2013	Vienna, Austria	www.esmrn.wien2013.org
XI World Congress of Perinatal Medicine	June 19-22, 2013	Moscow, Russia	www.mcaevents.org/t/01/wcpm2013-1/index.aspx
12th World Congress in Fetal Medicine	June 23-27, 2013	Marbella, Spain	www.fetalmedicine.com/fmf/courses-congress/conferences/