Center For Advanced Fetal Care Newsletter

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INSIDE THIS ISSUE

Springing into Awareness…

The more living we are given, the more experience we gain, and the more we realize that we cannot change the givens, and yet the wiser we become about the givens and how we may prevent catastrophic consequences. And this holds ever so true in all aspects of our given lives: personal as well as professional, where emotion and passion are counter-balanced by wisdom and maturity that unite in clarifying our path, triggering our vigilant awareness, springing us into taking the necessary measures. As such, we dedicate our Spring issue to this "Springing into Awareness" in the hopes of shedding the light onto the evidence-based path. We present to you the need for nutritional counseling in bariatric surgery patients and how that may relate to spinal dysraphism. We present the need for caution in all patients with low placentation in anticipation of post partum hemorrhage. We present to you highlights from AIUM's record-breaking convention held in NY, which united the "passionate-about-ultrasound", and from ISUOG's course on advanced sonographic techniques held in Berlin. We also present this issue's featured selection for the "Year of Ultrasound" from Canada, a 3D technique for the evaluation of the first trimester fetus, the potential negative effects of a labor-free cesarean section on the developing immune system, in addition to our usual quarterly features. We hope that with this issue, we highlight the importance of wisdom-infused educated "awareness" in order to secure more "springers" away from harm and into tomorrow's more secure shelter of safety…

Neural Tube Defects Post Bariatric Surgery


Spinal Dysraphism

A research letter by Pelizzo et al (Prenatal Diagnosis 2013; 33: 196-197) sheds light on the need to raise awareness as to the need for providing nutritional counseling, prior to and after conception, to women who have undergone bariatric surgery. Pelizzo et al discuss the obesity epidemic and the ever increasing adoption of bariatric surgery in such cases. However, bariatric surgery utilizes restrictive malabsorptive procedures, and when these are performed on women of child-bearing age, there is a consequent rise in the number of pregnancies to women with malnutrition, namely protein and micronutrient deficiencies, such as essential minerals, trace elements as well as water and fat-soluble vitamins. Of primary concern are procedures that combine both a restrictive and a malabsorptive approach, as in the Roux en Y gastric by-pass, that leads to vitamin B12 deficiency which may result in fetal and neonatal gravid consequences with an increase in neural tube defects and delayed myelination or demyelination. Pelizzo et al report their experience with 3 such cases in patients who had low albumin and pre-albumin, vitamin B12 deficiency and anemia. Pelizzo et al conclude that it is crucial to properly counsel these women pre– and post– procedures, to offer them supplementation as recommended by ACOG 2005, in order to curtail these serious consequences.

Second Trimester Placental Location and Post Partum Hemorrhage


Placenta 0.78 cm from Int Os

Osmundson et al conducted a retrospective study (JUM 2013; 32: 631-636) on patients with a second trimester (18—23w6d) diagnosis of low placentation. Patients were divided into 3 groups: low lying placenta (0.1 - 2.5 cm away from the internal os), marginal previa (touching but not overlapping the internal os), and a complete previa (covering the internal os). The 410 patients with low placentation were at an increased risk for post partum hemorrhage (PPH) compared to the controls (12.4% versus 4.9%, P< .001), and the need for uterotonic agents was higher in them as well (11.0% versus 6.1%, P=.01), even if the low placentation were to resolve. The authors conclude that low placentation, though likely to resolve in 93% of cases, is an independent risk factor for PPH. As such, clinicians need to be on alert in order to take precautions and properly counsel this subgroup of patients.

Highlights from the AIUM's Record-Breaking Annual Convention Held at the Mariott Marquis, New York - NY, April 6-10, 2013

It proved to be the year of ultrasound (US) indeed, with a record-breaking attendance of over 1797 attendees at the 2013 Annual Convention of the AIUM. All of the tremendous efforts of the AIUM, with their recent launch of both the Ultrasound First campaign (www.ultrasoundfirst.org), and the 2013: Year of Ultrasound campaign (www.ultrasound2013.org) truly paid off. The 5 day congress was a huge success with cutting-edge sessions covering all areas of US in medicine: diagnostic and educational, both hospital and outreach-setting based. The uniting passion for US was palpable everywhere...

The convention commenced with a preconvention day of comprehensive courses on such topics as integrating ultrasound into medical education, first trimester ultrasound, fetal cardiac screening, medical student/resident hands-on course, pelvic floor disorders to name a few. Subsequently the convention's plenary session featured the inspiring William Magee Jr, DDS, MD, executive chairman and cofounder of Operation Smile (www.operationsmile.org), a worldwide charity committed to helping children all over the world with facial birth defects which has already provided over 2 million patient evaluations and 200000 free surgeries. The mood and pace for the convention where thus set at the highest possible standards.

The uniqueness of this convention is in its attendees who represent every imaginable discipline: physicians of all specialties, sonographers of all interests, students (medical and non-medical), physicists and all with an interest in ultrasound. As such, the level of interaction and exchange of ideas and expertise is unparalleled anywhere else, and likely to spark more and more future endeavors that shall serve to reinforce ultrasound as the leading diagnostic modality. CFAFC highly recommends visiting the AIUM at www.aium.org to take advantage of a unique web-learning experience and where several of the congresses tracts will be made available for viewing online. Mark your calendars for the 2014 AIUM Convention, March 29– April 2, in Las Vegas!

Highlights from ISUOG's Course on Fetal Echocardiography and Craniofacial Anomalies, Held in Berlin-Germany, March 1-2, 2013

With over 500 delegates from around the globe, ISUOG had to close bookings and unfortunately disappoint a few delegates on their waiting list. The advanced course on fetal echocardiography, held for the first time in Berlin, focused primarily on fetal echocardiography and craniofacial anomalies. During the two days of this intensive course, amazing sonographic images were presented by world experts such as Prof. Benoit, Carvalho, Chaoui, Paladini and Pilu, and left many in awe of the work that is being done, as well as the exciting future that is yet to be.

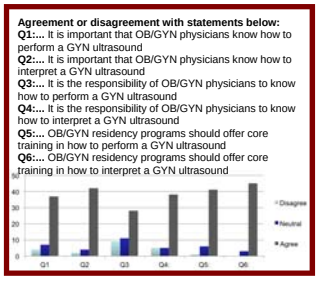
In addition to Dr. Carvalho's presentation of ISUOG's 2013 guidelines for evaluating the fetal heart, Prof. Chaoui presented the newest advanced trends in the evaluation of the fetal heart, as part of screening and raising awareness to the various new subtle sonographic signs, with a special focus on the area behind the heart, the aberrant right subclavian artery (a marker for trisomy 21) and the left brachiocephalic vein with its role in the prenatal diagnosis of anomalous pulmonary venous return. Prof. Benoit, ever the master of fetal imagery, presented the latest of 2D imaging modalities in obstetrics, and its role in evaluating the fetus, via the utilization of the high frequency linear probe. Prof. Kagan presented his latest work on the mandibulo-maxillary line in the evaluation of the fetal prefrontal space and how that may be of utility in cases of trisomy 21. In addition, he presented his work on the role of imaging the fetal conus medullaris for the evaluation of fetuses with spinal dysraphism and closed spina bifida.

Images with ISUOG Permission

CFAFC highly recommends this most informative course, which is now available for viewing online, to all who may be interested and are involved with advanced fetal sonography. By joining ISUOG, at any of its multi-tiered affordable membership, all lectures may be viewed online by clicking here: ISUOG Berlin Course 2013.

CFAFC's Quarterly Feature on 2013: the Year of Ultrasound from the University of Toronto: Needs Assessment in Gyn Ultrasound

A recent study carried out by Green, Kahan and Wong at the University of Toronto and presented in October 2012 at both the Wilson Center Research Day, and at the Education Scholar Program Graduation Ceremony at the University of Toronto, shed the light on the needs for a standardized approach to training in gynecological ultrasound.



Courtesy of Suzanne Wong, MD

The study was carried out via a needs assessment survey, in both English and French, that was mailed out to all residents enrolled in Ob/Gyn programs in Canada. Concurrently, a survey was sent out to members of the Society of Obstetricians and Gynecologists of Canada. The survey asked about the type of ultrasound education (didactic versus practical) and specific clinical skills that were taught. It also asked the residents and practicing physicians to rate, on a likert scale, their confidence in performing and interpreting both OB/GYN ultrasounds. The residents were asked about both Ob and Gyn ultrasound, while the practicing physicians were asked about GYN ultrasound skills. Finally it asked if they believe that more ultrasound training is needed in current Ob/Gyn residency programs.

A total of 82 residents and 339 practicing physicians completed the survey. Of the residents, 97% were female and there was an equal number of respondents from each of the five years of training. Responses were received from thirteen different residency programs across Canada. The survey reported 45% percent of Ob/Gyn programs have a formal curriculum in OB ultrasound versus 25% for GYN ultrasound. 83% of all residents reported they wanted more GYN ultrasound training during residency. Of the 339 practicing physicians completing the survey, 78% were OB/GYN physicians. Others included general practitioners, midwives, and radiologists. Responses were received from twelve provinces in Canada. Of the 339 responses, 83 people wrote additional comments regarding their strong feeling that were mostly in favour of more ultrasound education for OB/GYN physicians. 55% reported performing and interpreting GYN ultrasound in practice. 49% reported feeling confident in their abilities and 81% reported feeling that it is important to have a formalized curriculum in GYN ultrasound in Canadian residency programs. Both residents and practicing physicians agreed that performing and interpreting OB and GYN ultrasound are important skills in providing the best care to patients.

In conclusion, and based on the survey results, the authors conclude that it appears that OB ultrasound training is incorporated into many programs at varying degrees, however, there does appear to be minimal or absent GYN ultrasound training within residency programs in Canada. In addition, the study demonstrated that there is agreement amongst current residents and practicing physicians that more ultrasound education is needed in current residency training, and that this skill enhances the care of patients.

CFAFC's Recommendation: The Mid-Sagittal Volume Technique (MSV)

With the ever rising role of the first trimester scan in order to carry out a full anatomic and biometric evaluation of the fetus at 11+6—13+6 weeks, Abu-Rustums and Ziade describe a 3D-based technique in order to navigate through an acquired mid-sagittal volume of the first trimester fetus, utilizing a standardized approach. Utilizing this technique, the author defined the spatial relationships between 8 anatomic planes in the first trimester fetus. The planes are 0 (AC), +1 (heart), +2 (facial bones), +3 (orbits), +4 (BPD), +5 (butterfly), -1 (cord insertion), -2 (bladder). Defining these spatial relationships, utilizing a standardized approach, may serve as a basis for the potential future development of automation software for the automatic retrieval of these planes out of a 3D volume of the first trimester fetus (Prenatal Diagnosis 2012; 32: 875-882).

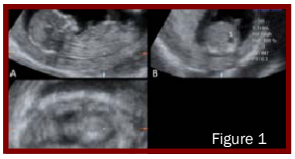


Figure 1

Steps 1-6 for the Application of the Mid-Sagittal Volume Technique

Step 1: Volumes are acquired from a sagittal plane with an angle of acquisition of 65 degrees.

Step 2: The volume is then standardized in reference plane (A) via rotation along the X, Y and Z axes to optimize the depiction of the fetus in the mid-sagittal plane, the same plane used for NT assessment (Figure 1).


Figure 2

Step 3: In reference plane (A), the reference dot is then placed in the fetal spine at the level of the diaphragm, automatically generating the axial plane of the fetal abdominal circumference, with a visible stomach, in plane (B) (Figure 1).

Step 4: Plane (B) is then selected as the reference plane, plane 0, (at 0 mm) and rotation along the Z axis is employed to optimize the location of the spine at 12 o'clock (Figure 1).

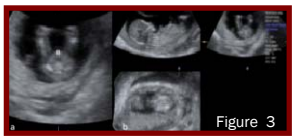


Figure 3

Step 5: Parallel shift is then utilized to navigate cephalad within the volume, from reference plane (B), plane 0, to generate 5 anatomic planes and to determine the spatial relationships of each of those 5 planes to plane 0 (Figure 2).

Step 6: Parallel shift is then utilized to navigate caudad within the volume, from reference plane (B), plane 0, to generate 2 anatomic planes and to determine the spatial relationships of each of those 2 planes to plane 0 (Figure 3).

THIS AND THAT

Upcoming Congress FMF

12th World Congress - Marbella 2013

The 12th Annual Congress of the FMF will be held in Marbella, Spain June 24-28, 2013. A most intensive 5 day course with a special focus on the latest advances in fetal medicine is planned. Registration and further information on this memorable annual event is available at the Fetal Medicine Foundation.

Upcoming ISUOG Interactive Course, Sydney

An advanced interactive course on "Early Pregnancy and Gynaecological Ultrasound" will take place in Sydney, Australia from 1-2 June. Registration is now open, with reduced registration fees for members. The course will cover the use of ultrasound in the diagnosis and management of common complications of early pregnancy, a systematic approach to investigating pelvic pain and the pitfalls in excluding endometriosis and an appreciation of current clinical dilemmas in gynecological ultrasound. Find out more.

SANA Certifies its First Group of Trainees

It is with much excitement that SANA completed the basic 6-step approach to obstetrical sonography to its first group of midwives and nurses at the Governmental Hospital of Seer Al Dinnieh. After 7 months of twice monthly didactic and hands-on training sessions, the attendees were able to demonstrate the necessary skill level at the completion of a practical exam. They were awarded ISUOG certificates. Details at SANA. As such, SANA extends its sincerest appreciation to ISUOG and ISUOG outreach for serving as such a constant source of inspiration and support.

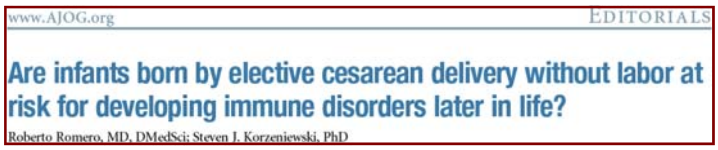
CFAFC's Recommends Awareness About a New App

A new App, targeting our patients, has just been released March 26, 2013. It is called "Hear My Baby's Heartbeat" and costs $4.99. It is supposed to be compatible with iOS 5 or later devices such as iPhone, iTouch and iPad. However there are many mixed reviews and concerns as to how well it functions in picking up fetal heart tones adequately. As such, we should caution our patients against using uncertain methodologies that may unnecessarily raise their anxiety level in case they malfunction.

CFAFC News Update

For the second year in a row, CFAFC Newsletter's Editor-in-Chief Reem S. Abu-Rustum has been named as a "Top Reviewer" for the British Journal of Obstetrics and Gynecolgy, and as a "Distinguished Reviewer" for the Journal of Ultrasound in Medicine for the year 2012. She has been appointed to the AIUM Endowment for Education and Research, re-appointed to the AIUM Web Development Committee, and appointed to the AIUM Board of Governors.

Hot-Off-The-Press: April 2013 Grey Journal


www.AJOG.org EDITORIALS

Are infants born by elective cesarean delivery without labor at risk for developing immune disorders later in life?

Roberto Romero, MD, DMedSci; Steven J. Korzeniewski, PhD


www.AJOG.org EDITORIALS

Diseases resulting from suboptimal immune function in offspring: is cesarean delivery itself really to blame?

Courtney D. Lynch, PhD, MPH; Jay D. Iams, MD

A featured topic in the April issue of the American Journal of Obstetrics and Gynecology addresses the possible untoward effects of a labor-free cesarean delivery on the developing neonatal immune system. Two editorials, in response to the Cho and Norman's expert review on "cesarean section and development of the immune system of the offspring" address this most fascinating topic, one that further piles up the evidence against cesarean on demand and the epidemic of cesarean section that has been spreading around the globe. It forces us gatekeepers to stop, weigh the evidence, and spring into safer practices in order to to safeguard both our patients (the mothers), and their offspring. Lynch and Iams raise several concerns as to the expert review itself, especially in the selection of literature, and they caution against a simplistic interpretation of the results which may lead to unsubstantiated alarm on many fronts. On the other hand, Romero and Korzeniewski discuss Cho and Norman's expert review in which it is suggested that there is an increased risk of type 1 diabetes mellitus, asthma, allergies, gastrointestinal disorders, among other conditions, in infants born by cesarean delivery. They state that though there may be many confounding epidemiological and environmental factors, there is scientific basis for concern and a need for further investigation. According to Cho and Norman, there are 3 involved mechanisms in the developing neonatal immune system: 1– acquisition of atypical microbiorne at birth, 2– the effect of labor on the immune system, and 3– epigenetic changes that translate into memory for the first 2 mechanisms that serve to modify the immune system. For instance, the stool of infants born by cesarean section contains less bacteria at 6 months of age than those born by cesarean, and even some studies suggest up until 7 years of age. In addition, it has been shown that the WBC found in the umbilical cord of fetuses born by cesarean section produce less IL1, TNF and IL6 versus the WBC in the umbilical cord of those who were born vaginally.

As such, this most complicated topic with its serious implications on generations to come is most certainly in need of further investigation in order to gain more understanding of the scientific evidence and in order to issue new guidelines in order to govern our liberal use of cesarean delivery.

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CFAFC would like to thank Drs. Walid Gergi, Georges Haddad, Bernard Nasr, Mark Sklansky, Suzanne Wong and ISUOG Secretariat for their contributions to this issue, and to the AIUM for uniting all who are passionate about ultrasound...

"Reason leads to conclusion, emotion leads to action" (Magee quoting Calne at AIUM 2013)

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

Prenatal Diagnosis of Hemimelia and Hypoglossia

By Bernard Nasr, MD and Walid Gergi, MD

31 year old female G1P0 with a negative past medical, no ingestion of medications, and a negative family history, was referred at at 21w4d for evaluation of a suspected of upper limb abnormalities.

Figure 1

The sonographic examination was limited by fetal position and lack of fetal movement. However, the evaluation demonstrated bilateral hemimelia (Figures 1,2), with all long bone measuring less than fifth centile, the tibia and fibula at an 18 week size retrognathia (Figure 3) with the presence of hypoglossia (Figure 4). In addition, a micropenis was noted.

Figure 2

Upon discussion of the findings with the family, they opted to terminate the pregnancy. Postmortem findings confirmed the prenatal findings, however the parents declined an autpsy and requested that no images get taken after birth.

Figure 3

The differential diagnosis included 5 main entities namely, hypoglossia-hypodactylia syndrome, Hanhart syndrome, glossopalatine and ankylosing syndrome, limb-deficiency splenogonadal fusion syndrome and Mobius syndrome (which has been associated with Cytotec use). However, a confirmatory diagnosis cannot be made without further pathologic and radiologic evaluation.

Figure 4

Based on the sonographic as well as the evaluation of the fetus after termination, our primary suspicion was for the hypoglossia hypodactylia syndrome. And though hypoglossia-hypodactylia syndrome is a rare sporadic syndrome, autosomal dominant inheritance cannot be ruled out and an underlying vascular insult (hemorrhagic or occlusive) is believed to be the underlying cause for these asymmetrical and distal abnormalities. Recurrence is rare unless there is an autosomal dominant mode of inheritance.

In conclusion, whenever limb abnormalities are noted, in addition to hypoglossia, several entities come to mind, all of which must be discussed with the family in order to plan further care and management.

Upcoming Congresses

COURSE TITLE	DATES	LOCATION	WEBSITE ADDRESS
College Francais d'Echographie Foetale:: Nouvelles Journee d'Echographie Foetale	May 17-20, 2013	Paris, France	www.njef.eu
Early Pregnancy and Gynecological Ultrasound Interactive Course	June 1-2, 2013	Sydney, Australia	www.isuog.org/Events/ISUOG+Organised+courses/
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.esmrnwien2013.org
RCOG Advanced Obstetric Ultrasound and Advanced Obstetric Practice	June 17-19, 2013	London, UK	www.rcog.org.uk/events/advanced-obstetric-ultrasound-and-advanced-antenatal-practice-1
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/
ISUOG's 23rd World Congress	October 6-9, 2013	Sydney, Australia	www.isuog.org/WorldCongress/2013/
3rd Annual Fetal Echo Symposium at UCLA	October 19, 2013	Los Angeles, CA	www.cme.ucla.edu/courses/event-description?event%5fid=2101400
4th Annual Fetal Echocardiography: Normal and Abnormal Hearts	October 25-26, 2013	Las Vegas, NV	www.edusymp.com/product/details/580