Scanning the journals

The Gleaner

Sonographic prediction of macrosomia cannot be improved by combination with pregnancy-specific characteristics
Balsyte D, Balsyte D, Schäffer L, Burkhardt T, Wisser J, Kurmanavicius J. Ultrasound Obstet Gynecol 2009; 33: 453–8.
We all know how inaccurate fetal weight estimation at ultrasound examination can be. So a search for help in increasing prediction accuracy is reasonable. This study, however, concludes that ultrasound is still the best and most objective method currently available to estimate birth weight in an unselected population. In fact its best function may be to exclude macrosomia and prevent unnecessary interventions.

Amniotic fluid “sludge” detected in patients with subchorionic hematoma: a report of two cases
Tsikitishvili E, Tomimatsu T, Kanagawa T, Sawada K, Kinugasa Y, Mimura K, Kimura T. Ultrasound Obstet Gynecol 2009; 33: 484–86.
This article leapt off the page. Two case reports needing seven authors!
And the term “sludge”? Originally meaning the precipitate produced by sewage treatment or any thick viscous matter, now in ultrasound it means dense aggregates of particulate matter in proximity to the internal cervical os. It might be associated with a severe intra-amniotic infection and may be an independent risk factor for preterm delivery, premature rupture of the membranes or in asymptomatic patients at risk for spontaneous preterm delivery, it may mean early chorioamnionitis. The authors are suggesting a connection between vaginal bleeding, subchorionic haematoma and infection followed by sludge development. More investigations are called for!

The assessment of the gestational sac diameter, crown-rump length, progesterone and fetal heart rate measurements at the 10th gestational week to predict the spontaneous abortion risk
Altay MM, et al. J Obstet Gynaecol Res 2009; 35 (2): 287–92.
As around 15% of pregnancies end in spontaneous abortion, the search for predictive markers continues.
This small study of 99 patients at 10 weeks gestation reveals that the maternal serum progesterone level, the mean gestational sac diameter (MGSD), the CRL and FHR were statistically significant in predicting abortion. FH over 175 bpm at 10 weeks, a progesterone level of 20.5 ± 6.9 mg/mL were helpful. Obviously larger studies need to be done to confirm these findings, but clinically it would be of enormous value if we could predict the losses.

Embryonic heart rate as a prognostic factor for chromosomal abnormalities
Oztekin D, Oztekin O, Aydal FI, Tinar S, Adibelli ZH. J Ultrasound Med 2009; 28: 609–14.
Fifty-seven embryos with slow heart rates (110 bpm) before seven weeks gestation were studied. The frequency of chromosomal anomalies was higher in embryos with a slow heart rate than those with a normal heart rate. So while we think of embryonic bradycardia as predicting fetal loss, it may also be a clue for aneuploidy detection.

Bioeffects literature review
J Ultrasound Med 2009; 28: 558–61
The AIUM Bioeffects Committee which includes 42 members including one of our past Presidents, Stan Barnett, has produced a review on a paper published three years ago titled. Prenatal Exposure to Ultrasound Waves Impacts Neuronal Migration in Mice by Ang, et al. published in Proc Natl Acad Sci USA, 2006; 103: 12093–910.
The committee conclude there were a number of serious problems with the original paper: too few mice, inappropriate statistics, observed effects in the laboratory longer than in human clinical conditions among them. This did not deter the popular press in the USA however from alarming the public. They accessed the paper and published it in the New York Times before it was seen in the scientific press. Lessons to be learnt!
It does make you wonder why the publication peer review didn’t pick up on the defects of the publication doesn’t it?

Libero

Accuracy of MRI, MR Arthrography, and Ultrasound in the diagnosis of rotator cuff tears: a meta-analysis
Joseph O De Jesus, Parker L, Frangos AJ, Nazarian LN. AJR 2009; 192: 1701–7.
This article evaluates the accuracy of these disciplines to diagnose rotator cuff tears using surgery as the gold standard.
The authors’ results show MR arthrography is more sensitive and more specific than MRI and US in diagnosing rotator cuff tears, both partial and full thickness. No surprises here. However when MR and US were compared head to head, they found that there were no statistically significant differences in the diagnosis of either full or partial thickness tears. Now this was a surprise, and even more so pertaining to partial thickness tears. Comforting news indeed.

Sonography of the painful shoulder: role of the operator's experience
Thomas Le Corroller, Cohen M, Aswad R, Pauly V, Champsaur P. Skeletal Radiol 2008; 37: 979–86
This article evaluates the interobserver variation between an experienced (15 years) and standard (6 months) operator in relation to rotator cuff pathology. Their sonographic findings were subsequently compared to MR arthrography, used as the reference standard. The sensitivity, specificity, PPV, and NPV were calculated for both operators.
Drum roll please. The level of interobserver variability for full thickness tears was low. It was also low for biceps tendon, subacromial bursa, and AC joint pathology.
The interobserver variation for partial thickness and intrasubstance tears was higher.
Another drum roll please. An experienced operator will fare better than a novice for the detection of rotator cuff pathology, in particular with reference to partial thickness tears. This states the obvious but I suppose it needed proving.

State of the art HR-US imaging findings of the most frequent musculoskeletal soft tissue tumours

Eidmann G, Riedl A, Schopfer D, Glodny B, Peer S, Gruber H. *Skeletal Radiol* 2009; 38 (7): 637–49.

Identifying soft tissue tumours is usually the easy part. Characterising them and being able to say what the tumour most likely represents with confidence is more difficult. High resolution ultrasound combined with colour, power, and spectral Doppler makes this latter task easier according to the article. Thankfully, 99% of them are benign.

This is a pictorial review of a wide range of soft tissue masses that we too may encounter. By the way, all cases presented were verified by histology.

Sonographic features are well described for haematomas, abscesses, lipomas, ganglia, fibromatosis, myositis, giant cell tumours, etc. Vascular tumours such haemangiomas and vascular malformations are also described. Let’s not forget the peripheral nerve sheath tumours that we may also encounter. Quite a compact article that we could reference as needed.

The Stirrer

Color comet-tail artifact: clinical applications

Tchelepi H, Ralls PW. *Am J Roentgenol* 2009; 192: 11–18.

Call it an ultrasound artifact and you will be lucky to get a yawn. If it is a “color Doppler twinkling artifact” it sounds more impressive and articles with that title were published for a decade from 1996. Now, out with the old and in with the old with a new snazzy name requiring a special article/pictorial essay in *AJR*. So how do you magically turn a twinkle into a comet? All you need to do is find a highly reflective object, especially with a rough surface, turn up the colour gain and have your finger ready to freeze the necessary image.

The images in this article show much more eloquently than the enthusiastic narrative how little clinical application this artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the calculi or focal calcifications, so the only value of the comet artifact has. From the B mode images alone we can see the
diagnostic features.

So called “advances in knowledge” from this article are that sensitivity and specificity of non-invasive carotid tests are:

1. Overestimated
2. Better for 70–90% stenosis than lesser grades
3. Depend on whether the patient is symptomatic from that artery
4. A combination of tests improves one at the expense of the other.

These are hardly revelations from on high, but for a less jaundiced review of this article and for the answer to which test is best for non-invasive assessment of carotid arteries you need go no further than reading the two-page editorial in the same issue entitled “Non-invasive carotid artery imaging: caution ahead”. The author wisely reminds us that non-invasive screening tests must always have high sensitivity but that specificity can be left to a later confirmatory test which then needs to be highly specific – not the 0.56 for CT angiography and 0.70 for MR angiography.

Sonography of thyroid nodules with peripheral calcifications

Park M, Shin JH, Han BK, Ko EY, Hwang HS, Kang SS, Kim JH, Oh YL. *J Clin Ultrasound* 2009; 37: 324–8.

Watch out while the diagnostic pendulum is still moving on the issue of peripheral thyroid nodule calcification and be cautious until it comes to rest in a few years and we know the true incidence in malignancy for the eggshell or rim calcification appearance. It’s been known for many years that microcalcification in nodules has the greatest risk of cancer with a lower risk for macrocalcification – but aren’t eggshells safe? This article at least emphasises the need to examine this rim of calcification more carefully for interruptions or focal thickening which are more suspicious of malignancy. But do we really believe that 70% of nodules with peripheral calcifications are malignant – either the wind is blowing North Korean radioactivity southward or we have a significant population bias in this South Korean study and the same is probably the case with the 63% rate of Kim, et al. from the same hospital department (*J Ultrasound Med* 2008; 27: 1425–30).

Ultrasoundography in patients with Budd-Chiari syndrome – diagnostic signs and prognostic implications

Boozari B, Bahr MJ, Kubicka S, Klempnauer J, Manns MP, Gebel M. *J Hepatol* 2008; 49: 572–80.

Budd-Chiari syndrome is a serious but thankfully rare group of conditions in which there is obstruction to hepatic veins or the upper IVC, usually due to a hypercoagulative state causing thrombosis. There is a recent excellent CME article (*Radiographics* 2009; 29: 669–81) which explains all you need to know about the aetiology, pathogenesis and treatment options of this disease but it is very sparse on the ultrasound diagnostic features.

Luckily, the above article, which appeared late last year, evaluated the accuracy of the various proposed ultrasonic signs of this disease in 45 patients. They found that a combination of “specific” venous ultrasound signs, such as thrombosis, stenosis, fibrotic cords (see the excellent image in Fig. 2), or insufficient recanalisation, together with the “non-specific” sign of caudate lobe hypertrophy (see where to measure in Fig. 1) offered the greatest diagnostic value. The additional ultrasound finding of portal hypertension or portal vein thrombosis in patients was one of the most important signs of poor prognosis, with mean survival then reduced to approximately two-and-a-half years.