What "ECHELON Smart with Synergy Drive" brought to our hospital

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About Lam Hoa General Hospital

Lam Hoa General Hospital, the very first and largest private hospital of its kind, is located in Thai Binh province in Vietnam and was founded following the decree 3601/QD-UBND from the Thai Binh People's Committees in 24th Sept 2007. Erected in the 28,000 square meter space, the 400-inpatient-bed green hospital is the harmonious blending of treatment activities and resort-like experience. Lam Hoa General hospital is equipped with numerous state-of-the-art medical equipments namely MRI 1.5T; Computed Tomography 32 slices; 5D Ultrasound machine; Laser lithotripsy; Cancer endoscopic screening. Additionally, the clinical activities which are backed by over 250 experienced passionate doctors and medical staff help the hospital confident in performing complicated procedures and surgeries, such as

- Joint replacement surgery, arthroscopic reconstruction of the ligaments of the joints
- Laparoscopic surgery to remove cholecystitis, uterine fibroids, prostate cancer, and thyroid cancer.
- Endoscopic laser lithotripsy, percutaneous renal lithotripsy.
- Endoscopy to cut Amydan with Plasma knife, Hummer.

Lam Hoa General Hospital also tightly cooperates with leading national hospitals to further advance the quality of treatment for patients.

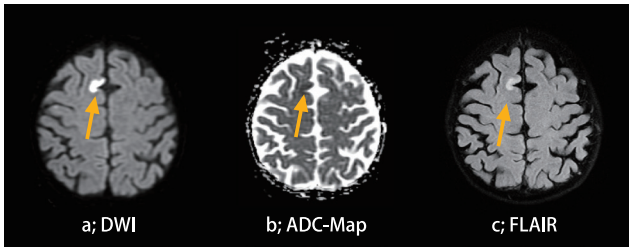
Fast yet Beautiful Imaging

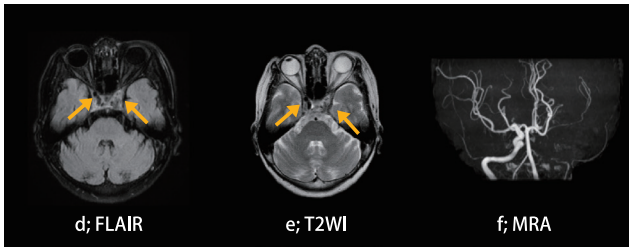
From reporting perspective, I usually prefer unfiltered images as image resolution is lost in filtered images. High spatial resolution images without filter, is a great help in diagnosis to detect abnormal structural changes and find out very fine details. ECHELON Smart has a feature called SynergyDrive, which includes a technology called "IP-RAPID". IP-RAPID is a technology that can reduce noise and increase SNR through iterative process similar to compressed sensing. Without applying the filter, we can get the high spatial resolution images with less noise due to IP-RAPID.

Since MRI examinations take a long time and patient sometimes moves during the scan which leads to motion artifact. IP-RAPID has the advantage of shortening the examination time and reducing the occurrence of motion artifacts. Of course, shortening the examination time also reduces the burden on the patient, as it reduces the amount of time the patient has to stay still during scan. Since IP-RAPID can also be applied to whole spine and whole-body-DWI, which relatively takes longer time, we can reduce scan time and patient's burden as well. In addition to IP-RAPID, ECHELON Smart is equipped with RADAR, which radially fills the sampling data. In case of occurrence of motion, signal with motion is dispersed to reduce motion artifacts. IP-RAPID can be applied in wide sequences like MRA, 2D FSE, GrE and EPI. After we started using IP-RAPID for routine scanning, number of patient scans has increased from 20 to 30 per day and with better image quality, there is no strain to eyes.

In future, we hope to increase the number of examination by increasing combination use of IP-RAPID in various regions.

With AutoExam feature in SynerygyDrive, unexperienced technicians can scan with ease and can achieve consistent image quality.





a,b,c; Show acute brain infarction. The lesion shows hyperintense on FLAIR, which means the infarction was > 6h.

d,e; On the right arrows show the normal flow void of right ICA, while the left show absence of left ICA flow void meaning an occlusion.

f; MIP 3D TOF shows absence of left ICA and left middle cerebral artery due to vessel occlusion.

Fat Suppression

FatSep imaging, which suppresses fat signal, is an essential scan for areas such as the spine, MSK and pelvis.

The ECHELON Smart provides a homogenous FatSep image. It has a high resolution and excellent tissue detection, making it easy to visualize anatomy. We are satisfied with the MSK and Pelvis image quality with Fat Suppression.

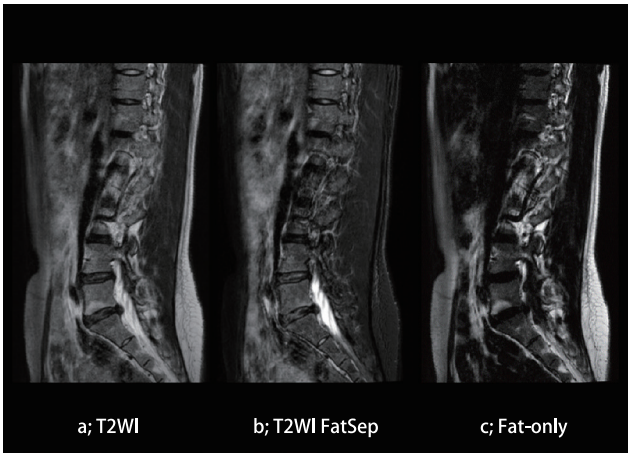
Apart from good images, three contrasts (FatSep (DIXON) images, T2-weighted images, and fat-only images) can be acquired simultaneously, which leads to significant reduction in examination time.
The fat-only image is essential in case of bone pathology and we need to compare bone marrow replacement to see malignancy.

In case of fracture of vertebra, we want to see whether fracture is caused by a benign etiology osteoporosis or malignant tumor- metastasis. Hence taking fat-only images helps us identify whether it is a tumor or normal bone marrow, so it is helpful to acquire all three images simultaneously.

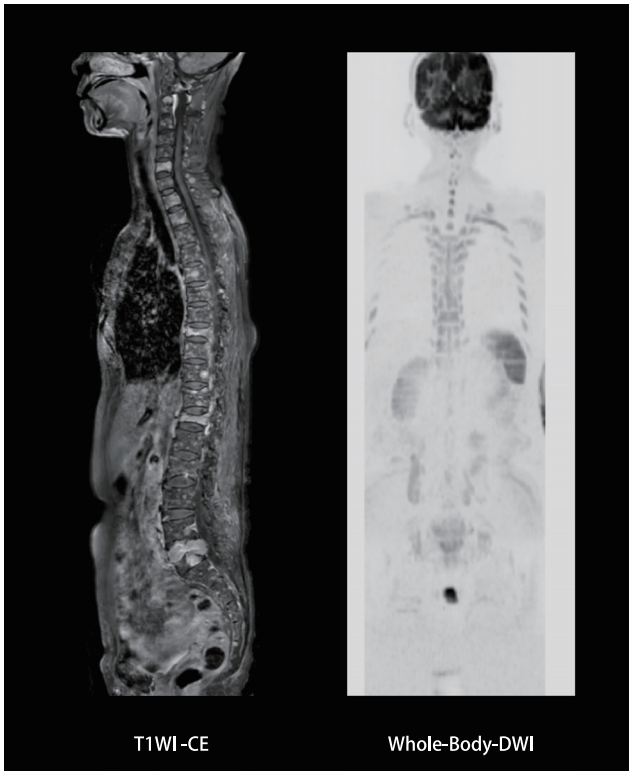
Whole-Body-Diffusion

Whole-body-DWI, which is used as a substitute for positron emission tomography (PET) to check for metastasis, has been performed since installation of ECHELON Smart. The image quality for these results are satisfactory. We hope to examine many patients using ECHELON Smart in future.

As a background, our hospital is planning to establish an oncology center and we believe that the number of requests for whole-body-DWI examinations will increase in the future.



FatSep T2WI with three contrasts (FatSep (DIXON), T2-weighted images, and fat-only images) can be acquired simultaneously, which leads to a reduction in examination time. Fat-only image also helps diagnose whether tumor or not.



IP-RAPID can reduce scan time for whole spine and whole-body-DWI as well. That helps to reduce patient's burden.

Conclusion

We introduced the latest application of ECHELON Smart Plus, which has been in use at our hospital for several months and advantages provided to us are as below.

IP-RAPID, a high-speed imaging method, maintains image quality and can be used in various regions and sequences. It is a revolutionary feature that can be used to shorten the imaging time and improve image quality depending on the examination & patient situation. In addition, although not mentioned in the text, the "SoftSound" function which can perform silent scan can be used for not only usual sequences but also MRA and DWI. It is great that scan time is not extended by using this function and gives patients comfortable MR exams. We highly evaluate that the device was designed with both user and patient in mind.

Brand name: MR imaging system ECHELON Smart
Medical device certification No.229ABBZX00028000

Standard configuration may vary depend on the country. For details of the configuration, contact our local representatives.