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Karolinska University Hospital Solna is a general Hospital with trauma level 1 capabilities, receiving about 1000 trauma patients according to a definition close to that of the American College of Surgeons. Of these about 200 are scored ISS>16.

The Trauma unit was inaugurated September 1996 located in the central operating department, immediately adjacent to helipad, emergency department and ICU. It consists of a trauma bay area for 1-2 patients with operating capabilities, one operating theatre, and one CT suite, initially equipped with Picker 5000 but recently exchanged for a GE Lightspeed 16.

As a part of the initial trauma evaluation an ultrasonographic examination is always performed by the radiologist on call, comprising the abdomen, pleurae and pericardium. The explicit purpose of this examination is to identify free fluid in the unstable patient that cannot be scheduled for immediate CT examination but needs operation.

Increasing concern for irradiation and the availability of new contrast agents prompted these initial trials.

We have used Acuson Sequoia systems and SonoVue microbubbles. This agent has proved valuable in tumour staging and evaluation of vascular liver lesions.

Advantages are in the possibility of studying a dynamic flow evolution in the selected organ. Advantages include also the possibility of bedside evaluation as well as repeated evaluation of patients being occupied with other procedures, i.e. angiography or operation.

It is also possible to examine with contrast enhanced ultrasound (CEUS) patients with contraindications to MRI or contrast enhanced CT (renal failure).

Disadvantages are the availability of an experienced ultrasonographer, the need for adequate software in the ultrasound apparatus and the limited possibility of studying several organs in the same session without repeated injections.

Our experience is with the low mechanical index method. SonoVue consists of sulphur hexafluoride (SF<sub>6</sub>) within a phospholipide shell. SF<sub>6</sub> is a stable gas.

The contrast agent is administered quickly thorough a venous access followed by saline flush 5-10 ml.

**Equipment settings:**

Acuson Sequoia platform using the Coherent Contrast Imaging (CCI).

Native Tissue Harmonic Imaging (NTHI) at a frequency of 3,5 MHz.

Dynamic range is 70 dB, Space/Time T1, Edge 0, persistence 3, post processing 2 and with a delta setting of 3.

It is very important to decrease the Mechanical Index to 0,12-0,13.

Sequoia use the Tissue Equalization Technology.

The over all gain is otherwise manually lowered until there is almost no tissue signal and the DGC is adjusted to create a homogenous image.

The sequences are sampled as dynamic digital images using the clip store function. The clip store is set at 9999 ms, 1 frame per capture.

Results: Only specially selected patients were scanned as indications were deemed suitable.

-follow up after inconclusive CT examination showed divided spleen, which was salvaged by net repair technique.

-follow up after negative CT of patient with aversion to rescanning with CT was negative

-Liver trauma patient with recurrent pleural effusion demonstrated bilioma but intact diaphragm, later verified by thoracoscopy.

Patients with splenic grade II damage were followed with CEUS.

**CONCLUSION**

CEUS is a new but promising technique, which might develop as an alternative when CT is unavailable. A further study in controlled environment with randomised patients is advocated. Drawbacks include the need for specially trained radiologists and special equipment, although much cheaper than today's golden standard CT.

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