

Healthcare Sector Division Imaging & IT

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Navigating the body without radiation – GPS for interventional radiology

At the Medica exhibition in Duesseldorf, Germany, between November 19 and 22, 2008, Siemens Healthcare will be showing iGuide CAPPAs*, a new solution that supports the physician during minimally invasive needle procedures. By combining an angiographic C-arm system with the electromagnetic navigation system iGuide CAPPAs, a new method was developed that enables navigation with very low radiation dose. Prior to the intervention, the Siemens software syngo DynaCT provides the 3D soft tissue images required by the physician. The method uses electromagnetic tracking and facilitates interventions such as precise and quick needle placements – for liver biopsies, for vertebroplasties when stabilizing fractured vertebrae, or for cancer pain treatment.

For a number of years Siemens has been working together with physicians on navigation solutions that support interventional radiologists during minimally invasive needle procedures as well as improve patient treatment. The innovation iGuide CAPPAs is part of the comprehensive navigation solution from Siemens. For a number of months now, the system is being successfully used by several hospitals. "iGuide CAPPAs allows for precise and safe placement of electrodes or biopsy devices even in regions that are difficult to evaluate with conventional fluoroscopy," explains Dr. Martin Skalej, Director of the Institute for Neuroradiology at the University Hospital in Magdeburg, Germany. He uses the system primarily for different interventions of the spine, e.g., for spinal radiofrequency ablations and for discographies or kyphoplasties. "No further imaging is necessary during the intervention. This reduces the x-ray exposure compared to previous interventions performed in the CT".

The principle is a simple one: prior to inserting the needle, the Artis zee C-arm generates a 3D soft tissue image of the anatomy to be treated, which is used for orientation by the physician. A sensor in the tip of the needle is tracked in an electromagnetic field created via a field generator. These

* Computer Assisted Planning and Positioning Applications

data are transferred in real time to the iGuide CAPPa system which shows the position of the needle tip on a monitor and superimposes on the previously generated three-dimensional data set of the anatomy. This provides the physician with both the necessary anatomical information as well as the exact position of the needle, so he can safely perform the needle procedures. This method is especially suitable for lengthy and complex interventions by providing improved spatial orientation and hence faster and safer navigation to the actual target. Additionally, the required radiation dose is greatly reduced.

Minimally invasive needle procedures are increasingly used in interventional radiology for the liver (radiofrequency ablations, biopsies, drainage) or other organ systems in the abdomen and thorax. With certain types of tumors, they are used in addition to other therapies for pain treatment or destruction of malignant tissue. For radiofrequency ablation, the tumor is heated via the tip of the needle and destroyed. A different palette of needles is available for the various interventional needle procedures. The technology is approved in the US and Europe and available on the market, effective immediately.

Images for iGuide CAPPa by Siemens are located under:

<http://www.siemens.com/med-pictures/iGuideCAPPa>

The **Siemens Healthcare Sector** is one of the world's largest suppliers to the healthcare industry. The company is a renowned medical solutions provider with core competence and innovative strength in diagnostic and therapeutic technologies as well as in knowledge engineering, including information technology and system integration. With its laboratory diagnostics acquisitions, Siemens Healthcare is the first integrated healthcare company, bringing together imaging and lab diagnostics, therapy, and healthcare information technology solutions, supplemented by consulting and support services. Siemens Healthcare delivers solutions across the entire continuum of care – from prevention and early detection, to diagnosis, therapy and care. Additionally, Siemens Healthcare is the global market leader in innovative hearing instruments. The company employs more than 49,000 people worldwide and operates in 130 countries. In the fiscal year 2008 (Sept. 30), Siemens Healthcare reported sales of €11.17 billion, orders of €11.78 billion, and group profit of €1.23 billion. (Preliminary figures) Further information can be found by visiting <http://www.siemens.com/healthcare>.