

At the Forefront of Diagnostic Imaging with the Vantage Galan 3T

As interest in the Vantage Galan™ 3T MRI system grows since its launch in November 2016, the system is already in use by some of Europe's leading imaging experts. VISIONS magazine finds out what Professor Martin Zwaan, Head of the Institute for Diagnostic and Interventional Radiology (DIR) at the Ammerland Klinik in Westerstede (Germany), and Dr Xavier Alomar, Head of Radiology at The Clinica Creu Blanca (Spain), think of the new MRI system.

Impressive Image Quality

Combining wide coverage (max. 50 x 50 x 205 cm) and visualization of the smallest details, by virtue of up to 128 HF channels, the image quality achievable with the Vantage Galan 3T appealed to both physicians.

"My aim is to have the best image quality possible. New applications are explored with the latest developed sequences." Dr. Alomar said. "With the Vantage Galan 3T, Toshiba Medical has now a real competitive product offer in this market."

"We have found the Vantage Galan 3T amazingly good for examination of joints and the head, with hardly any artefacts. I don't know

if the others have the same results, but it is very impressive!" added Prof. Zwaan. "Double Inversion Recovery with the system is really, really good. It's much clearer. It shortens the time that the Radiologist needs to diagnose a patient's condition."

Combining active- and passive shimming, the Vantage Galan 3T's compact and light magnet achieves a very stable magnetic field with a high degree of homogeneity. This ensures excellent imaging in whole body scans. Furthermore, the outstanding homogeneity in the large cylindrical field of view (50 x 50 x 45 cm) ensures very high accuracy of detail, even in the off-center field of view (e.g. shoulder and full abdomen). At the same time, this pro-

vides excellent fat-water separation; spectral fat saturation is of extraordinary quality, even at the edges of the field of view. As a result, the Vantage Galan 3T achieves outstanding measurements in spectroscopic scans. In addition, new RF technology, combined with the Saturn gradients, improves signal-noise ratio by up to 20%.

Advanced Software

In addition to generous standard features, such as a variety of non-contrast sequences, 3D post-processing and many more advanced packages are available. Olea Nova+ is an example (currently a research application that may drastically reduce measurement time), which extends the spectrum of imaging with



Prof. Martin Zwaan, Head of the Institute for Diagnostic and Interventional Radiology, The Ammerland Klinik, Westerstede, Germany.



Dr. Xavier Alomar, Head of Radiology, Clinica Creu Blanca, Barcelona, Spain.

the Vantage Galan 3T even further.

Both Prof. Zwaan and Dr. Alomar have worked with Toshiba Medical on development of Nova+ together with Olea Medical.

“We are working together with Toshiba Medical on stability and innovation. We are very happy with this collaboration and happy that we can explain what we need to the development team” said Dr. Alomar. “In particular, we think that Olea Nova+ is a new and particularly promising technique for MRI that can add value to normal clinical scanning. I think concepts in MRI will change significantly in the next few years. Computed MRI could replace much of the regular clinical scanning, for example. And I think we will be differentiating more various types of tumors using different sequences.”

Non-Contrast Applications

New sequences are also available with the Vantage Galan 3T, such as those for coronary artery imaging without contrast medium, 4D MRA of the brain and many other examinations. Two points predominate the discussion on contrast agents. Firstly, it is not possible to use a contrast medium in patients with poor renal function. And secondly, many physicians and researchers question the breakdown of some of the contrast media within the body.

“The Vantage Galan 3T system is very convenient from the perspective of the variety of examinations that we can carry out without contrast medium,” Prof. Zwaan remarked. “We try to minimize the use of contrast agents as far as possible. If there is a requirement to use a contrast agent, only macrocyclic contrast agents are used, with exception of Primovist for liver investigations.

In examinations of the lower leg it is sometimes difficult to display both legs, due to differences in flow velocity of the blood. Therefore it’s a big advantage to have more time-resolved sequences available, to display the correct phase in each leg. With a contrast-free sequence, scans can be repeated indefinitely if required. In addition, if we are able to perform Gadolinium-free angiographies, it’s a big advantage.”

While many non-contrast sequences are available with the Vantage Galan 3T, Dr. Alomar currently still uses contrast agents in several clinical applications.

“Gadolinium based contrast agents are used as they provide specific information for a correct diagnose. Of course, if recommendations say that Gadolinium should not be used, we will do so, although this is not the case at this moment.” Dr. Alomar remarked. “I think in the future, new sequences will enable better characterization, so contrast agents will not be necessary, but at this moment the contrast is important for our clinical applications.”

Research Interests

As a recognized stroke, Multiple Sclerosis (MS) and Neuromuscular Disease center, with 60 beds dedicated to neurological patients, the Ammerland Klinik is one of the biggest centers of expertise in Neurology in North West Germany. Therefore, brain imaging with the Vantage Galan 3T system, is a key research field at the Clinic.

“We are profiling patients with healthy brains and those with Alzheimer’s disease and Multiple Sclerosis. With these images, we are working in cooperation with a local firm (that has evolved from university research origins) to

build volumetric profiles of the brain with the aim of identifying new volumetric standards of the brain. They create these profiles based on MPRAGE data, which is produced with the Vantage Galan 3T. It contains all required information for this research project. The eventual results of the study will be available for all,” explained Prof. Zwaan.

“What we would be very interested in for the future is using the Vantage Galan 3T in combination with a neuro-CT. This would be amazing for our work using Brainlab software. The issue is that once you open the skull during surgery, the brain deforms to some degree because some CSF (Cerebro Spinal Fluid) is lost. Combining information from different modalities can help.”

Involved also in computed MRI research for imaging of the joints, as well as brain imaging, the Ammerland Klinik hopes that this will have even more widespread application in the future.

“With a little more success in these fields, we would try this for prostate imaging,” added Prof. Zwaan. “This is, however, a difficult area with more movement and a contrast medium is always required. We don’t have much previous experience with using this system in studies in prostate patients, but as we are making huge progress with the Vantage Galan 3T in other fields, this would be a logical step forward.”

“I am currently working with 3T in the hip area, on muscle injuries, the knee, ankle and hand. 3T scanning is also important for brain diagnoses,” remarked Dr. Alomar. “And we have just started to use the Vantage Galan 3T with 16 channel flex coils for studies

in prostatic cancer. The image quality is excellent. I am very happy with the diffusion and also the T2W images are very good. In anterior/posterior the image quality is very good. The protocols that we have tried give a superior image quality and we will introduce this as standard. The key in my opinion is the specific use of 16 channel flex coils."

Inside the new Vantage Galan 3T, the improved gradient coils in Saturn quality, ensure top performance capacity with diagnostic accuracy and the highest standard of image quality. The system works with an improved version of the 'tried and trusted',

Vantage Series matrix coil concept and new, second-generation, ATLAS coils. They are particularly well-adapted to local anatomy, but can also be combined when examining larger areas.

Future Prospects

Prof. Zwaan anticipates even faster scanning capabilities in the future for non-contrast angiograms. He also believes that computed MRI, introduced as Olea Nova+ by Toshiba and Olea, could have clinical relevance in the trauma department. It could be particularly useful with young patients, as a possible replacement for a

CT, to quickly perform a diagnose without radiation.

"We are very satisfied with our Vantage Galan 3T and its outstanding image quality. I would recommend this system for neurological and orthopedic diagnosis and treatment planning. The system opens up new dimensions in sectional image diagnostics and especially in our clinic, the neuro-diagnostics, which can be treated quickly by interventions. With its new clinical innovation, Olea Nova+, we are discovering possibilities that will take us in a new direction in the future."

"With the Vantage Galan 3T, we are discovering new possibilities."



Prof. Martin Zwaan, Head of the Institute for Diagnostic and Interventional Radiology, The Ammerland Klinik, Westerstede, Germany.

Regional Hospital

The Ammerland Klinik is a general regional hospital, in Westerstede, near Bremen, Germany. With expertise in treatment of neurological and vascular conditions, it has emerged as one of the biggest Interventional Radiology centers in Germany. Prof. Martin Zwaan is the Head of the Institute for Diagnostic and Interventional Radiology that recently acquired the hospital's first 3T MRI scanner - the Vantage Galan 3T. With the new system, the radiology team can advance its existing specialist work and expand its research in other diagnostic areas, as well as reduce patient waiting times for high-end MRI scans.

Almost 10 years ago, the Ammerland Klinik combined military and civilian medical facilities. The large Radiology team at the hospital now comprises five military physicians and 12 civilian physicians, who work very closely together as one department. Prof. Zwaan heads the Institute for Diagnostic and Interventional Radiology. Alongside he specializes in vascular imaging and interventions.

"As a hospital with several specialties including neuro- and vascular surgery, we were interested to acquire the Vantage Galan 3T to complement our 1.5T MRI system," said Prof. Zwaan. "We are particularly interested in imaging of vessels and, in particular, the contrast-free imaging of vessels, because a lot of our patients with peripheral arterial disease are diabetic and have decreased renal function, therefore, we need to make many studies without contrast media in our diagnostics. In addition, we have a lot of trauma patients, and therefore a high demand for joint imaging, because the Clinic is also a trauma center run in conjunction with the German Armed Forces."

"I am very happy with the Vantage Galan 3T with its new software," he concluded. "Follow up from the Toshiba Medical team is good and we are able to work with new sequences on the system."

Dr. Alomar and his team are working closely together with Toshiba Medical on advancing clinical applications with the Vantage Galan 3T.

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Private Diagnostic Clinic

The Clinica Creu Blanca, is a large, private diagnostic clinic in Barcelona, Spain. Well known for applying the very latest innovations in diagnostics, the clinic provides diagnostic services to private insurance companies and private doctors. Head of Radiology, Dr. Xavier Alomar is globally recognized as an expert in musculoskeletal (MSK) MRI. He has carried out a wide range of research in this field, including studies that have contributed to improving sports medicine and elite sports in conjunction with top sports clubs, such as FC Barcelona. While he has used 3T MRI for several years, Dr. Alomar explains how the Clinic's new Vantage Galan 3T enables advanced techniques in MSK, neurological and prostate imaging.

The Clinica Creu Blanca belongs to the Creu Blanca diagnostic group, which has four clinics in Barcelona and two in Aragon. The group provides a wide range of diagnostic medical services, with follow up and treatment carried out externally. Using cutting edge techniques, Dr. Alomar's work is dedicated to driving diagnostic imaging forward.

"My role is to find new possibilities in diagnostic imaging," said Dr. Alomar. "I look for new sequences, apply these in clinical applications and introduce them in our field of expertise. Quality and advanced applications enable progress. It is about continuous development."



Dr. Xavier Alomar, Head of Radiology, Clinica Creu Blanca, Barcelona, Spain.