ELEKTA USERS FIRST TO TREAT PATIENTS WITH VOLUMETRIC INTENSITY MODULATED ARC THERAPY (VMAT)

Press Release
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The Royal Marsden Hospital in Sutton UK and Allgemeines KrankenHaus / Medical University of Vienna in Austria have successfully completed the world's first image guided intensity modulated arc therapy patient treatments using commercially released product solutions.

The Royal Marsden Hospital pioneered clinical use of an Elekta Synergy® image guided system fitted with the new Elekta linear accelerator control system in order to deliver volumetric intensity modulated arc therapy (VMAT) to a patient undergoing a course of radiation therapy treatment for lung cancer.

"On Monday 28th of January we treated our first patient with the VMAT (Volumetric intensity Modulated Arc Therapy) technique" reports Jim Warrington, Head of Radiotherapy Physics at the Royal Marsden. "The patient received a single 340 degree arc of 6MV x-rays, with simultaneously variable gantry rotation speed, dose rate and dynamic multi-leaf collimator modulation. The treatment arc delivered a 2 Gray fraction to the target in 93 seconds." He continued: "the efficiency and flexibility of this technique is impressive and we hope to be able to expand the use of this advanced new treatment method to become routine practice in the future. We anticipate that when used in conjunction with our Elekta Synergy image guidance systems and employing non-coplanar angles of delivery, VMAT will be a significantly improved treatment modality for the Royal Marsden's radiotherapy patients", he concludes.

More conformal treatments and reduced treatment time

The two main benefits of this unique Elekta technology promise to be significant reduction in treatment time (in the case of the Royal Marsden treatment, 50 percent from the patient's previous conformal plan) combined with a significant improvement in conformance to the target and sparing of dose to adjacent healthy tissues. An additional benefit of reducing treatment times is greater comfort for the patient which in turn, by making it easier for the patient to keep still, increases the likelihood of delivering radiation beams more accurately as targeted.

During the same week, Allgemeines KrankenHaus / Medical University of Vienna (AKH) in Austria delivered the world's first PreciseBEAM VMAT treatment. PreciseBEAM VMAT is delivered as a combination of optimized treatment planning using Ergo++ and an Elekta Synergy linear accelerator, upgraded with a next generation digital control system.

The treatment was to an intracranial glioblastoma and consisted of 3 non-coplanar VMAT arcs with variable gantry speed and simultaneous leaf movement and rotation of the dynamic multileaf collimator. The Elekta accelerators are unique in their ability to deliver this level of movement complexity. The patient had a brain lesion very close to vital structures such as hypophisys, brain stem, optical nerves,

and lenses of the eyes, however the treatment was completed within 10 minutes – including set-up, imaging, repositioning and delivery.

“The new system will revolutionize the practice of tailored intensity modulated radiotherapy during the next decade”, commented Prof. Dr. Richard Pötter, the Chief Medical Doctor at AKH. “Very soon not only head and neck lesions but also tumors in the lung, close to the cervical spine and in the pelvis will be treated with VMAT.”

“For many years AKH has been practicing a technique called IMRT. The new technique VMAT adds the possibility of modulating the radiation intensity during an arc treatment. The advantage is an even better sparring of healthy organs and a more effective and better targeted irradiation of the tumor. At the same time the total treatment time is significantly reduced from 15 minutes to 6 – 7 minutes which is of highest importance for patients with serious diseases” continues Prof. Dr. Pötter.

Referring to their first patient treatment, Prof. Dr. Dietmar Georg, Chief Medical Physicist at AKH continues, “This therapy will currently be applied in very complex situations where the localization and the form of the tumor requires tailored intensity modulated treatment. Not every patient will be an appropriate candidate for this novel therapy, but we will work hard to investigate how we can make more use of this new treatment technique.”

Digitally controlled system is key

“On top of improving the utilization of existing radiotherapy equipment with the potential to reduce waiting lists for treatment, the improved conformance gives physicians the opportunity to either reduce the likelihood of unwanted side-effects at previously prescribed doses or increase the dose to the tumor whilst maintaining existing side-effect profiles – which in turn could lead to improved treatment outcomes”, explains Olof Sandén, Executive Vice President Europe at Elekta. “These innovations are available as upgrade packages for existing Elekta accelerators and we are justifiably proud to have introduced both the world’s first linear accelerator with integrated 3D imaging at the time of treatment and to be able to fully exploit the benefits that technology offers through introducing the world’s first accelerator capable of delivering VMAT.”

“Nearly ten years of research in collaboration with members of the Elekta IMRT Consortium has lead to this unique series of innovations”, explains Dee Mathieson, Elekta Business Area Manager, Oncology. “We started by setting ourselves the objective of removing the technical limitations presented by existing technology to give physicians ultimate flexibility in the planning of radiation therapy treatments. The real challenge was to achieve this level of freedom using existing treatment machines already installed in hospitals today. Having already developed the worlds only fully digital accelerator proved to be a key element in making this level of automation and control complexity possible in a way that allows clinicians to deliver advanced treatments with a single push of a button.” she concludes.

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[VMAT capability is CE marked as part of the new linear accelerator control system and may require additional regulatory clearances for sale in other regions of the world. Potential customers should contact their local Elekta office for further details.]

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About Elekta

Elekta is an international medical technology group, providing oncologists, radiation therapists, neurosurgeons and many other medical specialists with state of the art tools to fight serious disease.

Elekta provides advanced clinical solutions, comprehensive management and information systems as well as services for improved cancer care and management of brain disorders.

Elekta's systems and solutions are used in over 4,500 hospitals around the world. Clinical and information management solutions include, among others, Leksell Gamma Knife® for non-invasive treatment of brain disorders, Elekta Axesse™ and Elekta Synergy® for stereotactic and image guided radiation therapy and radiosurgery as well as the MOSAIQ™ suite of software for image-enabled EMR and efficient management of clinical and patient data.

With over 2,000 employees globally, the corporate headquarter is located in Stockholm, Sweden and the company is listed on the Nordic Exchange under the ticker EKTAb. More information about Elekta can be found at www.elekta.com.