

Novel portable diagnostic tool pairs optical and gamma imaging

June 15 2016

Bigger isn't always better, especially when it comes to a new and surprisingly portable molecular imaging system that combines optical imaging at the surface level and scintigraphy, which captures the physiological function of what lies beneath, announced developers at the 2016 Annual Meeting of the Society of Nuclear Medicine and Molecular Imaging (SNMMI).

The scintigraphy aspect of the scanner is comprised of a gamma camera that detects tiny radioactive signals emitted from the body after injection of a radionuclide, which interacts with specific physiological functions of the body, so that nuclear medicine physicians and their colleagues can extrapolate information from the radionuclide's activity.

Optical-gamma imaging could provide a multi-dimensional look at the body by allowing physicians to see a visual representation of molecular data in the same frame as optical [images](#) of the skin, the eyes and other surface organs. Unlike most hybrid imaging systems, which typically take up a lot of real estate in healthcare facilities, this technology is small enough to be easily portable.

"This research covers the first patient results obtained with the hybrid optical-gamma camera developed in the UK at the Universities of Leicester and Nottingham," said Alan Perkins, PhD, Radiological Sciences, University of Nottingham, Nottingham, United Kingdom.

"This scanner has hand-held potential and can be used in a variety of settings, including the outpatient clinic, patient bedside, operating theatre

and [intensive care unit](#)."

For this clinical pilot study, researchers imaged subjects undergoing routine molecular imaging procedures such as bone scans or imaging of the thyroid, eye or lymphatic system. The investigators optimized the image resolution and acquisition time to under five minutes by adopting a 1.5 millimeter-thick scintillator, which picks up gamma rays as they are emitted from within the body, and a 1 millimeter pin-hole collimator, which acts like an aperture to narrow focus on a particular field of view.

Results of the study showed that the optical-gamma camera was highly effective for imaging lymphatic and thyroid tissue, as well as drainage from the tear ducts, or lacrimal glands. Successful absorption of the radionuclides in these targeted areas was clearly seen in tandem with [optical images](#) of surface anatomy. This imaging system is still in development and requires further investigation before being made available to wider patient populations.

More information: Scientific Paper 531: "A novel compact hybrid optical-gamma-camera: First clinical result," A. C. Perkins, A. H. Ng, Radiological Sciences, University of Nottingham, Nottingham, United Kingdom, and Radiation Health and Safety, Ministry of Health, Putrajaya, Malaysia; P. E. Blackshaw, S. Bugby, Medical Physics and Clinical Engineering, Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom; J. E. Lees, Space Research Centre, University of Leicester, Leicester, United Kingdom; M. S. Alqatani, Radiological Sciences Department, King Khalid University, Riyadh, Saudi Arabia; L. Jambi, Radiological Sciences Department, King Saud University, Riyadh, Saudi Arabia, s," SNMMI's 63rd Annual Meeting, June 11–15, 2016, San Diego, Calif.

Provided by Society of Nuclear Medicine

Citation: Novel portable diagnostic tool pairs optical and gamma imaging (2016, June 15)
retrieved 5 May 2024 from

<https://medicalxpress.com/news/2016-06-portable-diagnostic-tool-pairs-optical.html>

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