

Researchers make case for standardized analysis of cardiac imaging

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For accuracy's sake, medical professionals should use the same software for comparing and analyzing diagnostic heart images taken from different time periods and laboratories, a team of researchers has concluded.

The collaborative study, published in the January-February issue of the *Journal of Nuclear Cardiology*, involved physicians and researchers at Sacred Heart Medical Center in Eugene, the University of Oregon and Cedars-Sinai Medical Center in Los Angeles. The study, which involved images done on 328 heart patients at Sacred Heart, is part of an effort to standardize cardiac-image analyses to improve both diagnostics and patient care.

A lack of important consistency is evident from analyses now done with three widely used software packages, said Dr. Mathews Fish, medical director of nuclear cardiology at the Oregon Heart & Vascular Institute at Sacred Heart. Inconsistencies can occur, for example, he said, when comparing images done on over time or when results on a patient come from different labs.

Fish is part of a collaborative research project with Cedars-Sinai that includes a recently awarded grant from the National Institutes of Health (NIH) for the development of an automated high-performance system for analyzing cardiac SPECT (three dimensional) imaging. SPECT stands for single photon emission computed tomography, which uses gamma rays to create pictures of organs and their structures.

The recently published study is believed to be the first head-to-head comparison of the commercially available software used in such cardiac-related diagnostics.

Cardiac SPECT is performed in conjunction with stress testing to compare blood flow to the heart muscle when patients are at rest or stressed. The images are analyzed using computer software. The new study found significant differences in diagnostic performance and quantification of abnormalities in the state-of-the-art software packages being used for cardiac SPECT imaging.

Because of its high diagnostic accuracy in determining the presence of significant coronary artery disease and its ability to determine the risk of a heart attack, cardiac SPECT imaging has become a useful tool in the care of patients with suspected heart disease. Important management and treatment decisions are based not only on whether the test is abnormal, but also the degree of the abnormality, which is best determined by computer software.

The database used in the study to compare the various results was created and maintained by Santiago Lorenzo of Argentina, a doctoral student in the University of Oregon's department of human physiology. Lorenzo adapted the results into Microsoft Access. "It was very useful to use since I had to constantly analyze the data in many different ways," he said. "Having the data organized made my job much easier."

Lorenzo's participation in the study was done as part of collaboration between the hospital and the UO's human physiology department.

"This study shows the tangible benefits of the Oregon Heart & Vascular Institute's research partnership with the University of Oregon," Fish said. "Such research performed locally in our own institutions greatly enhances the quality of medical outcomes and supports the use of the

most appropriate and effective technology for the care of patients."

Source: University of Oregon

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