Non-invasive imaging to detect myocardial ischaemia

A recent study evaluated an integrated non-invasive cardiac imaging technique for the detection of ischaemic heart disease (IHD).

Cardiovascular disease is a major cause of death across Europe. Although cardiovascular mortality rates, adjusted for age, are generally declining, the prevalence of IHD is increasing due to the emergence of new risk factors.

In order to further reduce cardiovascular mortality and morbidity, better prevention and management of IHD is needed. A common technique for the diagnosis of IHD is invasive coronary angiography, but its current diagnostic yield is suboptimal mainly due to underutilization of non-invasive tests prior to the invasive study.
The EU-funded EVINCI-STUDY project investigated the diagnostic accuracy of combining non-invasive anatomical information from computed tomography coronary angiography (CTCA) with functional information from stress imaging. The aim is to achieve earlier non-invasive detection and characterisation and thus better management of IHD. Project partners performed the investigations in a cohort of 697 patients with suspected IHD, and low-intermediate probability of disease, selected from 14 clinical centres across Europe.

Comparison of several imaging techniques for their diagnostic accuracy to detect obstructive coronary disease and predict revascularization revealed that CTCA had better diagnostic performance than stress imaging. Perfusion based imaging techniques (Single-photon emission computed tomography (SPECT) and positron emission tomography (PET)) had greater sensitivity, while wall motion based techniques (echocardiogram (ECHO) and cardiac magnetic resonance (CMR)) had greater specificity. In addition, integration of CTCA with functional imaging increased diagnostic accuracy of functional imaging alone.

Project members implemented a multimodal electronic tool to enable the organisation and visualization of all available information (clinical, biological and cardiac imaging) for a single patient. This ensured easy presentation of the integrated information at multiple levels of complexity to specialists and referring physicians, including medical practitioners.

In years to come, there will hopefully be a reduction in the use of invasive procedures, inappropriate revascularisation and health costs due to poor management. In addition, early detection could promote prevention and early treatment programmes.

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**Project Information**

**EVINCI-STUDY**

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