

Tackling the Cardiovascular Disease Complexity by Multimodality Approach on Diagnosis and Treatment of Cardiovascular Disease

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ABSTRACT

Current strategies of diagnosis and treatment among patients with cardiovascular diseases (CVDs) may be limited by suboptimal performance and too focus on only major problem which is interesting to main clinical practice. By the means of single modality approach on diagnosis, for example in coronary artery disease, may lead to single modality approach on treatment strategy, for example only focusing in percutaneous coronary intervention without subsequent cardiac rehabilitation program. The linear thought of one disease entity may cause incomprehensive management for various cardiovascular diseases. The multimodality approach on diagnosis and subsequent multimodality oncoming on treatment of CVDs is the future that is already open currently. Not only clinical acumen, but also supporting diagnosis tools, is mandatory for current cardiology practice, which is our challenge. The increased numbers of cardiologists in our country contribute to the improvement of life expectancy and quality of life in patients with CVDs. This improvement can be achieved depends on the capability of early diagnosis, the utilisation of novel treatment strategy, the continuity of monitoring and evaluation of outcome/effect. The multimodality approach fits with this flow of patients care.

The blooming of noninvasive imaging, invasive imaging, biomarkers, cellular analysis, genetic testing and nuclear cardiology has been able to diagnose more precisely the CVDs. The combination between several diagnostic tools and step-by-step strategy using multimodality approach to diagnose CVDs is proven beneficial both for patients and clinicians. The availability of imaging modalities, for example, in our country such as 3D echo, cardiac CT, cardiac MRI and nuclear scintigraphy, encourage cardiologists to be wise on choosing best multimodality diagnosis approach. Treatment strategy for CVDs has also been blooming in not only focusing on drugs or intervention or surgical management itself, but also involving other treatment modalities such as secondary prevention, cardiac/vascular rehabilitation, psychosocial and occupational therapy. However, the value of all modalities must be suitable with benefit and cost balance, especially in our country with national insurance coverage program. The comprehensive management of CVDs is possible by means of multimodality approach on diagnosis and treatment strategy.

Keywords: multimodality; diagnosis; treatment; CVDs

The Development of Bench-to-bedside Approaches to Understand In-Vivo Atherosclerosis and Thrombogenesis in Cardiovascular Disease

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ABSTRACT

Understanding the mechanisms of cardiovascular disease is developing. The causes of atherosclerotic plaque formation process include lipid retention, oxidation, and modification, which provoke chronic inflammation at susceptible sites. Deep venous thrombosis is also an important disease which can cause lethal complication such as pulmonary embolism. However, the pathogenesis of deep venous thrombosis remains unclear.

Recent advantages of molecular imaging techniques shed light into the molecular basis of atherosclerosis formation and development. Our research using NIRF (near-infrared fluorescence)-OCT catheter system enabled the visualization of both anatomical information from clinical grade OCT and plaque characteristics such as inflammation simultaneously. We succeeded in detecting athero-thrombosis prone plaque using this catheter *in vivo*.

Our most recent progress allowed visualization of deep venous thrombosis using two-photon microscopy *in vivo* with single leukocyte level. In this presentation, we will mainly present our recent data using such molecular imaging technology to visualize pathogenesis of deep venous thrombosis and atherothrombosis.

Keywords: atherosclerosis; pathogenesis; deep venous thrombosis