

Healthcare industry BW

German Cardiac Society meeting 2012 - Medicine for sick hearts

The recent German Cardiac Society meeting in Mannheim in April 2012 focused on the latest findings related to the prognosis, diagnosis and therapy of heart diseases. While great progress has been made in the therapy of disease symptoms, it will still take a long time before gene and stem cell therapies that target the causes of disease find their way into clinical application. The conference also presented the new German Centre for Cardiovascular Research, which will be located at seven centres in Germany. The centre will specifically focus on the translation of research on the most important cardiac diseases (e.g. cardiac insufficiency) into clinical application and the pooling of expertise for the development of new therapies and diagnostics for the treatment of cardiovascular diseases.



Rosengarten Congress Centre in Mannheim, where this year's annual meeting of the DGK was held. © City of Mannheim

The Deutsche Gesellschaft für Kardiologie - Herz-und Kreislaufforschung e.V. (DGK; Engl. German Cardiac Society) was established at the Kerckhoff Institute (now the Max Planck Institute for Heart and Lung Research) 85 years ago. It is the oldest and, with around 8,000 members, also the

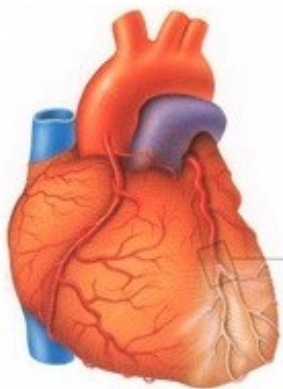
largest cardiac society in Europe. The DGK held its annual meeting in the Rosengarten Congress Centre in Mannheim from 11th to 14th April 2012. A record number of 8,200 participants came to Mannheim from 27 countries. More than 3,500 oral and poster presentations and many discussions addressed the latest developments and findings on practically all aspects of cardiovascular diseases and cardiology.

Baden-Württemberg is the healthiest German state

Although the number of cardiovascular deaths has considerably decreased in Germany over the last ten years, cardiovascular disease is still the number one cause of death in Germany – way ahead of tumour-related deaths. Worldwide, almost twice as many people die of cardiovascular diseases than of infectious diseases (infectious diseases are the number two cause of death worldwide, cancer is the number three cause of death worldwide). Considerable differences also exist on the regional level in Germany: Baden-Württemberg is the state with the lowest incidence of coronary heart disease and death rates (coronary heart disease relates to the narrowing or blockage of the coronary arteries which might lead to deficient blood supply and as a result, to cardiac insufficiency and myocardial infarction); the disease and death rate in Mecklenburg West-Pomerania is twice as high as in Baden-Württemberg (according to information supplied by gbe-bund). It has long been known that geographical differences are mainly due to different lifestyle and eating habits of the regions' populations (smoking, hypertension, metabolic disorders caused by a bad diet). The "Gutenberg Health Study" presented at the meeting in Mannheim has provided additional evidence for the huge role played by such risk factors (smoking, blood lipid levels, obesity, diabetes) in the development of cardiovascular diseases.

German Centre for Cardiovascular Research

The new German Centre for Cardiovascular Research, whose establishment is to be finalized by 2015, is one of several German Centres for Health Research initiated by the German government. The German Centre for Cardiovascular Research brings together 25 partners from university and non-university institutions at seven locations, including Heidelberg/Mannheim. Ninety per cent of the total costs (around 40 million euros per year) are financed by the German government and the remaining ten per cent by the German states.



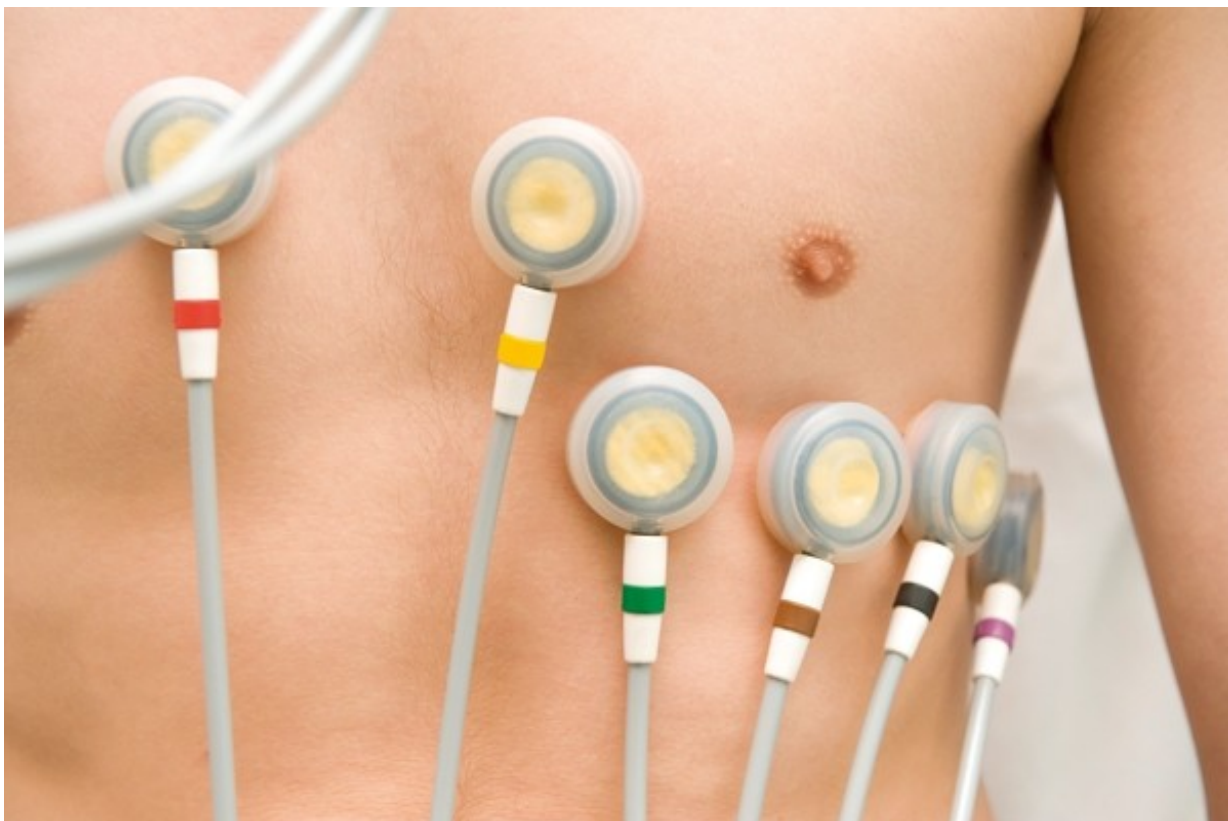
Cardiac insufficiency © Heidelberg University Hospital

The German Centre for Cardiovascular Research brings together experts with the aim of seeking promising new solutions for the treatment of cardiovascular diseases by transferring basic research findings as rapidly as possible into clinical research and clinical application. The funds will

be specifically used for the following topics: the treatment of cardiovascular disease, innate and acquired cardiomyopathies, cardiac insufficiency, heart arrhythmias and the prevention of myocardial infarction. The seven centres will concentrate on individual topic-related projects, for example projects related to stem cell research, research into microRNAs for the diagnosis and therapy of cardiomyopathies and the development of prognostic and diagnostic biomarkers. In addition to the research programmes, the German Centre for Cardiovascular Research will also carry out cooperative initiatives, for which around 35 per cent of the funds have been set aside. Such initiatives will focus on clinical studies for the evaluation of drugs for which no patent protection is available and which are therefore not dealt with by the pharmaceutical industry.

However, the projects expressly seek cooperation with industry, and funding will be provided for cooperative projects that have a long-term effect; successful projects will be coordinated by several partners. The centre's spokesman Prof. Dr. Thomas Eschenhagen explains: "We hope that the coordinated support of research projects will help us to establish a national study landscape. Germany has not really been that good as far as national projects are concerned. Although we have excellent research in Germany, it has been carried out at many individual institutions, and knowledge and expertise has not really been pooled." We will also offer all partners the possibility to receive funding for successful projects after the initial 5-year funding period. Politicians are increasingly becoming aware of the fact that successful research takes a long time. On the other hand, funding is a kind of a control to find out whether the money awarded leads to results. The centres will have to pay for research in advance and will receive governmental funding once they have come up with successful results.

Wanted: cardiac insufficiency biomarkers



Control of cardiac function © Mannheim Medical School

One of the funding priorities focuses on cardiac insufficiency (heart failure), which is the only serious cardiac disease in Germany that is constantly on the increase. Cardiac insufficiency is a

medical condition in which the heart progressively loses its ability to pump enough blood through the body. The disease leads frequently to death and cannot yet be treated causally. At present, it is only possible to alleviate the symptoms, delay the progression of the disease and reduce the risk of complications such as sudden cardiac arrest. However, research has shown that the expression of genes in the heart is altered quite some time before the patient experiences obvious symptoms. "Causal therapy needs to be started quite early. It is usually too late to try to reverse the situation at the point when the heart's ability to pump enough blood through the body is already decreasing," explained Prof. Dr. Stefan Engelhardt speaking at the meeting in Mannheim. However, it is only possible to interfere if alterations can be detected at an early stage. "Our primary goal must therefore concentrate on finding reliable biomarkers for such early disease stages," said Engelhardt.

Dr. Carsten Jungbauer reported on a new biomarker that enables the prognosis of the mortality of patients suffering from cardiac insufficiency. Chronic cardiac insufficiency is frequently associated with kidney damage. The combined functional impairment of the heart and the kidneys is referred to as cardiorenal syndrome; however, little is yet known about the pathophysiology of the syndrome. The KIM-1 (kidney injury molecule-1) marker that can be detected in the urine of patients with cardiorenal syndrome correlates with the severity of cardiac insufficiency and is of prognostic value for the patients' rehospitalisation and mortality. The data presented suggest that chronic cardiac insufficiency leads to damage to the renal tubules.

Stem cell and gene therapies



Prof. Dr. Hugo Katus, Medical Director of the Dept. of Cardiology at Heidelberg University Hospital © University Hospital Heidelberg

Cardiologists around the world are investigating whether gene therapies in which genes are introduced into the heart, or genes that can be switched off are suitable for the treatment of advanced cardiac insufficiency. They are also focusing on certain stem cell therapies which might be suitable for regenerating dead cardiac muscle areas. However, rapid success with therapies involving stem cells cannot be expected, explained Professor Dr. Jochen Wöhrle from Ulm University Hospital. He presented a placebo-controlled double blind study in which myocardial infarction patients who were successfully implanted stents were transplanted bone marrow stem

cells five to seven days after infarction. All study participants received optimal medical therapy for a period of three years. At the end of the reference period, the situation of the patients treated with stem cells had not improved compared to the control group who did not receive stem cells.

Slightly more promising results were presented by Prof. Dr. Hugo Katus, Medical Director of the Department of Cardiology at the University Hospital of Heidelberg. Katus regards the transformation of stem cells into so-called pacemaker cells as a promising perspective in the treatment of cardiac insufficiency. The researchers from Heidelberg are also focusing on a gene therapy approach for the treatment of chronic cardiac insufficiency: they use a virus as gene shuttle to deliver a protein that controls the influx of calcium into the heart muscle directly into the bloodstream of the heart. The approaches are currently being tested in animal experiments. Despite these successes, there is still a long way to go before stem cell and gene therapy approaches can be used for the treatment of cardiac insufficiency.

Article

30-Apr-2012

EJ (25.04.2012)

BioRN

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