Editor's Page

The Dawn of Cardiology at the Dawn of the 21st Century: Have we Found the Pathway to our Heart?

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The previous century was characterised by incredible inventions in all fields of science. We flew from one corner of the world to the other within 24 hours; we walked on the moon; antibiotics and vaccines saved millions of lives and genetics unravelled the human gene sequence. On the other hand, the same century was also stigmatised by the misuse of nuclear power and two world wars. Human life was treated with contempt and millions were sacrificed because of racial and religious differences. Have we grown wiser? Will we be able to suppress deep down the dark side of our soul? Will we be able to embrace each other, in order to work for the future of our children? It seems that we still have a long way to go. If we look around us, we can still see war, hunger, suffering. Politicians, activists, religious authorities, and of course scientists, devote a huge amount of effort to awaken consciousness, to prevent disasters, to heal both body and soul.

It is essential to listen to our heart and follow its rhythm. Cardiology, in this particular perspective, is privileged. Cardiology is focused on this small, but quite amazing organ, which not only pumps blood to the entire body, supplying the necessary amount of oxygen and nutrition, but also embodies, according to popular wisdom, the center of human feelings. In a way, this means that the practice of cardiology has a dual significance: prevention and treatment of the disease; moral support to the patient and the family.

Cardiovascular diseases are increasing in epidemic proportions in industrialised countries and still remain the major cause of morbidity and mortality. Furthermore, cardiovascular disease already accounts for almost 10% of the developing world's burden of disease and is likely to become its leading cause of death. However, at the dawn of the 21st century it seems that we have the knowledge, the determination and most important of all, the means to make a difference.

Not too many years ago, cardiologists fought disease literally barehanded. The only means they had at their disposal were their senses. Diagnosis was established based on history, palpation and auscultation. Cardiology's most important diagnostic tool is barely two centuries old. The stethoscope was invented in 1819 by the French physician René-Théophile-Hyacinthe Laënnec and the electrocardiograph in 1902 by Dutch physiologist Willem Einthoven. However, the 20th century witnessed extraordinary advances in the diagnosis and treatment of heart diseases. Hypertension, dyslipidaemia, smoking, diabetes and obesity were acknowledged as major risk factors for cardiovascular disease, while the role of potential factors, such as homocysteine and fibrinogen, is currently being explored. Preventive strategies have been established as the best "therapeutic approach" for healthy individuals with multiple risk factors. This will be the most effective way to reduce the global disease burden and will most definitely help national and international economics by decreasing the amount of money spent on treatment.

Non-invasive imaging techniques have emerged as novel and exiting diagnostic tools. Echocardiography has a proud past and a bright future. The development of myocardial contrast agents and associated imaging techniques to enhance the visualisation of these agents within the myocardium has significantly

facilitated the qualitative assessment of myocardial perfusion abnormalities. In the future, the continuous refinement of three-dimensional echocardiography will for the first time make possible the assessment of complex cardiac anatomy. On the other hand, computerised tomography and magnetic resonance imaging seem to be very promising and are already used in clinical practice for the determination of congenital or acquired heart disease, while extensive ongoing research might expand their indications.

In this battle against cardiovascular disease, interventional cardiology and electrophysiology will still play a pivotal role. The most sophisticated technology that has been developed for the detection of vulnerable atherosclerotic plaque is currently being evaluated. Additionally, the last decade has seen tremendous progress in the techniques, materials and adjunctive therapy associated with percutaneous coronary interventions. It is thus likely that in the near future the majority of patients with complex cardiovascular problems, such as those with three-vessel or severe valve disease, will be treated percutaneously. Clinical cardiac electrophysiology will continue to evolve. A dramatic reduction in hospitalisations and mortality is expected with the use of implantable cardioverter defibrillators, while improved exercise tolerance and a better quality of life have already been reported as the result of cardiovascular resynchronisation therapy.

Gene therapy for vascular diseases is moving rapidly from the sphere of the possible to the domain of the clinically applicable. Gene therapy is now a consideration in the treatment of certain inherited and acquired genetic disorders. With improvements in delivery and targeting, gene therapy is likely to enhance established and emerging therapies substantially. Valentine Fuster, past President of the American Heart Association, gave his perspective on the gene revolution at the 72nd Scientific Sessions of the AHA in November 1999: “Three years ago, we said that gene therapy used for peripheral vascular disease was a possible therapy. A year ago, we said it was feasible. Today, we say it is almost clinically applicable. A year ago, we said gene therapy for coronary heart disease was possible, and today we say it is feasible. Maybe next year, we will say it is clinically applicable”.

In this continuing explosion of emerging diagnostic and therapeutic techniques, it is very easy to lose sight of the target. Fascinated by novelty, eager to learn and to apply fancy new methods, we fight and we finally cure the disease. However, we frequently leave behind a terrified and ignorant patient, who is unable to cope with either his sickness or his treatment. We are doctors of the heart and we must never forget it. This is not about being the first or the best, this is about a human being who is sick and afraid and depends on us, on our skills and our knowledge. In the dawn of the 21st century we are still doctors of the heart. Let us reach out to our patients and use all those wonderful things that technology provides with prudence and caution.