



Cardiovascular Disease and Need for Translational Research

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Cardiovascular disease (CVD) is the leading cause of death worldwide as well as a major public health concern, especially in the developed countries, and its incidence is increasing globally. Given their substantial contribution towards the escalating costs of health care, CVDs also generate a high socio-economic burden among the general population. The rise of major risk factors such as hyper-lipidaemia, hypertension, diabetes, obesity, smoking and lack of physical activity, in industrialized but also developing countries, further enhances the impact of CVDs [1]. Prevalent cases of CVD nearly doubled from 271 million in 1990 to 523 million in 2019, and the CVD deaths increased from 12.1 million in 1990 to 18.6 million in 2019. The epidemiological evolution of CVD provides significant implications for clinical practice and public health policy development, with prevalent cases of CVD which are likely to increase dramatically as a result of population growth and aging [2].

CVD includes a series of diseases, involving angina pectoris, myocardial infarction (MI), heart failure (HF), arrhythmia and else. The underlying pathogenesis associated with nearly all CVDs is predominantly related to atherosclerosis, which leads to the development of coronary artery disease, cerebrovascular disease, venous thromboembolism, and peripheral vascular disease, subsequently causing MI, cardiac arrhythmias or stroke. Additionally, HF can occur as consequence of large MI or can be due to genetic predisposition or infectious disease. HF is a progressive disease in which the heart muscle is not able to pump enough blood to meet the needs of the body. The prevalence of HF is in 1–2% of adults in industrialized countries and is increasing with population ageing, thus representing one of the major public health problems [3].

Preclinical studies are warranted not only to understand basic mechanisms and thereby provide targets for new therapeutic strategies, but also to obtain significant information about the safety and efficacy of these new approaches. Animal studies provide opportunities to test the feasibility of novel strategies without the risk of harming humans. Obviously, simplified in vitro or animal models do not completely reflect the complexity of reality, and a significant gap still exists between preclinical and clinical research, as we can see for cardiac amyloidosis or for congenital heart diseases [4].

On the other side, randomized controlled trials (RCTs) has emerged as the principal method by which new therapies are evaluated in medicine and in cardiovascular research. Indeed, results from RCTs have enabled the transition from anecdote-based to the empirical evidence-based medicine. To date, RCTs in cardiovascular medicine have grown in size, purpose, and complexity, because as therapeutic approaches in cardiovascular medicine have become more effective, the level of evidence required to support incremental novel advances has grown significantly [5].

The management of CVD has changed significantly over the last decades, leading to improvements in the quality of life and outcomes. This has been made possible by the identification of various pathways leading to the development and progression of CVD, which have been successfully targeted with effective therapies. Meanwhile, many other potential targets of treatment have been identified, and the list is continuously expanding. Finally, the improvement in cardiac imaging techniques, as well as the advanced understanding of biomarkers, which enable us to define specific cut-offs for diagnosis, to manage patients' response to therapy, to predict prognosis and stratify patients based on their risk; provides intriguing perspectives for future research.

Open Cardiology Research invite researchers to submit their original works, research papers, re-views, and short communications, as well as case report, conference proceedings, clinical images, etc. The purpose consists of providing the reader with updated information on the topics related to cardiology research, with the aim of expanding current knowledge about CVD.

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