

Department of Internal Medicine

Division of Cardiology

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General Summary and Research Activities

Research in every field, both clinical and basic, advances daily on the basis of reliable results.

Clinical research

In clinical research, we have been vigorously participating in multicenter collaborative studies, including large-scale clinical studies, and conducting research during routine clinical practice. In the large-scale clinical studies, we have primarily collaborated in subanalyses of the Japanese Investigation of Kinetic Evaluation in Hypertensive Event And Remodeling Treatment (JIKEI HEART) Study, whose results were previously reported, and in such studies as the Japanese Rhythm Management Trial for Atrial Fibrillation (J-RHYTHM) II (upstream drug therapy for atrial fibrillation associated with hypertension by means of a multicenter study: a study related to and comparative study of calcium antagonists and angiotensin receptor blocker: ARB), the Assessment of β -Blocker Treatment in Japanese Patients with Chronic Heart Failure (J-CHF) study (a large-scale clinical study to establish a β -blocker treatment method in chronic heart failure), the PEARL study (multicenter cooperative study to investigate the ameliorative effect of hydroxymethyl glutaryl coenzyme A reductase inhibitors on chronic heart failure), and the Nationwide Gender-specific Atherosclerosis Determinants Estimation and Ischemic Cardiovascular Disease Prospective Cohort (NADESICO) study (multicenter cooperative prospective cohort study on sex differences in risk factors for arteriosclerotic diseases and prevention), which used computed tomography examinations of coronary arteries.

We have converted patient data, including risk factors, lesion morphology, and other variables obtained during catheter examinations and treatment in various clinical research divisions into a database and compared risk factors, outcomes, and other clinical variables of ischemic heart disease, cardiomyopathy, and other conditions. In addition, we have participated in nationwide clinical studies (The Japan-Drug Eluting Stents Evaluation; a Randomized Trial [J-DESSERT], the Coronary Spasm Association [CSA]), mainly investigating treatment with drug-eluting stents and the diagnosis of coronary vasospasm, which is closely related to the etiology of ischemic heart disease. In regard to heart failure, which is an extremely common circulatory disease, we have

been assessing data related to serum brain natriuretic peptide concentrations, which are an index of pathologic change, and have been performing research on standard values that will be useful in clinical practice. In addition, we have described in detail the pathologic changes of heart failure before and after admission to the hospital and are assessing clinical data that will serve as new indexes.

We have been aggressively treating atrial fibrillation by means of catheter ablation, and during this fiscal year we have treated approximately 160 patients. In addition, in clinical research we have investigated: 1) the usefulness of the pulmonary vein antrum isolation procedure by new mapping systems, and 2) optimal catheter ablation strategies for persistent atrial fibrillation.

Basic research

Our research activities include studies at other institutions in Japan and abroad by graduate students in basic sciences and clinical sciences and the presentation of study results. In the field of arrhythmia, we have studied the development of atrial fibrillation by using various experimental models to examine the effects of inflammatory cell invasion and fibrosis on the myocardium. In the field of cardiomyocyte physiology, we have investigated the physiological and pathophysiological regulatory mechanisms of myocardial contraction and relaxation with molecular biology techniques and physiologic techniques. Other research topics include a new signal transmission system in the α -receptor stimulation effect in relation to L-type Ca channels in the rat myocardium, the effects of β -receptor stimulation in sarcoplasmic reticulum function, and cardiomyocyte intracellular Ca kinetics in mice with dilated cardiomyopathy due to troponin T mutations. In the field of myocardial metabolism, we have investigated the association between ischemia-reperfusion damage and intracellular ion kinetics in the isolated perfused hearts of mice with type 2 diabetes.

Publications

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