

Cardiovascular Medicine

1. Staffs and Students (April, 2012)

Professor	Mitsuaki Isobe	
Clinical Professor	Kenzo Hirao	
Associate Professor	Takashi Ashikaga, Tetsuo Sasano (Graduate School of Health Care Sciences, Biofunctional Informatics)	
Junior Associate Professor	Yasuhiro Yokoyama,	Go Haraguchi (Department of Critical Care Medicine)
Assistant Professor	Mihoko Kawabata, Shunji Yoshikawa, Yasuaki Tanaka, Taro Sasaoka, Yusuke Ebana (Medical Research Institute, Bio-informational Pharmacology), Daisuke Tezuka	Ryoko Azuma, Ken Kurihara, Shingo Maeda,
Graduate Student	Chisato Takamura, Yu Hatano, Kentaro Takahashi, Tatsuya Hayashi, Tetsuo Kamiishi, Susumu Tao, Hiroshi Kawata, Tomoyo Sugiyama, Tomofumi Nakamura, Kei Takayama, Toru Miyazaki, Yuji Konishi, Masa-- Takigawa, Tatsuya Fujinami, Masahito, Suzuki, Rena Nakamura	Koji Higuchi, Kiyoshi Ohtomo, Masahiko Setoguchi, Tomoko Manno, Daisuke Ueshima, Kensuke Ihara, Koji Sugiyama, Ryota Iwatsuka, Yoko Kato, Yoichi Otaki, Atsuhiko Yagishita, Osamu Inaba, Naoyuki Miwa,

2. Education

We are dealing with pathophysiology of circulatory system especially cardiovascular diseases. Cardiovascular diseases are principal cause of death in our country. These diseases are categorized into several fields. They include ischemic heart disease, myocardial disease, valvular disease, atherosclerosis, arrhythmia, and infectious disease. The common final figure of these diseases is heart failure leading to patients' death. Based on recent progresses in molecular biology and bioengineering our knowledge on the pathophysiology of these diseases has been expanded rapidly. There are variety of new diagnostic technologies including imaging tests, hematological tests and electrophysiological tests. In addition, development in the treatment of cardiovascular disease is overwhelming. They include intravascular catheter intervention, catheter ablation and operation. Medical treatment has also been progressed rapidly. Further, gene therapy for cardiovascular diseases has started. All of these fields are our focus for education. In this course, students learn about modern knowledge and technologies in cardiovascular diseases, especially in the field of pathophysiology, diagnosis, treatment and prevention.

3. Research Subjects

The purposes of our investigation are to reveal the etiology and pathophysiology of cardiovascular diseases, and to develop new technologies for diagnosis and treatment. For that purpose we investigate clinical cases and model animals. Currently our investigations are focusd on arteriosclerosis, atherosclerosis, cardiomyopathy, myocarditis, arrhythmias, cardiac rejection and heart failure. The relationship between gene mutation and cardiovascular disease, electrophysiology, myocardial cell transplantation and myocardial regeneration are also our major subjects of research.

- 1) Clinical study of gene therapy for coronary artery disease (Isobe)
- 2) Clinical study for treatment of acute coronary syndrome (Isobe, Ashikaga, Yoshikawa)
- 3) Molecular mechanism and treatment of myocardial ischemia and reperfusion injury (Isobe, Haraguchi)

- 4) Molecular mechanism and treatment of coronary restenosis and vascular disease (Isobe)
- 5) Gene therapy of myocarditis and cardiac chronic rejection (Isobe, Suzuki)
- 6) Cardiac rejection and immunological tolerance (development of safe immunosuppressive therapy) (Isobe, Suzuki)
- 7) Treatment of heart failure and cardiomyopathy by myocardial regeneration (Isobe, Suzuki)
- 8) Regulation of arteriosclerosis by targeting transcription factors (Isobe)
- 9) Gene therapy of vascular disease (Isobe)
- 10) Diagnostic imaging of aortitis (Isobe)
- 11) Molecular mechanism and treatment of aortitis (Isobe)
- 12) Assessment of vascular endothelial dysfunction in vasculitis, heart failure and arrhythmia(Isobe)
- 13) Application in gene therapy for heart failure and cardiomyopathy(Isobe)
- 14) Molecular system of myocardial remodeling in heart failure and ventricular hypertrophy(Isobe)
- 15) Therapy of sleep apnea syndrome with heart failure(Isobe)
- 16) Assessment by imaging of coronary artery and cardiac function(Isobe Tezuka)
- 17) System of origin with tachyarrhythmias (particularly supraventricular tachycardia)(Hirao)
- 18) Medical therapy and ablation for tachyarrhythmias (Hirao)
- 19) Research for the conduction of atrio-ventricular node(Hirao)
- 20) Research and Therapy for arrhythmia by using Cardioendoscope(Hirao)
- 21) Research of atrial fibrillation from origin of pulmonary vein(Hirao)
- 22) Research of genetic factor with atrial fibrillation(Hirao)
- 23) Research of ablation for atrial fibrillation(Hirao, Yokoyama)

We conduct collaborative researches with not only Medical Research Institute and other facilities in our university but also domestic and foreign institutes according to research projects. Since clinical cases in our hospital are diverse and abundant, clinical investigations are also our major target. Therefore, we can provide many research projects depending on students' need. We encourage and help students to pursue their own original way of investigation.

4. Clinical Services

Students are also encouraged to learn about clinical cardiology. They can participate in any clinical activities underwent in our hospital including cardiac catheterization, electrophysiological study, catheter ablation, various imaging tests, cardiac pathology, and patients care.

5. Publications

Review

1. Adachi S, Isobe M: Plakophilin-2 gene could be a causative factor in arrhythmogenic right ventricular cardiomyopathy. *Circ J* 76(1): 51-52, 2012

Original Article

1. Maeda S, Yamauchi Y, Obayashi T, Hirao K, Isobe M: Atrial fibrillation arising from the left brachiocephalic vein. *J Am Coll Cardiol* 59: 773, 2012
2. Ozaki, S; Ando, M; Isobe, M; Kobayashi, S; Matsunaga, N ; Miyata, T; Nakabayashi, K; Nakajima, Y; Nose, M; Ohta, T; Shigematsu, H; Sueishi, K; Tanemoto, K ; Yoshida, A; Yoshida, M; Yutani, C ; Arimura, Y; Fukaya, S ; Hamaguchi, S ; Hashimoto, H; Hiromura, K ; Ishizu, A; Iwai, T; Kaneko, K; Kataoka, H; Kawana, S; Kida, I ; Kobayashi, Y; Komori, K; Masaki, H; Matsumoto, T; Nagaoka, T; Nagasawa, K; Nojima, Y; Okada, M; Okazaki, T; Sakamoto, I; Shigematsu, K; Shiiya, N; Takahashi, A; Takizawa, H ; Yamada, H; Yoshida, S; Fukui, T; Horie, M; Koike, T; Kumagai, S; Sasajima, T: Guideline for Management of Vasculitis Syndrome (JCS 2008) Digest Version. *Circ J* 75(2): 474-503, Feb 2012
3. Maeda S, Yamauchi Y, Obayashi T, Hirao K, Isobe M: Atrial fibrillation arising from the left brachiocephalic vein. *J Am Coll Cardiol* 59(8): 773, Feb 2012
4. Miyazaki S, Kuwahara T, Kobori A, Takahashi Y, Takei A, Sato A, Isobe M, Takahashi A: Impact of the Adenosine Provoked Acute Dormant Pulmonary Vein Conduction on Recurrence of Atrial Fibrillation. *J Cardiovasc Electrophysiol* 23: 256-260, Mar 2012.
5. Watanabe R, Ogawa M, Suzuki J (corresponding author), Hirata Y, Nagai R, Isobe M. A comparison between imidapril and ramipril on attenuation of ventricular remodeling after myocardial infarction. *J Cardiovasc Pharmacol*. 59(4): 323-330, 2012

6. Hamaya R, Ogawa M, Kobayashi N, Suzuki J, Hirata Y, Nagai R, Isobe M: A Novel IKK Inhibitor Prevents Progression of Restenosis after Arterial Injury in Mice. *Int Heart J* 53(2): 133-138, 2012
7. Ohigashi H, Haraguchi G, Konishi M, Tezuka D, Kamiishi T, Ishihara T, Isobe M: Improved Prognosis of Takayasu Arteritis in the Last Decade: Comprehensive Analysis of 106 Patients. *Circ J* 76(4): 1004-1011, 2012
8. Kawata H, Noda T, Yamada Y, Okamura H, Satomi K, Aiba T, Takaki H, Aihara N, Isobe M, Kamakura S, Shimizu W: Effect of sodium-channel blockade on early repolarization in inferior/lateral leads in patients with idiopathic ventricular fibrillation and Brugada syndrome. *Heart Rhythm* 9: 77-83, 2012
9. Tezuka D, Haraguchi G, Ishihara T, Ohigashi H, Inagaki H, Suzuki J, Hirao K, Isobe M: Role of FDG-PET/CT and Utility of Maximum Standard Uptake Value in Takayasu Arteritis: Sensitive Detection of Recurrence. *J Am Coll Cardiol Imaging* 5(4): 422-429, 2012
10. Kamimura M, Moroi M, Isobe M, Hiroe M: Role of coronary CT angiography in asymptomatic patients with type 2 diabetes mellitus. *Int Heart J* 53(1): 23-28, 2012
11. Suzuki J, Ogawa M, Sakai Y, Hirata Y, Isobe M, Nagai R: A prostacycline analog prevents chronic myocardial remodeling in murine cardiac allografts. *Int Heart J* 53(1): 64-67, 2012
12. Matsumoto R, Suzuki J, Watanabe R, Ogawa M, Isobe M: Inhibition of I κ B phosphorylation by a novel IKK inhibitor IMD-1041 attenuates myocardial dysfunction after infarction. *Immunol Endocr Metab Agents Med Chem*. 12: 137-42, 2012
13. Yamada R, Suzuki J, Isobe M: Clarithromycin Attenuates Left Ventricular Remodeling and Dysfunction after Pressure Overload in Mice. *Immunol Endocr Metab Agents Med Chem*, 12: 147-151, 2012
14. Shima N, Suzuki J, Isobe M: Clarithromycin Attenuates Left Ventricular Remodeling and Dysfunction after Pressure Overload in Mice Via Matrix Metalloproteinase Suppression. *Immunol Endocr Metab Agents Med Chem*, 12: 143-6, 2012
15. Takamura C, Ohigashi H, Ebana Y, Isobe M: A New HLA Risk Allele in Japanese Patients with Takayasu Arteritis. *Circ J* 76(7): 1697-1702, 2012
16. Suzuki J, Tezuka D, Morishita R, Isobe M. Eight-year follow-up of an initial case with NF-kB decoy oligodeoxynucleotide transfection after coronary stent implantation. *Immun Endoc Metab Agents in Med Chem*. 12: 40-2, 2012
17. Otsuka H, Arimura T, Abe T, Kawai H, Aizawa Y, Kubo T, Kitaoka H, Nakamura H, Nakamura K, Okamoto H, Ichida F, Ayusawa M, Nunoda S, Isobe M, Matsuzaki M, Doi YL, Fukuda K, Sasaoka T, Izumi T, Ashizawa N, Kimura A: Prevalence and Distribution of Sarcomeric Gene Mutations in Japanese Patients With Familial Hypertrophic Cardiomyopathy. *Circ J* 76(2): 453-461, 2012
18. Hikita, H ; Kuroda, S ; Kawaguchi, N ; Nakashima, E ; Fujinami, T ; Sugiyama, T ; Kamiishi, T ; Takahashi, Y ; Nozato, T ; Kuwahara, T ; Satoh, A ; Takahashi, A ; Isobe, M. Differential Characteristics of Inflammatory Responses to Stent Implantation Between De Novo and Intrastent Restenosis Lesion in Patients With Stable Angina. *ANGIOLOGY* 63(Feb): 92-95, 2012
19. Kohro, T ; Iwata, H ; Fujiu, K ; Manabe, I ; Fujita, H ; Haraguchi, G ; Morino, Y ; Oguri, A ; Ikenouchi, H ; Kurabayashi, M ; Ikari, Y ; Isobe, M ; Ohe, K ; Nagai, R: Development and Implementation of an Advanced Coronary Angiography and Intervention Database System. *Int Heart J* 53(1): 35-42, 2012
20. Hanatani T, Aoyama N, Suzuki J, Izumi Y, Isobe M: A Periodontal Pathogen *Aggregatibacter actinomycetemcomitans* Deteriorates Ventricular Remodeling after Myocardial Infarction in Mice. *Int Heart J* 53(4): 253-256, 2012
21. Konishi M, Haraguchi G, Ohigashi H, Sasaoka T, Yoshikawa S, Inagaki H, Ashikaga T, Isobe M: Progression of Hyponatremia is Associated with Increased Cardiac Mortality in Patients Hospitalized for Acute Decompensated Heart Failure. *J Cardiac Failure* 18(8):620-5, 2012
22. Sekinishi A, Suzuki J, Aoyama N, Ogawa M, Watanabe R, Kobayashi N, Hanatani T, Ashigaki N, Hirata Y, Nagai R, Izumi Y, Isobe M: A Periodontal Pathogen *Aggregatibacter actinomycetemcomitans* Deteriorates Pressure Overload-Induced Myocardial Hypertrophy in Mice. *Int Heart J* 53(5): 324-330, 2012
23. Oishi S, Sasano T, Tateishi Y, Tamura N, Isobe M, Furukawa T: Stretch of atrial myocytes stimulates recruitment of macrophages via ATP released through gap-junction channels. *J Pharmacol Sci* 120: 296-304, 2012
24. Kameda T, Usami Y, Shimada S, Haraguchi G, Matsuda K, Sugano M, Kurihara Y, Isobe M, Tozuka M: Determination of myeloperoxidase-induced apoAI-apoAII heterodimers in high-density lipoprotein. *Ann Clin Lab Sci* 42(4): 384-391, 2012
25. Tanaka T, Suzuki J, Ogawa M, Itai A, Hirata Y, Nagai R, Isobe M. Inhibition of I kappaB phosphorylation prevents

load-induced cardiac dysfunction in mice. *Am J Physiol Heart Circ Physiol.* 303: H1435-45, 2012

26. Ashikaga T, Inagaki H, Satoh Y, Isobe M: Proximal balloon deflation technique: a novel method to retrieve retained or entrapped equipment from the coronary system. *Cardiovasc Revasc Med.* 13(4):253-255, 2012