British Journal of Heart Diseases
2018; 1(1): 101 . doi: 10.31488/bjhd.1000101

A Message to Young Cardiologists

Masatoshi Fujita*[1]

1. Uji Hospital, 54-2 Shibanohigashi, Gokasho, Uji, Kyoto 611-0011, Japan,

*Corresponding author: Masatoshi Fujita, MD, PhD, Uji Hospital, 54-2 Shibanohigashi, Gokasho, Uji, Kyoto 611-0011, Japan, Tel: +81-(0)774-32-6000; Fax: +81-(0)774-33-2648;E-mail: mfujita@kuhp.kyoto-u.ac.jp

Received: May 05, 2018; Accepted: May 17, 2018; Published: May 18, 2018

Several years ago, I summarized my life work "coronary collateral circulation" in a few review articles [1-3]. At present, percutaneous coronary intervention (PCI) plays an important role in the treatment of severe coronary artery disease, however, expensive angiography apparatus and well-trained cardiac interventionalists are needed for its clinical achievement. Moreover, its invasive approach has potential critical complications. On the other hand, treatment by coronary collateral development is safe, inexpensive and noninvasive, which is easily conducted by general cardiologists without any equipment and special techniques. Although coronary flow reserve through well- developed collateral circulation may be limited, activity of daily life is substantially enhanced.

Increasing evidence suggests that increased shear stress on pre-existent coronary collateral arterioles in the presence of a pressure gradient across the coronary collateral network triggers coronary collateral growth (arteriogenesis). Arteriogenesis involves numerous angiogenic growth factors as well as heparin [4]. Thus, the targets of collateral-promoting therapy appear to be shear stress itself and angiogenic responses to increased shear stress. Recently, we have proposed a new therapeutic approach to patients with myocardial remodeling resulting from myocardial infarction by applying above- mentioned conceptual framework [5].

At present, PCI for chronic total occlusion (CTO) has a high procedure success rate of approximately 90% [6]. A lack of well- developed collaterals suitable for the retrograde approach causes, at least in part, failed CTO-PCI. Promotion of pre-existent collateral circulation (arteriogenesis) would contribute to further increase CTO-PCI success rates. I hope a new therapeutic approach by coronary collateral development for coronary artery disease will be established by young, creative, enthusiastic cardiologists in the near future.

References

1. Fujita M, Tambara K. Recent insights into human coronary collateral development. Heart. 2004; 90(3):246-250.
2. Fujita M, Sasayama S. Coronary collateral growth and its therapeutic application to coronary artery disease. Circ J. 2010; 74(7):1283-1289.
3. Fujita M, Sasayama S. Reappraisal of functional importance of coronary collateral circulation. Cardiol. 2010; 117(4):246-252.
4. Fujita M, Sasayama S, Asano H, et al. Improvement of treadmill capacity and collateral circulation as a result of exercise with heparin pretreatment in patients with effort angina. Circ J. 1988; 77(5):1022-1029.
5. Miyamoto S, Fujita M, Inoko M, et al. Effect on treadmill exercise capacity, myocardial ischemia, and left ventricular function as a result of repeated whole-body periodic acceleration with heparin pretreatment in patients with angina pectoris and mild left ventricular dysfunction. Am J Cardiol. 2011; 107(2):168-174.
6. Sapontis J, Christopoulos G, Grantham JA, et al. Procedural failure of chronic total occlusion percutaneous coronary intervention: Insights from a multicenter US registry. Catheter Cardiovasc Interv. 2015; 85(7):1115-1122.

To cite this article: Fujita M. A Message to Young Cardiologists. British Journal of Heart Diseases. 2018: 1:1. doi: 10.31488/bjhd.1000101