

Changes in metabolism of sphingosine-1-phosphate induced by fish oil is associated with reduction of allograft arteriosclerosis in intestinal transplant

Qiurong Li

Nanjing University School of Medicine, China

Abstract

Transplant arteriosclerosis is a major cause of late intestinal allograft dysfunction. However, little is known about the involvement of the phospholipid metabolism in it and no effective treatment is available. This study aimed to investigate the modulating role of sphingosine-1-phosphate (S1P) in transplant arteriosclerosis and find out whether fish oil (FO) can attenuate allograft arteriosclerosis through S1P signaling. Here, we conducted a rat model with orthotopic intestinal transplantation. Animals received daily FO or phosphate buffered saline or corn oil treatment after intestinal transplant. The allograft arteriosclerosis was characterized on day 190 post transplant and the expression of sphingosine kinase 1 (SPHK1) and S1P receptors was also determined. We showed that the expression of SPHK1 and its activity were significantly augmented, and the expression of S1P₁ and S1P₃ mRNA was up-regulated in the allogeneic animals, which was involved in allograft arteriosclerosis. FO supplementation suppressed the activation of SPHK1 and the expression of S1P₁ and S1P₃ in transplanted intestines, leading to decreased transplant arteriosclerosis. The findings demonstrate that the activation of SPHK1/S1P signaling plays a possible role in the pathogenesis of transplant arteriosclerosis. The reduction of allograft arteriosclerosis by FO is likely associated with down-regulation of SPHK1/S1P signaling. This study provides novel insight into understanding the role of S1P, which may be considered as a potential therapeutic target for transplant arteriosclerosis.

Biography

Qiurong Li achieved her Ph.D. in Herbin Medical University in 1997 and has accomplished postdoctoral study at Rheinisch-Westfälische Technische Hochschule Aachen in 2002. She is currently the director of Research Institute of General Surgery and a Professor for General Surgery in Jinling Hospital, Nanjing University. She has published more than 20 papers in reputed journals including *Annals of Surgery*, *American Journal Transplantation*, *Critical Care Medicine*, *Journal of Pathology*, etc.

Email: liqiurongjue@126.com