Complex Roles of Endothelial Shear Stress in Vascular Remodeling Response

With great interest I read the review article by Chatzizisis et al. (1) regarding endothelial shear stress (ESS), coronary atherosclerosis, and vascular remodeling. The authors stated in the text, "Recent observations, however, indicate that low ESS leads to excessive expansive remodeling . . . " from their diabetic hyperlipidemic swine model. However, in their previous human study (2), they demonstrated that constrictive remodeling occurred more frequently (44%) than expansive remodeling (22%) in subsegments with low ESS, whereas expansive remodeling occurred more frequently (26.3%) than constrictive remodeling (5.3%) in subsegments with moderate/higher ESS. These results suggest complex roles of ESS in the vascular remodeling response, depending on concomitant conditions including atherosclerotic stage, in addition to differences in biology between experimental models and clinical studies (3,4). Further clinical studies are warranted to determine the role of ESS in vascular remodeling in humans.

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complex interactions among local flow, atherosclerosis, and vascular remodeling.

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