GW23-e2505 **REGULATION OF RPE BARRIER FUNCTION BY VEGF-B**

doi:10.1136/heartjnl-2012-302920b.10

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Objectives Vascular endothelial growth factor-B (VEGFB) is a member of VEGF family growth factors. It is abundant in heart, skeletal muscle and eye. To investigate the role of VEGFB in blood-retina barrier function, we examined the effect of VEGFB on RPE barrier function in mice.

Methods Ischaemia was induced by oxygen-induced retinopathy. VEGFB was delivered to the retina intravitreally. The effect of VEGFB on RPE barrier-specific leakage was evaluated in mice with our recently developed fluorescent microscopic assay. Gene expression was analysed with Western blot and RPE barrier integrity was evaluated with immunohisto chemistry.

Results Intravitreal injection of VEGFB caused a loss of integrity in the RPE tight junctions in normal mice and exacerbated the severe breakdown of the RPE barrier in ischaemic mice. Mechanistic study showed that VEGFB significantly activated VEGF receptor-1 (VEGFR1) and extracellular-signal-regulated kinase (ERK) in vitro and in vivo.

Conclusions VEGF-B regulates RPE barrier function through the activation of VEGFR-1 and ERK1/2. As approximately 30 percent of cases of diabetic macular oedema (DME) are associated with RPE barrier breakdown, VEGFB may be a therapeutic target for DME, a major vision loss in diabetic retinopathy.