Leaky lymphatics lead to obesity in mice

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Lymphatic vessels play multifaceted roles in the body, including the absorption of dietary lipid in the intestines as well as the movement of immune cells throughout the body. Previous work by Guillermo Oliver and colleagues showed that mice with lymphatic defects due to loss of one copy of the *Prox1* gene developed obesity late in life. They hypothesized that obesity was due to leakage of lipid-rich fluid known as chyle from the small intestine; however, the prior study was inconclusive because it was possible that defects outside of the lymphatic vasculature could have also contributed to the development of obesity.

In the current issue of *JCI Insight*, Oliver and his team report definitive evidence linking obesity to lymphatic dysfunction in the *Prox1*$^{+/-}$ mouse model. The researchers demonstrated that lymphatic vasculature function was compromised in *Prox1*$^{+/-}$ mice prior to the onset of obesity and defects continued to be present in older, obese animals.

They then restored expression of *Prox1* exclusively in the lymphatic system of *Prox1*$^{+/-}$ mice and showed that these animals had normal body weight and insulin levels.

Further, they found that administering chyle to preadipocyte cells in culture stimulated their differentiation into adipocytes. These findings suggest that leaking chyle from the lymphatic vasculature could serve as a trigger for obesity.

More information: Noelia Escobedo et al. Restoration of lymphatic function rescues obesity in Prox1-haploinsufficient mice, *JCI Insight* (2016). DOI: 10.1172/jci.insight.85096