

Diabetes UK Conference Abstract:

Adipose tissue Angiotensin-like protein 4 (ANGPTL4) in diabetes and its remission following bariatric surgery

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Background/Aim: Angiotensin-like proteins (ANGPTLs) inhibit lipoprotein lipase which catalyses the movement of lipoproteins into adipose tissue (AT). ANGPTLs are linked with ectopic fat partitioning, by which they play an important role in the pathogenesis of Type 2 diabetes and are potentially influenced by the processes of adipose tissue dysfunction. The aim of this study was to identify changes in ANGPTL4 in relation to diabetes and its remission.

Methods: Serum and AT were obtained from subjects undergoing surgery. Expression of ANGPTL4 and genes associated with AT dysfunction were quantified using RT-qPCR and protein levels by ELISA (Raybiotech). Significance was achieved if $p < 0.05$.

Results: ANGPTL4 was higher in subcutaneous AT (SCAT) than omental tissue, not linked to BMI but higher in diabetes (SCAT: 2.9 ± 0.47 AU, $n=6$ versus 1.25 ± 0.15 AU, $n=6$, $p=0.008$). ANGPTL4 protein levels were also higher in people with diabetes (2720 ± 555 pg/ml, $n=21$, versus 1224 ± 157 pg/ml, $n=18$, $p=0.02$). SCAT ANGPTL4 mRNA correlated with HOMA-IR ($r=0.55$, $p=0.01$, $n=22$) and fasting glucose ($r=0.56$, $p=0.01$, $n=22$).

Circulating ANGPTL4 showed no significant change 9.5 months post-surgery (weight change: 25.7 ± 3.7 kg) regardless of diabetes status. However, SCAT ANGPTL4 mRNA expression decreased after surgery in subjects with diabetes (before 2.9 ± 0.03 AU versus after 1.18 ± 0.09 AU, $n=6$, $p=0.005$) of whom all but two went into remission.

Conclusion: Our unique pre-/post bariatric comparison demonstrates a postsurgical decrease in otherwise raised SCAT-ANGPTL4 gene expression in diabetes. This suggests that AT ANGPTL4 is increased as result of adipose tissue dysfunction, e.g. inflammation and hypoxia which are linked to diabetes pathophysiology and which improve after weight loss surgery/ diabetes remission.