Metformin treatment increases PYY levels in some women with PCOS

The beneficial effects of metformin treatment in women with type 2 diabetes and polycystic ovary syndrome (PCOS) are, in part, attributable to weight reduction, possibly caused by altered levels of anorectic gut hormones such as PYY (peptide tyrosine tyrosine). Tsilchorozidou and colleagues studied the effects of short-term and long-term oral metformin treatment on anthropometric characteristics and plasma levels of PYY.

Eight healthy, normal-weight women (mean BMI 25.3 kg/m^2, mean age 35.5 years) received twice-daily metformin (850 mg after lunch and 425 mg after dinner) for 10 days. By day 3, levels of PYY had increased significantly from baseline (P<0.01); however, only five (68%) participants were classified as responders (≥50% increase in PYY concentration from baseline).

A group of 20 women with PCOS (mean BMI 29.5 kg/m^2, mean age 29.5 years) received metformin 500 mg three times per day for 6 months, and were advised to follow a healthy diet and perform regular cardiovascular exercise. After 6 months, the mean fasting level of PYY increased significantly (P = 0.02). Again, marked variation occurred in responses to treatment, with 11 (55%) women classified as responders. Long-term metformin treatment was associated with significant improvements in weight, BMI, fasting glucose levels and menstrual frequency (all P <0.05). PYY levels correlated with reductions in waist circumference (r = 0.55, P = 0.01).

The authors conclude that metformin treatment increases PYY levels in a subset of healthy women and those with PCOS. Further studies are needed to identify patients who are likely to respond well to long-term metformin treatment.

Original article Tsilchorozidou T *et al.* (2008) Metformin increases fasting plasma PYY in women with PCOS. *J Clin Endocrinol* [doi:10.1111/j.1365-2265.2008.03285.x]

Hypothyroidism: glucose metabolism improves with endocrine therapy

Overtly hypothyroid patients often have profoundly impaired glucose metabolism, which is partly reversed by restoration of the euthyroid state. Handisurya and colleagues have now shown that reversal of even subclinical hypothyroidism significantly reduces glucose-stimulated insulin secretion. Interestingly, insulin secretion decreased to a greater extent than could be expected from improved insulin sensitivity alone.

The study included 23 patients with Hashimoto thyroiditis, of whom 12 had overt hypothyroidism and 11 had subclinical hypothyroidism. Assessments of β-cell function and insulin sensitivity were done before and 6 months after initiation of levothyroxine therapy.

Both groups of patients had low fasting insulin levels and increased glucose-stimulated insulin secretion at baseline. Levothyroxine therapy significantly improved insulin sensitivity only in patients with overt hypothyroidism. Patients' insulin-secretion profiles improved, but did not normalize, on levothyroxine therapy; however, these improvements resulted in reduced demand on pancreatic β cells after a glucose challenge.

Hypothyroid patients often have increased circulating levels of free fatty acids, which increase insulin resistance via attenuation of glucose uptake and oxidation. Handisurya and colleagues suggest that levothyroxine might decrease free fatty acid levels and thereby attenuate glucose-stimulated insulin secretion. Levothyroxine therapy is warranted even in individuals with subclinical hypothyroidism, especially if they have risk factors for impaired glucose metabolism, given their high likelihood of progression to overt hypothyroidism.

Original article Handisurya A *et al.* (2008) Effects of thyroxine replacement therapy on glucose metabolism in subjects with subclinical and overt hypothyroidism. *Clin Endocrinol (Oxf)* [doi:10.1111/j.1365-2265.2008.03280.x]

Somatostatin analogs: are they equivalent?

Controversy persists over whether long-acting somatostatin-analog formulations have different efficacies in the treatment of acromegaly. Several studies reported that octreotide long-acting release (LAR) achieves marginally better biochemical control of acromegaly than lanreotide slow release (SR). Two lanreotide formulations, SR and Autogel® (Société de Conseils de Recherches et d'Applications Scientifiques, Paris, France), are reported to have equivalent