Neuropeptide Y links stress and diet-induced obesity in mice

Links between chronic stress and the development of obesity have been suggested, although the mechanisms have remained unclear. Kuo and colleagues have now uncovered a mechanism underlying stress-induced obesity in mice, identifying neuropeptide Y (NPY) as a peripheral factor that stimulates fat growth.

It has been previously known that NPY in the brain promotes obesity by stimulating appetite, and in the periphery, is released from sympathetic nerves during stress. Prompted by these observations, Kuo *et al.* exposed mice to a stressor (cold exposure or aggressor mouse) daily for 2 weeks and found that, when these stressed mice were fed a diet high in fat and sugar, NPY and Y2R (an NPY receptor) were upregulated in the abdominal white adipose tissue. These mice accumulated twice as much fat as unstressed mice on the same unhealthy diet because of NPY-stimulated proliferation and differentiation of new adipocytes and fat angiogenesis. Moreover, after 3 months of stress and a diet high in fat and sugar, mice not only developed gross abdominal obesity but also symptoms of metabolic syndrome. Interestingly, local intra-fat inhibition of Y2R markedly reduced abdominal fat accumulation and its metabolic consequences.

Extending these findings to humans, whose fat tissue also expresses NPY and its Y2R, indicates that chronic stress leads to the upregulation of the NPY system that, in turn, amplifies diet-induced abdominal obesity and increases the risk of developing metabolic syndrome. Importantly, these findings raise the possibility of manipulating NPYR2 activity within fat tissue for the purpose of treating obesity and metabolic syndrome.

Original article Kuo LE *et al.* (2007) Neuropeptide Y acts directly in the periphery on fat tissue and mediates stress-induced obesity and metabolic syndrome. *Nat Med* **13:** 803–811

MMF therapy for patients with autoimmune hepatitis refractory to standard treatment

Standard immunosuppressive therapy, consisting of prednisone and azathioprine, is ineffective in 10–20% of patients with autoimmune hepatitis. Inductivo-Yu and colleagues, therefore, investigated the biochemical, histological and hematological effects of mycophenolate mofetil (MMF) in autoimmune hepatitis patients who were refractory to standard treatment.

This retrospective study included 15 patients (mean age 60 years, 73% women) who had discontinued treatment with prednisone (with or without azathioprine) because of lack of response (73%) or adverse effects (95%), and were subsequently treated with MMF for at least 1 year. MMF, at an initial dose of 1 g twice daily, either replaced prednisone monotherapy ($n = 3$) or was administered alongside prednisone instead of azathioprine in patients who initially received combination therapy ($n = 12$).

At the end of MMF treatment (mean duration 41 months), the mean alanine aminotransferase level decreased significantly ($P = 0.03$); normal levels were reached in 11 patients. The mean inflammatory score also decreased significantly ($P = 0.02$), as did the mean Ishak fibrosis score ($P = 0.02$). There were no significant adverse changes in hematological parameters including white cell count, platelet count and hemoglobin level. There were no differences between patients receiving MMF monotherapy and those receiving MMF plus prednisone, and no infection-related adverse events occurred in any patients during MMF treatment.

The authors conclude that MMF (with or without prednisone) improves histological and biochemical parameters in patients with autoimmune hepatitis who are unresponsive or intolerant to standard therapy, and call for prospective studies to validate their findings.

Original article Inductivo-Yu I *et al.* (2007) Mycophenolate mofetil in autoimmune hepatitis patients not responsive or intolerant to standard immunosuppressive therapy. *Clin Gastroenterol Hepatol* **5:** 799–802

Detection of *H. pylori* by fluorescence

Current methods for detecting *Helicobacter pylori* provide limited information on the distribution and density of infection. These factors have been shown to be important determinants in the development of gastric cancer. *H. pylori* is known to accumulate the fluorescent molecule protoporphyrin IX (PPIX) when exposed to 5-aminolevulinate (5-ALA), the precursor of PPIX. Individual gastric pits containing fluorescent