

have evaluated MRI as a means of imaging transplanted human islets in mice.

Evgenov *et al.* incubated human pancreatic islets with magnetic, fluorescently labeled nanoparticles. Both labeled and nonlabeled islets were implanted into healthy mice. MRI was performed daily for 188 days after surgery, and the labeled islets were clearly distinguishable from the nonlabeled islets for the entire period. Importantly, the magnetically labeled islets were shown to retain their ability to secrete insulin. The researchers also transplanted labeled and nonlabeled islets into diabetic mice, and found that the labeled islets restored normoglycemia just as well as the nonlabeled islets did: this occurred within 7–10 days of transplantation.

For the first time, it has been shown that MRI can be used to monitor transplanted human pancreatic islets reliably. The authors believe this technique can provide valuable spatial and temporal information, and that it has the potential to translate into clinical practice.

*Katherine Sole*

**Original article** Evgenov NV *et al.* (2006) *In vivo* imaging of islet transplantation. *Nat Med* **12**: 144–148

## Corticotropin test recommended as first-line diagnostic tool

The high-dose short Synacthen® (Alliance Pharmaceuticals Ltd., Chippenham, UK) (corticotropin) test (SST) is often used as an alternative to the insulin tolerance (hypoglycemia) test (ITT) in the investigation of secondary adrenal insufficiency, but questions have been raised regarding the SST's false-negative rate, particularly at the lower end (18–23 µg/dl) of the normal range of values. In order to investigate this concern, a British team has retrospectively followed patients who scored in the lowest 15<sup>th</sup> centile ( $\leq 22.7$  µg/dl) of normal (healthy) responses to the SST, and who did not receive replacement glucocorticoid therapy.

Final analysis included 148 patients (94 women), who were followed up for a median of 4.2 years (range 4 months to 7 years). When clinical outcome was used as the gold standard, the SST was found to have a false-negative rate below 1%.

This result is similar to that of the only previous study to evaluate the SST using

clinical outcome as a reference. Most studies have compared the SST with the ITT, and have variously reported the SST's sensitivity to be 65–100%; however, the ITT has been known to give false-positive results, so a poor response to the ITT does not always prove adrenal insufficiency. They recommend that the SST should continue to be used as a first-line diagnostic tool for secondary adrenal insufficiency; however, like all tests, the results should be interpreted in the light of the whole clinical picture.

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**Original article** Agha A *et al.* (2006) The long-term predictive accuracy of the short synacthen (corticotropin) stimulation test for assessment of the hypothalamic-pituitary-adrenal axis. *J Clin Endocrinol Metab* **91**: 43–47

## Falling levels of leptin increase appetite in humans given a calorie-restricted diet

Previous studies have shown a rapid decline in the levels of serum leptin in mice given a severely calorie-restricted diet. Leptin is, therefore, thought to have a key role in energy homeostasis; but so far, few studies have observed similar effects in humans.

In the study by Mars and colleagues, the effects of a 4-day diet, containing 36% of the estimated energy requirements, were investigated in 44 healthy men. Inclusion criteria included no use of drugs known to affect energy metabolism, a normal diet for the previous 2 months and no history of diabetes, thyroid, liver or gastrointestinal-tract problems. Fasting serum leptin and insulin levels were measured at baseline and at study days 2 and 4. Fasting appetite was assessed using a 10-point LIKERT SCALE.

During the 4-day diet, the men's serum leptin levels progressively declined, by 39.4%. A positive correlation was found between fasting appetite and leptin levels, which became stronger throughout the study. Insulin and glucose levels declined during the first 2 days, but no further change was noted thereafter, which suggests that insulin did not have a role in the increased appetite observed after day 4.

The authors conclude that the steep decline in leptin levels during a short-term severely calorie-restricted diet is associated with an increase in self-perceived appetite. This

### GLOSSARY

#### LIKERT SCALE

A 10-point scale measuring hunger, fullness, desire to eat and prospective consumption