



Low levels of PYY hormone a very early indicator of Type 2 diabetes

10 March 2008

It may soon be possible to take a simple blood test to show whether or not someone has low levels of a particular molecule, predisposing them to the development of Type 2 diabetes. If the test is positive, it may then be possible to use preventative treatment, slowing down, or even halting that development.

Such is the hope of scientists and clinicians at Sydney's Garvan Institute of Medical Research who have shown conclusively that people who produce low levels of the molecule PYY have a higher risk of developing Type 2 diabetes and obesity.

The findings were published online on 4 March in the prestigious *International Journal of Obesity*.

It is already known that the hormone PYY, which is released from the gut after a meal, creates a feeling of satiety. When PYY is in oversupply, it prevents diet-induced obesity in mice.

Professor Herbert Herzog, Director of Garvan's Neuroscience Program, and an expert on appetite, says that the new findings are important in that they show a metabolic defect before the presence of any disease or manifestation of weight gain. "We can now see that low PYY levels after eating are a very early predictor of the development of obesity and Type 2 diabetes," he said.

Professor Lesley Campbell, Director of Diabetes Services at St. Vincent's Hospital and a senior member of Garvan's Diabetes and Obesity Clinical Studies group, has been researching genetic factors in the development of Type 2 diabetes for over 10 years. Specifically, her research looks at people before they get the disease, the contributing factors, and the effects of the diabetes.

Professor Campbell has already published findings that insulin resistant people, with a family history of Type 2 diabetes, have low levels of PYY. "In earlier studies we hinted at the fact that before any of the abnormalities of diabetes are present, people already have an abnormality of satiety, marked by the lack of the secretion of this PYY hormone," she said.

"We now have published that, even earlier in the development of diabetes, people who are not yet insulin resistant show a low secretion of PYY. They have a blunted post-meal secretion of this hormone, making them less likely to feel satiety, and more likely to gain weight."

Professor Campbell's research involved elaborate testing of two groups of people, eight in each group, over a period of two years. One group had relatives with Type 2 diabetes, the other group had no family history of the disease. The groups were matched for gender, for age and for adiposity.

“It was most important to match the groups for their fatness,” said Professor Campbell. “The only difference was their relatives. You assume that they are carrying the genetic burden of diabetes, which we already know to be a reality.”

“Low levels of PYY at this very early pre-diabetes stage could be used as a marker, or predictor, that Type 2 diabetes is very likely to develop.”

“As a clinician, I am hopeful that it will be possible to screen extensively in the future, and therefore stem the spread of this debilitating disease.”

ABOUT GARVAN

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with approximately 400 scientists, students and support staff. Garvan's main research programs are: Cancer, Diabetes & Obesity, Arthritis & Immunology, Osteoporosis, and Neuroscience. The Garvan's mission is to make significant contributions to medical science that will change the directions of science and medicine and have major impacts on human health. The outcome of Garvan's discoveries is the development of better methods of diagnosis, treatment, and ultimately, prevention of disease.

All media enquiries should be directed to:

Alison Heather 02 9295 8128 or Jackie Crossman on 0402 218 662