Contribution ID: **40** Type: **POSTER**

The relation of pre-diabetes and region-specific visceral adipose tissue: quantified by multi-detector computed tomography

Thursday 6 September 2012 15:10 (1 hour)

Background: Central obesity in relation to insulin resistance is strongly linked to the development of diabetes. However, data regarding the association between peri-cardial and peri-aortic fat amount, a real estimate of visceral adipose tissue and pre-diabetes status remained elusive.
Objective: The aim of this study was to examine whether pericardial and thoracic peri-aortic adipose tissue, when quantified by multi-detector computed tomography (MDCT), may differ substantially among subjects in normal, pre-diabetes and overt diabetes status.
Materials and Methods: We consecutively studied 562 participants including 357 healthy, 155 pre-diabetes and 50 diabetes who underwent health survey. Pre-diabetes status was defined by impaired fasting glucose or impaired glucose intolerance by American Diabetes Association guidelines. Pericardial (PCF) and thoracic peri-aortic (TAT) adipose tissue was assessed by non-contrast 16-slice multi-detector computed tomography (MDCT) data set with off-line measure (Aquarius 3D Workstation, TeraRecon, San Mateo, CA, USA). Body fat composition (Tanita 305 Corporation, Tokyo, Japan), serum high-sensitivity C-reactive protein (Hs-CRP) level and insulin resistance (HOMA-IR) were all obtained.
Results: Patients with diabetes and pre-diabetes had greater volume of PCF (89 ± 24.6, 85.3 ± 28.7 & 67.6 ± 26.7ml, $p<0.001$) as well as higher volume of TAT (9.6 ± 3.1 ml vs 8.8 ± 4.2 & 6.6 ± 3.5ml, respectively, $p<0.001$) when compared to normal group, though there was no significant differences between diabetes and pre-diabetes groups. For those without overt diabetes in our study, increasing TAT burden, rather than PCF, seemed to correlate with higher HOMA-IR and Hs-CRP in the multivariable models while there seemed to be a borderline relationship between PCF and coronary artery calcium score.
Conclusion: Pre-diabetic status was associated with much higher pericardial and peri-aortic adipose tissue than normal subjects, which is actually comparable to overt diabetes. In addition, for those visceral fat accumulated surrounding aortic area seemed to exert effects on insulin resistance and systemic inflammation.

Key Words: Pre-diabetes, type II diabetes mellitus, MDCT, visceral adipose tissue, coronary calcium score

Primary author: Dr YUN, Chun-Ho (Department of Radiology, Mackay Memorial Hospital)

Co-authors: Dr HUNG, Chung-Leih (Department of Radiology, Mackay Memorial Hospital); Ms SUN, Jing-Yi (Department of Biomedical Imaging and Radiological Sciences, National Yang Ming University); Dr TSAI, Jui-Peng (Department of Radiology, Mackay Memorial Hospital); Mr LIN, Yang-Hsien (Department of Biomedical Imaging and Radiological Sciences, National Yang Ming University)

Presenter: Mr LIN, Yang-Hsien (Department of Biomedical Imaging and Radiological Sciences, National Yang Ming University)

Session Classification: Poster session

Track Classification: X-ray imaging applications - Medicine