Visceral fat as a predictor of coronary artery disease as assessed by MSCT in Thai patients

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Background

- Obesity is a risk factor for cardiovascular disease and type 2 diabetes.
- The effect of obesity were not dependent upon excess total body fat mass but were the consequence of the regional distribution of body fat, an excess of visceral fat is predictive of increased risk of the complication of obesity.
- Visceral fat measured by MSCT is significantly associated with the presence and extent of coronary artery calcium.
- The association among visceral abdominal fat and coronary heart disease are still lacking in Thai populations.

Objectives

- To examine whether visceral fat is associated with CAD as determined by multislice computed tomography (MSCT).
- To demonstrate association between abdominal fat and waist circumference
- To assess the RAMA-EGAT Score after modified by adding VFA to the model with point system.

Methods

- A cross-sectional study of 1,250 Thai patients who were suspected CAD. 64- slice CT coronary angiography was performed to detect CAD. Visceral fat area (VFA) and subcutaneous fat area (SFA) were determined by MSCT.
- Univariate and multivariate logistic regression analyses were used to assess the relations between presence of CAD and risk factors and abdominal fat area. Receiver-operating characteristics (ROC) curves was used to explore appropriate cut-off level of continuous variables to predict CAD.

Results

MSCT shows visceral fat area (VFA) in red color and subcutaneous fat area (SFA) in green color.

RAMA-EGAT Score

<table>
<thead>
<tr>
<th>Score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (cm²)</td>
<td>34-44</td>
<td>45-49</td>
<td>50-54</td>
<td>55-59</td>
<td>60-65</td>
<td>≥65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cholesterol</td>
<td>&lt;200</td>
<td>≥200</td>
<td>≥200</td>
<td>≥200</td>
<td>≥200</td>
<td>≥200</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Blood sugar</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waist circumference</td>
<td>Below</td>
<td>Above</td>
<td>Above</td>
<td>Above</td>
<td>Above</td>
<td>Above</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Visceral fat as measured by MSCT is associated with CAD in Thai patients after adjustment for age, BMI, WC, SFA and traditional cardiovascular risk factors.

VFA was strongly correlated with WC (r=0.68). The sex-specific cut-off levels of VFA to predict the presence of CAD was 160 and 125 cm², corresponding to WC values of 85 and 81 cm in men and women respectively.

Since RAMA-EGAT Score was composed of WC that strongly correlated with VFA therefore adding VFA to RAMA-EGAT Score does not add on any value to predict the presence of CAD.

Conclusions

- Visceral fat as measured by MSCT is associated with CAD in Thai patients after adjustment for age, BMI, WC, SFA and traditional cardiovascular risk factors.
- VFA was strongly correlated with WC (r=0.68). The sex-specific cut-off levels of VFA to predict the presence of CAD was 160 and 125 cm², corresponding to WC values of 85 and 81 cm in men and women respectively.
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References