Total body fat content and retinopathy in Chinese diabetic patients

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Introduction
Diabetes Mellitus (DM) is becoming a very common, but serious disease among the elderly over the world. Poor diet and eating habit are part of the reasons accounting for the growing number of DM patients. Obesity is a risk factor of various macro- and micro-vascular diseases, such as coronary heart disease, hypertension and DM.1 Diabetic retinopathy (DR), a leading cause of blindness in developed countries, is associated with long DM duration, blood glucose level, and perhaps body fat content as well.2 However, the correlation between obesity and DM retinopathy is still not clear known.

Purpose
To evaluate the relationship between body fat content, body mass index (BMI) and diabetic retinopathy in a community-based screening programme.

Subject and Method
Hong Kong Chinese with Type 2 DM were recruited (n=1073) during the DR screening service at The Integrative Community Health Centre in Lai King, Hong Kong. Subjects were aged from 32 to 90 years, mean 62.1 ± 10.2.

The screening procedures consisted of visual acuity measurement, anterior ocular health evaluation and fundus photo documentation. Fundus photos were taken at 9 positions of gazes by non-mydriatic fundus camera (TRC-NW6C, Topcon). The severity of DR was graded according to the criteria recommended by American Optometric Association (AOA). Subjects were asked about the duration of diabetes, hypertension and recent plasma glucose level. Subjects’ height, weight and body fat content were measured. Body Fat was assessed by a non-invasive commercial fat analyzer (HBF-303, Omron, Japan), using bioelectrical impedance. Subjects were divided into 3 groups based on the duration of diabetes: Group 1 (1-5 years), Group 2 (6-10 years) and Group 3 (Over 10 years).

Results
A shorter diabetic duration and lower random plasma glucose level were favourable to reduce the severity of DR (p<0.01). Severity of DR showed significant positive correlations (r=0.078, p=0.046) with body fat content (%) in Group 2 (n=263, r=0.176, p<0.01) and Group 3 (n=150, r=0.52). Similar positive correlations (p<0.01) were observed with body mass index (Group 2: r=0.227, Group 3: r=0.277). However, neither body fat content (r=-0.064, p=0.101) nor body mass index (r=-0.078, p=0.046) was correlated with DR severity in Group 1 (n=660).

Conclusion
The commercial fat analyzer can measure the body fat content instantly and non-invasively. Reduced body fat content and body mass index might be favorable to reduce severity of DR in patients with diabetes more than 5 years. Apart from glucose level, importance of weight and body fat control should be raised to patients and all healthcare professionals.

References

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