FoU Spenshult

Reumatologisk forskning och utveckling

Metabolic factors associated to radiographic knee osteoarthritis in individuals with knee pain

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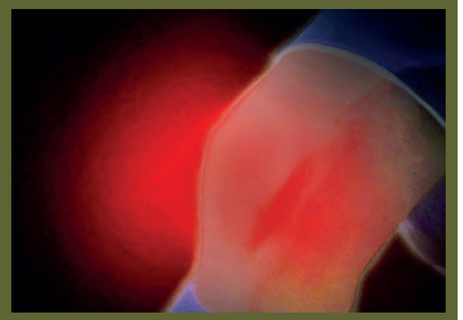
Conclusion

There were associations between some metabolic factors and radiographic knee OA in individuals with knee pain.

Fasting glucose was increased in both the No OA and ROA group.

The associations between metabolic risk factors and the development of knee OA needs to be assessed in longitudinal studies.



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Background

Metabolic factors have been shown to be associated to radiographic knee osteoarthritis (OA) [1]. However, more knowledge is needed in the area of early clinical knee OA.

Objectives

The aim was to study associations between metabolic factors and radiographic knee OA in individuals with knee pain.

Methods

In total 272 individuals with radiographs at baseline, from an ongoing longitudinal study of knee pain (without cruciate ligament injury), were included in the present cross-sectional study. At baseline BMI, waist circumference (WC) and visceral fat area (VFA) were assessed. Fasting plasma glucose, triglycerides, cholesterol, HDL-and LDL-cholesterol were analysed.

Metabolic syndrome (MetS), central obesity, raised blood pressure, raised triglycerides reduced HDL-cholesterol, raised glucose was classified according to International Diabetes Federation.

The individuals were divided in two groups according to Ahlbäck [2], one group, who had grade I or more in at least one knee (radiographic knee OA, ROA) n=62 and the other group, not fulfilling Ahlbäck criteria (no radiograhic knee OA, No OA) n=211.

The associations between metabolic factors and knee OA were calculated by crude logistic regression analyses, adjusted for age and sex.

Results

- The group with radiographic knee OA were older, had higher BMI, higher amount of visceral fat and more central obesity, table 1.
- Central obesity was present in 94% in the group with ROA compared to 75%, in the no OA group (p=0.002).
- There was no difference between the groups regarding MetS, table1.
- The group with ROA had increased cholesterol, triglycerides and LDL-cholesterol, table 1.
- There were no differences in fasting glucose between the groups, though both groups had a mean glucose value in the upper range of a normal value, table 1.
- Factors associated to having radiographic knee OA were age, BMI, central obesity and raised triglycerides, table 2.

Metabolic syndrome (MetS) according to International Diabetes Federation
central obesity (WC ≥94 cm in men and ≥80cm in women) plus any two of the following factors:
- raised blood pressure (systolic blood pressure ≥ 130 or diastolic blood pressure ≥ 85 mm Hg or treatment of hypertension),
- raised triglycerides (≥ 1.7 mmol/L or specific treatment),
- reduced HDL-cholesterol (men < 1.03 mmol/L and women < 1.29 mmol/L or specific treatment),
- raised glucose (glucose ≥ 5.6 mmol/L, or type 2 diabetes

Table 1.Descriptives comparing the two groups no knee osteoarthritis, No OA and radiographic knee osteoarthritis, ROA.

	No OA Mean (sd)	ROA* Mean(sd)	p-value
Age	**50 (9)**	**56 (4)**	**<0.001**
Sex, women, %	66	71	0.454
BMI	**25.9 (4.7)**	**27.7 (4.7)**	**0.007**
VFA (cm2)	**109 (53)**	**126 (52)**	**0.026**
WC, cm	**94 (13)**	**99 (13)**	**0.006**
Central obesity, %	**75**	**94**	**0.002**
Raised Blood pressure**, %	**66**	**53**	**0.063**
Cholesterol (mmol/L)	**5.2 (1.0)**	**5.5 (1.1)**	**0.033**
Triglycerides (mmol/L)	**1.0 (0.6)**	**1.2 (0.7)**	**0.035**
Raised triglycerides**, %	**9**	**21**	**0.008**
LDL-cholesterol (mmol/L)	**3.4 (1.0)**	**3.7 (1.1)**	**0.027**
HDL-cholesterol (mmol/L)	1.7 (0.4)	1.7 (0.5)	0.547
Reduced HDL**	11	15	0.460
Glucose (mmol/L)	5.5 (0.9)	5.5 (0.5)	0.858
MetS, %	39	44	0.5

*Ahlbäck grade I or more in at least one knee
**according to International Diabetes Federation (IDF)

Table 2 Associations to radiographic knee OA at baseline (controlled for age and gender)

		OR	95% CI	p-value
Age		**1.112**	**1.060-1.166**	**<0.001**
Sex	Women	1		
	Men	1.347	0.711-2.551	0.361
BMI	<24.99	1		
	≥25.00	**1.875**	**1.002-3.510**	**0.049**
VFA (cm2)		1.005	0.999-1.010	0.100
Central obesity	No	1		
	Yes	**3.913**	**1.319-11.611**	**0.014**
Triglycerides (mmol/L)	Not increased	1		
	Increased	**2.354**	**1.029-5.385**	**0.043**
Cholesterol (mmol/L)		1.136	0.860-1.501	0.370
LDL (mmol/L)		1.174	0.880-1.565	0.276

Increased triglyceride is 1.7 mmol/l or more; Central obesity according to International Federation of Diabetes (men ≥94 cm, women ≥80cm)

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