Disturbed postprandial lipid metabolism in patients with psoriasis: a preliminary report

Psoriasis hastalarında bozulmuş yemek sonrası lipid metabolizması: Ön rapor

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Dear editor,

Psoriasis is a common immune-mediated skin disease with well-known metabolic influences. Patients with psoriasis may have a predisposition to insulin resistance, and several studies have shown increased rates of diabetes mellitus, hypertension, hyperlipidemia, obesity, and metabolic syndrome.[1-4] Chronic inflammatory state in psoriasis may cause increased risk for atherosclerosis, myocardial infarction (MI), and stroke.[5,6] A significantly deteriorated profile of lipids, lipoproteins and their oxidized products in patients with psoriasis was observed in previous studies, with higher values of low-density lipoprotein (LDL), triglycerides (TG), and significantly decreased high-density lipoprotein (HDL) levels.[7,8] According to many epidemiological and case-control studies, it was demonstrated that non-fasting (postprandial) TG concentration was a clinically significant and independent predictor of the risk of cardiovascular diseases (CVD).[9,10] In this preliminary report, it was aimed to investigate postprandial lipid metabolism in patients with psoriasis and controls by using oral fat tolerance test (OFTT).

We recruited 31 patients with psoriasis and 37 healthy controls from the Department of Dermatology, Karadeniz Technical University Faculty of Medicine. All patients and controls gave written consent to participate in the study. This study is approved by the KTU Medical Ethics Committee. Inclusion criteria for patient group were to have an active psoriatic disease of any severity, and age > 18 years. Patients were excluded in the case of diabetes, chronic kidney disease, obesity and endocrine disorders related to lipid metabolism, menopause, estrogen replacement therapy and thyroid hormone disorders. Subjects performing heavy exercise and those on herbal medicines were also excluded. Patients were matched to healthy controls according to gender, age and body mass index (BMI).

Participants consumed routine daily meals prior to the OFTT, and avoided alcohol intake 24 h before the test. After 12 h overnight fasting blood samples were collected. Each participant was then given an OFTT meal containing a total 75 g fat in line with the expert panel suggestions.[11]

Key words: *oral fat tolerance test, psoriasis, lipid metabolism*

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The OFTT was performed on all participants after 12 hours overnight fasting as described in detail in our previous study.[12] The test meal was consumed within 20 min, and following 6 h, all subjects were instructed not to consume anything orally, except for water. The OFTT was conducted at the Department of Medical Biochemistry where participants spent the entire test and were not allowed bed-rest or heavy exercise. Blood samples were drawn into the tubes without any anticoagulant for serum acquisition, as well as EDTA-anticoagulant tubes for plasma, by venipuncture before the test and every 2 h there after over a 6 h period. Area under the curve (AUC) values were calculated from TG concentrations in the fasting state, and at 2, 4, and 6 hours after the OFTT, using the trapezoidal rule.[13] Statistical analyses were performed using SPSS Statistics 16.0 (SPSS, Chicago, IL, U.S.A.). The Mann–Whitney test, independent samples t-test and Chi-square test were used to compare variables. All tests were two-tailed and $P<0.05$ was considered significant.

Clinical characteristics and biochemical variables including lipid profile and area under the curve (AUC) calculated using TG concentrations at fasting, 2, 4 and 6 hour after the OFTT were summarized in table 1. The mean TG level was significantly higher in patients with psoriasis than those in controls ($P=0.007$), whereas the mean high-density lipoprotein (HDL) level was significantly lower in psoriatic patients ($P=0.009$). AUC level of patients with psoriasis were significantly higher than controls ($P=0.040$) (Fig. 1).

The main goal of this preliminary study was to investigate postprandial TG levels in patients with psoriasis, and we found a statistically significant higher AUC values in patients with psoriasis supporting that this disturbed TG metabolism might be associated with increased cardiovascular risk in patients with psoriasis. In our previous study using OFTT, AUC and TG 4 h values were positively correlated with atherogenic indices including TC/HDL-C ratio, LDL-C/HDL-C ratio, TG/HDL-C ratio, ApoB/ApoA1 ratio, sdLDL and

Table 1. Clinical characteristics and lipid profile of patients with psoriasis and controls

	Psoriasis (n=31)	Controls (n=37)	*P*
Age (years)	40.84 ± 11.23	39.54 ± 8.33	0.587
Gender (M/F)	20/11	26/11	0.613
PASI (mean)	8.19 ± 4.01		
Duration (years)	13.80 ± 11.35		
BMI	28.98 ± 4.58	27.02 ± 4.09	0.067
Waist circumference (cm)	100.22 ± 12.96	93.83 ± 11.31	**0.039**
Total colesterol, mg/dL	207.45 ± 39.82	197.62 ± 29.35	0.246
Triglyceride, mg/dL	158.19 ±101.81	106.08 ± 46.03	**0.007**
LDL, mg/dL	130.93 ± 34.48	121.32 ± 28.04	0.209
HDL, mg/dL	42.22 ± 10.15	49.70 ± 11.56	**0.009**
AUC (OFTT)	1468.00 ± 721.62	1104.18 ± 399.94	**0.040**

PASI, psoriasis area and severity index; BMI, body mass index; LDL, low-density lipoprotein; HDL, high-density lipoprotein; AUC, area under curve; OFTT, oral fat tolerance test

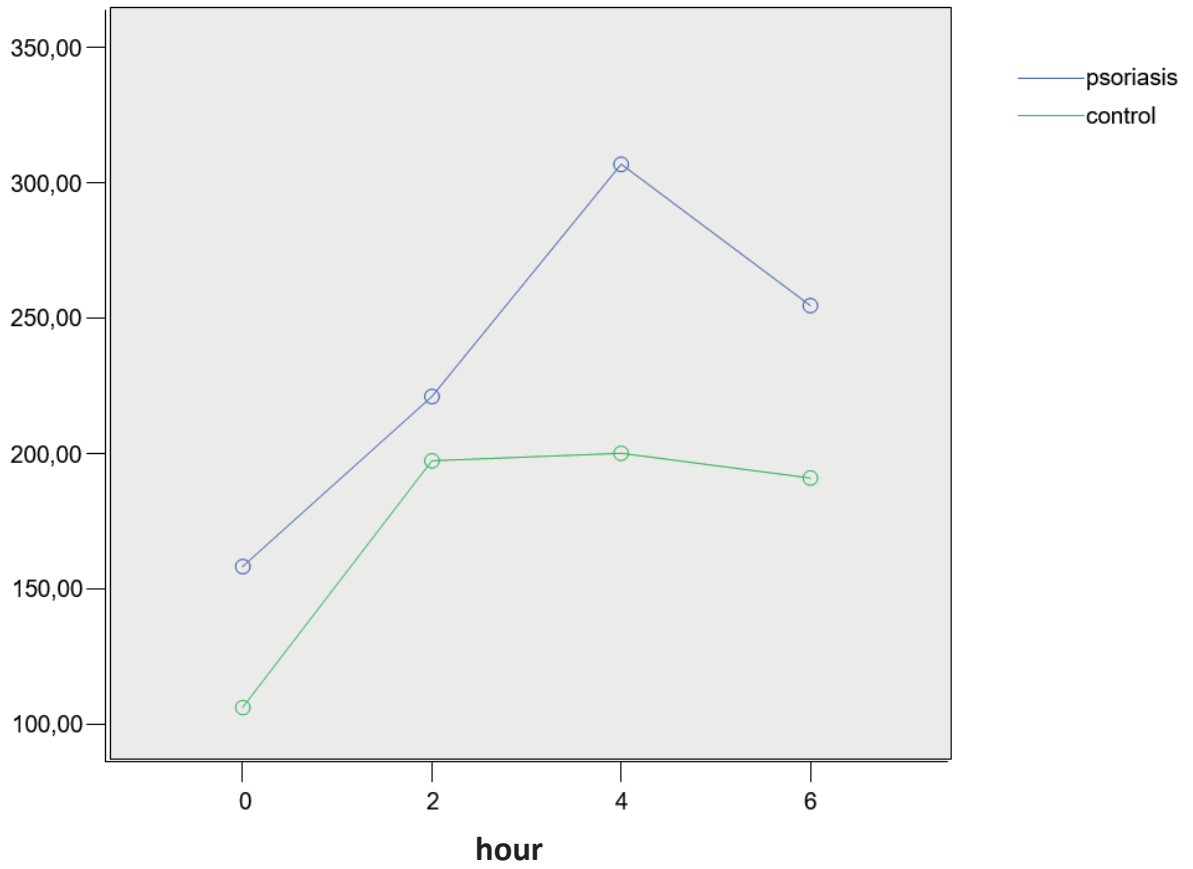

Fig. 1. Course of serum triglyceride levels in patients with psoriasis and control group according to Oral Fat Tolerance Test

ox-LDL concentrations in both the female and male subgroups. Thus we had concluded that postprandial lipemia may be associated with atherogenic tendency by changing lipids, lipoproteins, sdLDL and oxLDL concentrations, especially in males.[12] Psoriasis had been earlier identified to be an independent risk factor for the occurrence of myocardial infarction (MI).[14] In a recent German nationwide study, Karbach et al. showed that patients with MI with psoriasis were in median 5 years younger than patients with MI without psoriasis, and psoriasis seemed to enhance the prevalence of classical cardiovascular risk factors.[15] In line of the results of our preliminary report, we conclude that disturbed postprandial TG metabolism might interfere the occurrence of CVD in patients with psoriasis.

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