Total Fats, Saturated Fatty Acids, Processed Foods and Acute Coronary Syndrome in Transitional Albania

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ORIGINAL PAPER

SUMMARY

Background: We aimed was to assess the association of acute coronary syndrome (ACS) with selected food groups pertinent to non-Mediterranean prototype in Albania, a transitional post-communist country in Southeast Europe. Methods: We conducted a case-control study in Tirana in 2003-2006 including 467 non-fatal consecutive ACS patients (370 men aged 59.1±8.7 years, 97 women aged 63.3±7.1 years; 88% response) and a population-based control group (469 men aged 53.1±10.4 years, 268 women aged 54.0±10.9 years; 69% response). A semi-quantitative food frequency questionnaire including 105 food items was administered to all participants based on which the daily calorie intake for selected food groups (meat products, overall oils and fats, sweets, and junk food) was calculated. General linear model was used to assess the association of food groups with ACS. Results: Mean age-adjusted values of meat products, overall oils and fats, sweets and junk food were all considerably higher in cases than controls in both sexes. Cases had significantly higher mean "non-Mediterranean" diet scores (consisting of junk food, sweets, oils and fats except olive oil) than controls (10.3% vs. 5.9% in men and 15.2% vs. 8.3% in women, P<0.01 for both). Conclusions: In this Albanian population, intake of total fats, in particular saturated fatty acids was associated with a higher risk of ACS in both sexes. Furthermore, the consumption of processed foods was associated with considerable excess coronary risk which points to serious health implications for the Albanian adult population.
Key words: total fats, saturated fatty acids, risk of Acute coronary syndrome.

1.   INTRODUCTION

In Albania, anecdotic evidence indicates that deviation from the traditional Mediterranean diet has taken place in all regions of the country in the past two decades in line with an emergent western lifestyle including a sharp change of dietary patterns (1). Thus, it is reported that many elements of the traditional Mediterranean diet in Albania are substituted by processed foods higher in salt and saturated fats (1, 2). This process of nutritional transition has been paralleled with an increase in the rates of cardiovascular disease in Albania in the past decades (3, 4). To date, however, there are no individually-based data informing about the quantity and quality of food consumption in the Albanian adult population. Therefore, information on the exact consumption and share of processed foods is scant for Albania.

In this context, we undertook a population-based case-control study in Tirana in order to assess the association of acute coronary syndrome (ACS) with selected food groups mainly not from the Mediterranean prototype including overall oils and fats (except olive oil), sweets and junk food.

2.   METHODS

A population-based case-control study of ACS was conducted in 2003-06 among 35-74 year-old residents of Tirana (5). Cases included 467 non-fatal consecutive ACS patients aged 35-74 years, hospitalized at the University Hospital Center (370 men aged 59.1±8.7 years and 97 women aged 63.3±7.1 years; 88% response). The definition of ACS was based on combinations of clinical signs and symptoms, electrocardiographic and echocardiographic criteria (5, 6). The population-based sample comprised an age- and sex-stratified random sample drawn from the adult population of the Tirana municipality. Overall, 469 men aged 53.1±10.4 years and 268 women aged 54.0±10.9 years were recruited (69% response) [5,6].

The data collection included administration of a semi-quantitative food frequency questionnaire (FFQ) and a structured questionnaire including data on socio-demo-

Food groups	Men (N=734)					Women (N=282)				
	Cases (N=361)		Controls (N=373)		P*	Cases N=(90)		Controls N=(192)		P*
	Mean	95%CI	Mean	95%CI		Mean	95%CI	Mean	95%CI	
Butter, margarine, oils, fats (on bread and/or added into food)	79	75-83	58	54-62	<0.01	102	92-111	58	52-65	<0.01
Sweets (cakes, ice-creams)	176	171-182	114	108-120	<0.01	212	198-226	153	144-162	<0.01
Meat and meat products	572	558-586	398	384-412	<0.01	480	454-506	350	333-367	<0.01
Junk food	38	35-41	30	27-33	<0.01	58	49-68	32	25-38	<0.01
"Non-Mediterranean" diet score [junk food + sweets + oils and fats (except olive oil)]	283	274-292	177	169-186.	<0.01	364	343-385	215	201-229	<0.01
"Non-Mediterranean" diet score / total calorie intake (percentage of total energy intake)	10.3	10.0-10.6	5.9	5.6-6.2	<0.01	15.2	14.5-16.0	8.3	7.9-8.8	<0.01

Table 1. Mean age-adjusted calorie intake (Kcal/day) for selected food groups by Acute Coronary Syndrome status and sex * Comparison of means by use of the General Linear Model.

graphic and socioeconomic characteristics, conventional coronary risk factors and behavioral factors (5,6).

The FFQ consisted of 105 food items. Participants were asked to indicate how often, on average, they had eaten specified amounts of each food item in the past 12 months. We used nine categories to assess the average frequency of intake of each food item: <1/month, 1-3/month, 1/week, 2-4/week, 5-6/week, 1/day, 2-3/day, 4-5/day, and >6/day. Microdiet, Version 2 (Downlee Systems Limited, UK, 2005) was employed to calculate for each food item the daily calorie intake. The respective values for all 105 food items were added up in order to get a summary score (total daily calorie intake expressed in Kcal) for each participant. For the current analysis, the daily calorie intake (in Kcal) of each food group was calculated.

The study was approved by the Albanian Committee of Medical Ethics. All participants provided written informed consent.

The statistical analysis included 451 ACS patients (361 men and 90 women) and 565 controls (373 men and 192 women) for whom data on nutrient intake were available. Mean age-adjusted values by ACS status, their 95% confidence intervals (CIs) and p-values for selected food groups (meat products, overall oils and fats, sweets, and junk food) were calculated separately in men and women by use of the General Linear Model.

3. RESULTS

The Table presents mean age-adjusted values of selected food groups by ACS status separately in men and women. The analysis indicated that mean age-adjusted values of all food groups presented in the Table were substantially and significantly higher in cases than controls in both sexes (for meat products: 572 Kcal/day in male cases vs. 398 Kcal/day in male controls, and 480 Kcal/day vs. 350 Kcal/day, respectively, in women, P<0.01 for both sexes; for overall oils and fats: 79 Kcal/day in male cases vs. 58 Kcal/day in male controls, and 102 Kcal/day vs. 58 Kcal/day, respectively, in women, P<0.01 for both sexes; for sweets: 176 Kcal/day in male cases vs. 114 Kcal/day in male controls, and 212 Kcal/day vs. 153 Kcal/day, respectively, in women, P<0.01 for both sexes; for junk food: 38 Kcal/day in male cases vs. 30 Kcal/day in male

controls, and 58 Kcal/day vs. 32 Kcal/day, respectively, in women, P<0.01 for both sexes).

An overall score referred to as "non-Mediterranean" diet score (consisting of junk food, sweets, oils and fats except olive oil) was calculated for each participant (Table). ACS patients had significantly higher mean "non-Mediterranean" diet scores than controls (10.3% vs. 5.9% in men and 15.2% vs. 8.3% in women, P<0.01 for both).

4. DISCUSSION

A salient finding of our study was the significantly higher consumption of "non-Mediterranean" food items (including junk food, sweets, oils and fats except olive oil) in ACS patients than in controls. In this population, there was evidence of a strong positive association of ACS with "non-Mediterranean" diet score expressed both in Kcal/day and as a percentage of total daily calorie intake. In contrast, a Mediterranean prototype diet that reflected a higher consumption of fish, olive oil and fresh fruit and vegetables as well as traditional Albanian dishes was strongly protective (data not shown).

The consumption of processed foods was associated in this Albanian adult population with considerable excess coronary risk which points to serious health implications. This marker of change is an important indicator of the process and extent of transition in Albania that will require targeted public health interventions to avoid its negative consequences, particularly for cardiovascular health and metabolic disorders (1, 2).

This study has some potential limitations given the response rate in the control group (5,6) and the use of FFQ for assessment of dietary patterns. On the face of it, there is no reason to assume differential reporting of dietary patterns in ACS patients as compared to their control counterparts.

Yet, we cannot dismiss the possibility that the acute coronary event may have influenced the reporting of nutrient intake in ACS patients as compared to the population-based control group. However, the FFQs are widely employed for measuring the dietary intake in epidemiological studies of this nature (7).

In conclusion, in this Albanian population, intake of total fats, in particular saturated fatty acids, processed

foods (referred to as "junk" foods), sweets and meat products were all associated with a higher risk of ACS in both sexes.

5. REFERENCES

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