COMPARISON STUDY OF SERUM LIPIDS, LIPOPROTEINS AND URIC ACID FOR MALE AND FEMALE IN DIABETIC PATIENTS WITH ISCHEMIC HEART DISEASE

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ABSTRACT
Eighty-seven healthy subjects (45 males and 42 females), 145 non-insulin dependent diabetes mellitus-NIDDM (66 males and 79 females) without ischemic heart disease groups, and 123 NIDDM (54 males and 69 females) with ischemic heart disease patients were selected in this study. In healthy subjects group, no significant differences in lipids and lipoproteins parameters in males and females were detected. While uric acid (UA) concentration was significantly higher in males than females in each group. In NIDDM without ischemic heart diseases, the concentrations of TG and VLDL-c were significantly higher for females than males. No significant differences were noticed in males and females for CHOL, HDL-c and LDL-c contents, while the concentrations of UA was significantly higher for males than females in that group.In NIDDM patients with ischemic heart disease, the concentration of all lipid parameters and uric acid did not show any significant differences between females and males.

INTRODUCTION
Diabetes mellitus (DM) is associated with a markedly increased prevalence of coronary heart disease (CHD). It may be as high as 5.5% among adult patients with DM comparing to 2-4% for the general population. Also, DM represents a risk factor for increased mortality and morbidity in patients with CHD. The cardiovascular mortality rate is more than double in men and more than quadruple in women with DM, in comparison with non diabetic counterparts (Martial and Bourassa, 1995).

Ball and Mann (1994) found that each year, about 30,000 of the men who die are under age 65 and 5,000 under age 55. The death rates from CHD is very according to different countries and various causes of death. Mohsen *et al.* (1999) reported that the levels of TG were significantly higher in both male and female with NIDDM comparing to non diabetic ones. In the present study, a comparison of serum lipids, lipoproteins and uric acid in male and female of health subjects, NIDDM without ischemic heart disease group and NIDDM with ischemic heart disease patients were reported.

MATERIALS AND METHODS

Subjects

These subjects were divided into three groups: Group-I: healthy controls, eighty-seven subjects (45 males and 42 females) with mean ages 57.1± 9.89 years were selected randomly. They were non smokers, non alcoholics, no family history of CHD, not obese andnot diabetics or hypertension. Group-II: Diabetic control; one hundred and forty-five adults (66 males and 79 females), non-insulin diabetes mellitus (NIDDM group) were selected randomly at the diabetic clinic during their routine visits from Sede-Ehsain polyclinic. Group-III: diabetic patients; one hundred and twenty-three adults (54 males and 69 females) who were apparently suffering from ischemic heart disease as judged from their medical history were selected at randomly from Sede-Ehsain Polyclinic, 7th October Hospital, and El-Jamaheria Hospital, Benghazi, Libya, during the period from 1st May 2002 to 1st March 2003.

The patients were diagnosed as myocardial infarction and angina pectoris, at the time of blood sampling. None of patients had acute myocardial infarction within 3 months.

Sampling

Five ml of venous blood samples were collected after fasting overnight at least 10 hr. The samples were kept for 30 minutes at room temperature, then serum was separated by centrifugation at 4,000 r.p.m. for 15 minutes. The serum stored at about - 18°C until analysis.

Methods

Triglycerides were determined by means of kits obtained from Biocon Company, Germany according to the method of Fassatia and Prenciple (1982). Total cholesterol was determined according to Richmond (1973), HDL-c was

determined according to Lopes *et al.* (1977). LDL-c was measured according to the method of Levy (1981) and uric acid was
determined according to Pileggi and Barthelmai (1962). VLDL-c was calculated from the following equations:

VLDL-c = [Total cholesterol] – [LDL-c + HDL-c] mg/dl

Statistical Analysis

The recorded data in this study were subjected to statistical analysis according to Schaumn (1992).

RESULTS

Serum lipids, lipoproteins and uric acid in male and female of healthy subjects (Table 1) showed that the means of serum levels of uric acid in male were significantly higher than that observed in female healthy subjects. While difference in means of all serum lipid parameters were not significant.

Table 1. Serum lipids, lipoproteins and uric acid in male and female of healthy subjects

(as mg/dl, mean ± SD)

Groups	CHOL	TG	HDL	LDL	VLDL	UA
Male N= 45	159.44 ± 26.8	121.61 ± 37.93	42.44 ± 7.17	90.86 ± 24.72	24.84 ± 8.58	4.14 ± 0.79
Female N= 42	168.45 ± 29.29	117.00 ± 93.49	44.93 ± 8.1	97.67 ± 27.67	23.26 ± 8.18	3.63 ± 0.86
P	0.07	0.02	0.07	0.11	0.19	0.003

Data in Table (2) represent the serum lipids, lipoproteins and uric acid in male and female of NIDDM group. The mean serum levels of triglycerides and VLDL-c in female were significantly higher than that observed in male of such group. While the levels of uric acid showed the opposite trend. The difference in means of CHOL, LDL and HDL was not significant.

Table 2. Serum lipids, lipoproteins and uric acid in male and female
NIDDM group (as mg/dl, mean ± SD)

Groups	CHOL	TG	HDL	LDL	VLDL	UA
Male N= 66	184.98 ± 3.2	173.88 ± 94.6	37.61 ± 6.60	111.0 ± 30.31	34.21 ± 18.25	4.38 ± 0.82
Female N= 79	184.42 ± 30.54	204.41 ± 92.13	36.44 ± 5.46	112.61 ± 25.0	40.0 ± 19.79	3.63 ± 0.70
P	0.5	0.03	0.12	0.4	0.04	0.00

Data of serum lipids, lipoproteins and uric acid in male and female of
NIDDM patients (Table 3) showed that the difference in means of all lipid
parameters and uric acid were not significant for male and female NIDDM
patients.

Table 3. Serum lipids, lipoproteins and uric acid in male and female of
NIDDM patients (as mg/dl, mean ± SD)

Groups	CHOL	TG	HDL	LDL	VLDL	UA
Male N= 54	209.42 ± 48.77	216.0 ± 149.04	31.0 ± 6.02	135.0 ± 43.91	42.89 ± 28.47	6.25 ± 1.22
Female N= 69	212.51 ± 45.43	245.6 ± 160.82	32.56 ± 6.45	141.24 ± 39.04	48.85 ± 51.84	6.02 ± 1.48
P	0.36	0.15	0.09	0.21	0.15	0.19

DISCUSSION

Data presented in Framingham study showed that diabetic condition
double the risk of cardiovascular disease in male and triple in female (Kannel
and McGee, 1979). According to data from this study no differences in lipid

parameter between healthy male and female were detected. The mean serum levels of TG, VLDL-c in female of NIDDM group were significantly higher than that observed in diabetic male and no differences were detected between values of CHOL, LDL-c and HDL-c. These results are in agreement with those of Aizawa *et al.* (1993) who reported that levels of TG in NIDDM were significantly higher comparing to general population.

Diabetic males with CHD showed an increase in levels of CHOL, TG and LDL-c was higher than that in the diabetic males, but the differences were not significant, this could be due to the small sample sizes. There is consistently great degree of lipoprotein abnormality in female as compared with male diabetic in NIDDM group. Diabetic women had consistently higher mean TG and VLDL-c than that in diabetic men. Walden *et al.* (1986) reported similar elevation in diabetic women comparing with diabetic men.

The mean serum levels of uric acid in male healthy subjects were significantly higher than that observed in female healthy. Concerning uric acid levels in NIDDM with CHD, neither male or female showed differences. A number of publications have contributed conflicting information as to the association of serum uric acid with CHD and its precursors, because of its association with clinically significant arteriosclerosis one of the first trails was examined for relationship to hyperuricemia is the cholesterol. Brown *et al.* (1982) reported that one third of the group of patients with hypercholesterolemia had hyperuricemia. The higher level of uric acid in men than in women is attributed to the possible urat-depression effect of estrogens in women (Mikkelsen *et al.*, 1959).

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دراسة مقارنة بين الرجال والسيدات المصابين بمرض البول السكرى

وأمراض القلب على محتوى المصل من الليبيدات والليبيدات البروتينية

وحامض البوليك

صلاح نجيب بوجرين — عيسى جرجوم — عبد الحميد البرجيسى

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فى هذه الدراسة تم إختيار 3 مجموعات وتقسيمهم من حيث نوع الجنس إلى رجال ــ سيدات :

- المجموعة الأولى: وتضم 87 شخص سليم (45 رجب ــ 42 سيدة).

- المجموعــة الثانـية: وتضـم 145 شــخص مــريض بمـرض البول السكرى الغير معتمد على الأنسولين (66 رجل ــ 79 سيدة).

- المجموعــة الثالــثة: وتضم 123 شخص مريض مريض بأمراض القلب ومرض البول السكرى الغير معتمد على الأنسولين (54 رجل ــ 69 سيدة)

ولقد أظهرت النتائج مايلى :

● فــى مجموعــة الأصحاء: لم توجد فلروق معنوية بين الرجال والسيدات فى مستوى الليبيدات ، والليبــيدات البروتينــية ، بيــنما كان هناك زيادة معنوية فى حامض البوليك فى الرجال مقارنة بالسيدات.

● بالنســبة لمرضـى الــبول السكرى الغير معتمد على الأنسولين، وجد أن هناك زيادة معنوية لمسـتوى الجليسـريدات الثلاثية ، وكذلك VLDL-c فى السيدات مقارنة بالرجال. بينما لم توجد فــروق معــنوية بيــن الرجال والسيدات فى مستوى الكوليستيرول الكلى ، HDL-c ، LDL-c. وقد وجد أن هناك زيادة معنوية فى كمية حامض البوليك فى الرجال عنه فى السيدات.

● فــى مرضــى القلب والبول السكرى الغير معتمد على الأنسولين ، لم توجد فروق معنوية فى كمية الجليسريدات الثلاثية والليبيدات البروتينية وحامض البوليك بين كل من الرجال والسيدات

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