Carbohydrate Consumption and Cardiovascular Complaints

E. Cheraskin, M.D., D.M.D.[1]

Introduction

Increasing attention is being directed to the relationship between carbohydrate consumption and cardiovascular disease. However, the principle focus is largely upon obvious disturbances in carbohydrate metabolism (e.g. diabetes mellitus) and classical evidence of cardiovascular pathosis (i.e. ischemic heart disease). Because of their chronicity, this report is designed to relate carbohydrate consumption with early characteristic, if not pathognomonic, findings suggestive of cardiovascular pathosis in relatively healthy individuals.

Method of Investigation

Seventy-four dental practitioners and their wives (members of the Southern Academy of Clinical Nutrition) participated in this experiment. Each participant completed the Cornell Medical Index Health Questionnaire.[1] Thirteen of the questions (Table 1, p.189) deal with cardiovascular symptoms and signs. Shown in Table 2 (p.189) is the frequency distribution of affirmative responses. It is clear that the majority (41 out of the 74 persons) report no positive findings. Affirmative answers, however, ranged to a high of seven in one individual. Each subject also submitted a seven-day dietary survey. The daily total carbohydrate intake in grams is summarized in Table 3, (p.190). The majority of the group consumed between 100 and 149 grams per day. Also outlined is the daily refined carbohydrate consumption in Table 4. (p.190) The largest fraction of the group reported a daily intake of less than 50 grams. Finally, Table 5 (p.190) describes the percentage refined carbohydrate consumption with regard to the total carbohydrate intake.

1. Note: This is the last of the papers accepted for publication prior to the author's death in August, 2001. Correspondence: Park Tower, 904/906 2717 Highland Ave. S., Birmingham, AL 35205-1725.

Results

The 74 individuals were divided equally so as to relate the mean number of cardiovascular complaints to the daily-total carbohydrate intake. One group of 37 persons consumed 53 to 143 g of carbohydrates per day. The remaining group of 37 persons is characterized by a daily carbohydrate consumption of 145 to 301g. It will be noted in Table 6 (p.191) that, on an average basis, those consuming the greater amount of carbohydrate foods show more cardiovascular findings than those in the lower intake group (0.9 versus 1.1). Specifically, the difference is of a magnitude of 22%.

It is generally recognized that one of the most important factors in chronic disease is time. Accordingly, the relationship of carbohydrate consumption and daily total carbohydrate ingestion was studied in light of the age factor. In the younger age group (23-37 years), the mean number of cardiovascular complaints is the same irrespective of the intake. In sharp contrast, in the older group (38-56 years), those consuming the greater quantity of total carbohydrates report 50 percent more cardiovascular symptoms and signs (1.0 versus 1.5).

An analysis was also made of the correlation of cardiovascular findings and the daily refined carbohydrate intake (Table 7, p.191). For the entire sample (irrespective of age), the cardiovascular score is greater by 11 percent for the group consuming the greater amount of refined carbohydrate foods. For the younger age category, there is actually a lower mean of an order of 25 percent. In the upper age group, those consuming the greater amount of refined carbohydrate products show approximately 50 percent more complaints.

Lastly, attention is directed to the cor-

Table 1. Cardiovascular questions in the Cornell Medical Index Health Questionnaire.

1. Has a doctor ever said your blood pressure was too high?
2. Has a doctor ever said your blood pressure was too low?
3. Do you have pains in the heart or chest?
4. Are you often bothered by thumping of the heart?
5. Does your heart often race like mad?
6. Do you often have difficulty in breathing?
7. Do you get out of breath long before anyone else?
8. Do you sometimes get out of breath just sitting still?
9. Are your ankles often badly swollen?
10. Do cold hands or feet trouble you even in hot weather?
11. Do you suffer from frequent cramps in your legs?
12. Has a doctor ever said you had heart trouble?
13. Does heart trouble run in your family?

Table 2. Distribution of cardiovascular complaints.

Number of Cardiovascular Complaints	Male		Female		Total	
0	26	(63.4%)	15	(45.5%)	41	(55.4%)
1	8	(19.5%)	8	(24.2%)	16	(21.6%)
2	4	(9.8%)	4	(12.1%)	8	(10.8%)
3	1	(2.4%)	2	(6.1%)	3	(4.1%)
4	0	(0.0%)	2	(6.1%)	2	(2.7%)
5	1	(2.4%)	1	(3.0%)	2	(2.7%)
6	1	(2.4%)	0	(0.0%)	1	(1.4%)
7	0	(0.0%)	1	(3.0%)	1	(1.4%)
Total	41	(100.0%)	33	(100.0%)	74	(100. 0%)

* Approximate.

relation of cardiovascular findings with respect to daily percentage refined carbohydrate intake (Table 8, p.191) with regard to total carbohydrate consumption. Here one notes for the entire sample and the two age groups increases of 86 percent, 33 percent, and 125 percent respectively for those consuming the greater percentage of refined carbohydrate foodstuffs.

Discussion

Table 9 (p.192) summarizes the mean number of cardiovascular complaints in terms of the two age groups (listed as older and younger), the carbohydrate variable (total, refined, or percentage), and consumption (higher or lower). It is noteworthy that, of the 12 possible combinations, the upper six in terms of the greatest

Table 3. Distribution of daily carbohydrate intake. (a)

Daily Total Carbohydrate Intake (grams)	Male		Female		Total	
0-49	0	(0.0%)	0	(0.0%)	0	(0.0%)
50-99	3	(7.3%)	6	(18.2%)	9	(12.2%)
100-149	15	(36.6%)	18	(54.5%)	33	(44.6)%
150-199	11	(26.8%)	7	(21.2%)	18	(24.3%)
200-249	7	(17.2%)	2	(6.1%)	9	(12.2%)
250-299	4	(9.8%)	0	(0.0%)	4	(5.4%)
300-349	1	(2.4%)	0	(0.0%)	1	(1.4%)
Total	41	(100.0%)	33	(100.0%)	74	(100.0%*

* Approximate.

Table 4. Distribution of daily refined carbohydrate intake. (b)

Daily Refined Carbohydrate Intake (grams)	Male		Female		Total	
0-49	16	(39.0%)	14	(42.4%)	30	(40.5%)
50-99	14	(34.2%)	13	(39.4%)	27	(36.5%)
100-149	9	(22.0%)	6	(18.2%)	15	(20.3%)
150-199	2	(4.9%)	0	(0.0%)	2	(2.7%)
Total	41	(100.0%)	33	(100.0%)	33	(100.0%)

Table 5. Distribution of daily refined carbohydrate intake. (c)

Percentage Refined Carbohydrate Intake (grams)	Male		Female		Total	
0-24	4	(9.8%)	2	(6.2%)	6	(8.1%)
25-49	28	(68.3%)	18	(54.5%)	46	(62.2%)
50-74	8	(19.5%)	11	(33.3%)	19	(25.7%)
75-10 0	1	(2.4%)	2	(6.1%)	3	(4.1%)
Total	41	(100.0%)	33	(100.0%)	74	(100.0%)*

*Approximate

Table 6. Relationship of cardiovascular complaints and daily total carbohydrate intake.

	53-143 grams of carbohydrate daily		145-301 grams of carbohydrate daily	
	Sample size	Mean number of cardiovascular complaints	Sample size	Mean number of cardiovascular complaints
Entire sample	37	0.9	37	1.1
23-37 years	16	0.7	20	0.7
38-56 years	21	1.0	17	1.5

Table 7. Relationship of cardiovascular complaints and daily refined carbohydrate intake.

	6-57 grams of refined carbohydrate daily		60-195 grams of refined carbohydrate daily	
	Sample size	Mean number of cardiovascular complaints	Sample size	Mean number of cardiovascular complaints
Entire sample	37	0.9	37	1.0
23-37 years	16	0.8	20	0.6
38-56 years	21	1.0	17	1.5

Table 8. Relationship of cardiovascular complaints and daily precentage refined carbohydrate intake.

	7-43 % refined carbohydrate intake		44-98 % refined carbohydrate intake	
	Sample size	Mean number of cardiovascular complaints	Sample size	Mean number of cardiovascular complaints
Entire sample	39	0.7	35	1.3
23-37 years	18	0.6	18	0.8
38-56 years	21	0.8	17	1.8

Table 9. Summary of mean number of cardiovascular complaints.

Age category	Carbohydrate variable	Carbohydrate intake	Mean number of cardiovascular findings
Older	Percentage	Higher	1.8
Older	Refined	Higher	1.5
Older	Total	Higher	1.5
Older	Refined	Lower	1.0
Older	Total	Lower	1.0
Older	Percentage	Lower	0.8
Younger	Refined	Lower	0.8
Younger	Percentage	Higher	0.8
Younger	Total	Higher	0.7
Younger	Total	Lower	0.7
Younger	Refined	Higher	0.6
Younger	Percentage	Lower	0.6

number of findings are characteristically the older individuals. It is also of interest that the three with the greatest complaints have, as a common denominator, the higher consumption of carbohydrates. It is exciting to realize that such correlations prevail in the early, ill-defined, marginal areas between optimal health and obvious disease.

Summary and Conclusions

This is a study of the correlation of cardiovascular complaints (elicited from the Cornell Medical Index Health Questionnaire) and daily total, refined, and percentage refined carbohydrate consumption in 74 dental practitioners and their wives. The results suggest a greater frequency of cardiovascular responses in relatively older persons who consume relatively greater quantities of carbohydrate, and possibly refined foodstuffs.

Reference

1. Cheraskin, E., Ringsdorf, W.M., Jr., Setyaadmadia, A.T.S.H. and Barrett, R.A. Carbohydrate Consumption and Cardiovascular Complaints. *Angiology* 18: #4, 224-230, April 1967.