COFFEE AND CANCER OF THE PANCREAS

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Abstract We questioned 369 patients with histologically proved cancer of the pancreas and 644 control patients about their use of tobacco, alcohol, tea, and coffee. There was a weak positive association between pancreatic cancer and cigarette smoking, but we found no association with use of cigars, pipe tobacco, alcoholic beverages, or tea. A strong association between coffee consumption and pancreatic cancer was evident in both sexes. The association was not affected by controlling for cigarette use. For the sexes combined, there was a significant dose-response relation ($P \sim 0.001$); after adjustment for cigarette smoking, the relative risk associated with drinking up to two cups of coffee per day was 1.8 (95 per cent confidence limits, 1.0 to 3.0), and that with three or more cups per day was 2.7 (1.6 to 4.7). This association should be evaluated with other data; if it reflects a causal relation between coffee drinking and pancreatic cancer, coffee use might account for a substantial proportion of the cases of this disease in the United States. (N Engl J Med. 1981; 304:630-3.)

OVER the past few decades, cancer of the pancreas has emerged as one of the most important neoplasias in human beings. It now accounts for approximately 20,000 deaths annually in the United States. Causative factors have been sought in several previous studies, but only cigarette smoking has emerged as a consistent, though relatively weak, exogenous risk factor. We report the results of a study that was planned to reevaluate the relation of this disease to smoking and to examine the role of alcohol consumption as a possible confounding variable. Data were also obtained on intake of tea and coffee — factors that have not been adequately investigated in this disease.

METHODS

We conducted a case-control interview study. The cases were patients with histologic diagnoses of cancer of the exocrine pancreas who were in any of 11 large hospitals in the Boston metropolitan area and Rhode Island between October 1974 and August 1979. Patients with tumors of the islet cells, periampullary duodenal mucosa, or ampulla of Vater were not included. We identified 578 patients and interviewed 405 of them. Twenty patients died and 35 were discharged before an interview could be arranged; 78 were too sick to be interviewed, 14 had language difficulties, and 26 refused the interview. Also excluded from the analysis were eight nonwhite patients, four residents of countries other than the United States, eight patients older than 79 years, and 16 patients whose interview information was judged by the interviewer to be of questionable reliability. The analysis is based on data from the remaining 369 patients.

To assemble a control series, the interviewers also attempted to question all other patients who were under the care of the same physician in the same hospital at the time of an interview with a patient with pancreatic cancer. Either before the interview (if the information was known) or afterward, patients with diseases of the pancreas or hepatobiliary tract or diseases known to be associated with smoking or alcohol consumption were excluded. The principal diagnostic categories excluded (in addition to diseases of the biliary tract or pancreas) were cardiovascular disease, diabetes mellitus, respiratory or bladder cancer, and peptic ulcer. From a total of 1118 eligible patients, we interviewed 700; nine died and 131 were discharged before the interview, 179 were too ill, 26 had language problems, and 73 refused. After exclusion of 17 nonwhites, five foreign residents, four persons older than 79 years, and 30 persons whose interviews were judged to be unreliable, the control series used for the analysis consisted of 644 patients. Minor differences between tables in the stated numbers of cases and controls resulted from absence of specific items being analyzed in a few questionnaires.

The control series was composed of two principal diagnostic groups: 273 patients with cancer other than cancers of the pancreas and biliary tract, respiratory tract, or bladder and 371 patients with other disorders. Of the control patients with cancer, the tumor was in the breast in 65 patients, colon in 60, rectum in 25, stomach in 24, small intestine in nine, ovary in eight, prostate in eight, and cervix in seven; there were also 16 with melanoma and 15 with lymphoma. No other cancer was found in more than four subjects. Diagnoses in the controls without cancer were of a wide variety, although because of the nature of the practices of many of the physicians who were responsible for patients with cancer of the pancreas, patients with gastroenterologic conditions were probably overrepresented in relation to a general hospital population. The principal diagnoses were hernia in 70 patients; colitis, enteritis, or diverticulitis in 41; bowel obstruction, adhesions, or fistula in 26; gastritis in 17; other gastroenterologic conditions in 47; benign tumors in 29; varicose veins or phlebitis in 21; genitourinary disorders in 20; neurologic disorders in 20; gynecologic disorders in 16; and other conditions in 64.

In the analyses, the patients with pancreatic cancer were compared with the control patients with cancer and independently with the control group without cancer. The findings were quite similar, and only the results with the combined control group are presented here.

Several questions in the interview probed the duration and intensity of smoking of cigarettes, cigars, and pipes. Questions on alcoholic beverages asked about the frequency of use before the onset of illness, the age span over which such use occurred, and the type of beverage used most frequently. The questions on tea and coffee were limited to the number of cups consumed in a typical day before the current illness was evident.

Tests of significance and estimates of adjusted relative risks and their confidence limits were derived with the method of Mantel and Haenszel[1] and its extension.[2] The data were stratified by age in 10-year groups and by sex where appropriate. All confidence limits are 95 per cent intervals. Most analyses were performed with the calculator programs developed by Rothman and Boice.[3]

RESULTS

Tobacco

There was no difference between cases and controls in the use of cigars or pipe tobacco. Among men, the relative risk associated with use of cigars (with nonsmokers as the referent group) was 1.0 (confidence interval, 0.7 to 1.4), and that with use of a pipe was 1.0 (confidence interval, 0.7 to 1.4).

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Table 1. Distribution of Cases and Controls According to Cigarette-Smoking Habits and Estimates of Risk Ratios.

Sex	Category	Never Smoked	Ex-Smokers	Current Smokers		Total *
				<1 pack/day	≥1 pack/day	
Men	Cases (no.)	40	99	22	57	218
	Controls (no.)	74	122	35	75	306
	Adjusted relative risk †	1.0	1.4	1.1	1.4	1.4
	95% confidence interval	—	0.9–2.3	0.5–2.2	0.9–2.4	0.9–2.2
Women	Cases (no.)	62	41	20	26	149
	Controls (no.)	160	86	36	55	337
	Adjusted relative risk †	1.0	1.3	1.5	1.6	1.5
	95% confidence interval	—	0.8–2.2	0.8–2.8	0.9–2.9	1.0–2.2

*Adjusted relative risks and 95 per cent confidence intervals in this column are for consumers of any amount (including ex-consumers) as compared with nonconsumers.

†Mantel–Haenszel estimates of risk ratios, adjusted over categories of age in decades. In all comparisons, the referent category was subjects who had never smoked. Chi-square (Mantel extension) with equally spaced scores, adjusted over age in decades: 1.2 for men, 4.1 for women.

The data on use of cigarettes are shown in Table 1. There was a weak positive association. Although only the data for women showed a significant dose-response relation, the estimate of the relative risk associated with smoking at any time for both sexes combined was 1.4; the difference from the referent risk was significant (confidence interval, 1.1 to 1.9).

Alcohol

Table 2 shows a comparison of use of alcoholic beverages by cases and by controls. No notable or significant association appeared. The combined estimate of relative risk associated with drinking at any time was 0.9, with a confidence interval of 0.6 to 1.3, and that associated with regular drinking was 0.8 (confidence interval, 0.5 to 1.3).

No difference between cases and controls was found in the statements about the type of alcoholic beverage used most frequently (data not shown).

Table 2. Distribution of Cases and Controls According to Alcohol-Drinking Habits and Estimates of Risk Ratios.

Sex	Category	Alcohol Drinking			Total
		None	Occasional	Regular	
Men	Cases (no.)	16	113	89	218
	Controls (no.)	27	157	123	307
	Adjusted relative risk *	1.0	1.3	1.3	1.3
	95% confidence interval	—	0.7–2.6	0.6–2.6	0.7–2.5
Women	Cases (no.)	33	99	17	149
	Controls (no.)	59	221	57	337
	Adjusted relative risk *	1.0	0.8	0.5	0.8
	95% confidence interval	—	0.5–1.3	0.3–1.1	0.5–1.3

*Chi-square (Mantel extension) with equally spaced scores, adjusted over age in decades: 0.2 for men, 2.7 for women. All data are analyzed as in Table 1.

Tea

The tea consumption of cases and controls is shown in Table 3. A slight inverse association appeared in both sexes, but it was not significant in either.

Coffee

An unexpected association of pancreatic cancer with coffee consumption was evident (Table 4). Among men, each category of coffee consumption had a statistically significant excess risk as compared with that of nondrinkers of coffee, but the dose-response relation was flat. Among women, both categories of consumers of three or more cups per day had significantly elevated risks, and the dose-response relation (as measured by the Mantel test) was highly significant ($P<0.001$). For the sexes combined, with a simultaneous adjustment for sex and age, the trend was also highly significant (chi-square, 11.0), and the adjusted relative risks for consumers of no cups per day, one to two, three to four, and at least five were 1.0, 2.1, 2.8, and 3.2, respectively.

Table 3. Distribution of Cases and Controls According to Tea-Drinking Habits and Estimates of Risk Ratios.

Sex	Category	Tea Drinking (Cups per Day)			Total
		0	1–2	≥3	
Men	Cases (no.)	61	134	21	216
	Controls (no.)	72	205	29	306
	Adjusted relative risk *	1.0	0.7	0.8	0.7
	95% confidence interval	—	0.5–1.1	0.4–1.5	0.5–1.1
Women	Cases (no.)	40	85	25	150
	Controls (no.)	75	191	70	336
	Adjusted relative risk *	1.0	0.7	0.6	0.7
	95% confidence interval	—	0.5–1.2	0.3–1.2	0.5–1.2

*Chi-square (Mantel extension) with equally spaced scores, adjusted over age in decades: 1.4 for men, 1.9 for women. All data are analyzed as in Table 1.

Interaction

Since no association was observed with use of alcoholic drinks, tea, pipe tobacco, or cigars, the principal interaction of interest was that between cigarette use and coffee use. This relation was explored in the analysis presented in Table 5. The data showed a consistent association of pancreatic cancer with coffee drinking within each category of smoking, and the data for all smokers and nonsmokers showed a consistent trend with coffee drinking after adjustment for smoking. With the Mantel extension, the chi-square value for the trend with coffee consumption (after adjustment for smoking as well as age and sex) was 10.6 ($P \sim 0.001$). The association with smoking within categories of coffee consumption was less clear, and the relative risks for ex-smokers and current smokers, adjusted for coffee consumption, did not differ significantly from unity.

Discussion

Our findings with regard to association of cancer of the pancreas with cigarette use and alcohol consumption are consistent with those of previous investigators. The association with cigarette use has been most extensively explored. Weakly positive associations were found in two other case-control studies[4,5] and in the large cohort studies in British physicians,[6] American veterans,[7] and the American Cancer Society population.[8] The relative risks for cigarette smokers as compared with nonsmokers were 2.3 in the larger case-control study and 1.6, 1.8, and an average of 2.2 in the three cohort studies. These values are comparable to the figure of 1.4 in our study. In one small case-control study, a weak and nonsignificant association was found only in women; among men, there was no difference in cigarette-smoking habits between cases and controls.[5] However, the inclusion of patients with smoking-related diseases among the hospitalized controls in that study would have served to conceal a weak relation. Adjustment for coffee consumption did not entirely remove the association with cigarette smoking in our own data, although the association was not significant after such adjustment. The possible confounding influence of coffee consumption was not evaluated in the other studies.

The relation between alcohol use and pancreatic cancer has been less extensively studied, but a lack of association has been found in one case-control study[4] and in a proportional mortality analysis of a large series of deaths of alcoholics.[9] An association with wine drinking was reported in one study, but the numbers were relatively small, the difference was not conventionally significant, and potential confounding factors were not evaluated.[5] Overall, it seems unlikely that alcohol consumption has any role in the origin of cancer of the pancreas — an observation that is of some interest in the light of the obvious role of this substance in chronic pancreatitis.

In a recently reported case-control study involving 94 patients with pancreatic adenocarcinoma and a similar number of hospital controls, Lin and Kessler noted that the cases tended to drink more decaffeinated coffee than did the controls.[5] In view of the relatively recent use of decaffeinated coffee on a large scale, it seems unlikely that this particular type of beverage has a causal relation to cases of pancreatic cancer appearing at present. It seems more likely that the high consumption of decaffeinated coffee noted by Lin and Kessler is a reflection of generally high coffee consumption by these patients in the past. These authors gave no data on the use of regular coffee by their subjects.

Although the positive association with coffee consumption that we observed must be evaluated with other data before serious consideration is given to the possibility of a causal relation, it is worth noting that some of the descriptive features of the epidemiology of cancer of the pancreas seem to be consistent with such a relation. The apparent increase in frequency of cancer of the pancreas in recent decades[10] and the low rates observed in Mormons[11,12] and Seventh-Day Adventists[13] would be compatible with a causative role for either coffee consumption or cigarette smoking. However, the relatively small excess of men with the disease in proportion to women would seem to be more suggestive of a role for coffee rather than for cigarettes. Some 10 years ago, correlating trade statistics in 20 countries with rates of death from cancer, Stocks reported a positive correlation between coffee consumption and rates of pancreatic cancer; the association was present in both sexes, although it was significant only in men.[14] We note also the recent report of the simultaneous occurrence of cancer of the pancreas in a husband and wife who both added "coffee syrup" to ground coffee before percolating it.[15]

Our use of a control group composed of hospitalized patients must be discussed. It is possible that these patients reduced their coffee consumption because of illness and that their replies were affected,

Table 4. Distribution of Cases and Controls by Coffee-Drinking Habits and Estimates of Risk Ratios.

Sex	Category	Coffee Drinking (Cups per Day)				Total
		0	1–2	3–4	≥5	
Men	Cases (no.)	9	94	53	60	216
	Controls (no.)	32	119	74	82	307
	Adjusted relative risk *	1.0	2.6	2.3	2.6	2.6
	95% confidence interval	—	1.2–5.5	1.0–5.3	1.2–5.8	1.2–5.4
Women	Cases (no.)	11	59	53	28	151
	Controls (no.)	56	152	80	48	336
	Adjusted relative risk *	1.0	1.6	3.3	3.1	2.3
	95% confidence interval	—	0.8–3.4	1.6–7.0	1.4–7.0	1.2–4.6

*Chi-square (Mantel extension) with equally spaced scores, adjusted over age in decades: 1.5 for men, 13.7 for women. All data are analyzed as in Table 1.

Table 5. Estimates of Relative Risk of Cancer of the Pancreas Associated with Use of Coffee and Cigarettes.*

Cigarette Smoking	Coffee Drinking (Cups per Day)			Total †
	0	1–2	≥3	
Never	1.0	2.1	3.1	1.0
Ex-smokers	1.3	4.0	3.0	1.3 (0.9–1.8)
Current smokers	1.2	2.2	4.6	1.2 (0.9–1.8)
Total †	1.0	1.8 (1.0–3.0)	2.7 (1.6–4.7)	

*The referent category is the group that uses neither cigarettes nor coffee. Estimates are adjusted for sex and for age in decades.

†Values are adjusted for the other variable, in addition to age and sex, and are expressed in relation to the lowest category of each variable. Values in parentheses are 95 per cent confidence intervals of the adjusted estimates.

even though the question was related to the time before the onset of their illness. Indeed, Rosenberg et al. reported a lower proportion of coffee consumers among hospitalized women with chronic disease than among women admitted for emergencies.[16] However, the differences noted by Rosenberg et al. between patients with acute and chronic illness were much smaller than those between the cases and controls in our study. Although the majority of control patients in our series had chronic disease, pancreatic cancer itself is a chronic disease, and in theory it would seem as likely as any other disorder to induce a change in coffee consumption. It is a matter for speculation whether such a bias is likely to be greater in our case series or in patients with the diagnoses represented in our control series. It is inconceivable that this bias would account for the total difference between cases and controls, but it is possible that risk may be either overestimated or underestimated on this account. We note, however, that the relative risks shown in Table 4 were similar whether the patients with other cancers or the patients with nonmalignant disorders were used as the control group.

If the association between coffee consumption and pancreatic cancer is confirmed and found to be causal, the relation will have some importance in quantitative terms. Cancer of the pancreas is now the fourth most common fatal malignant disease in the United States. If the distribution of coffee consumption in our control group reflects that in the general population, with relative risks of 1.8 associated with the use of one to two cups daily and 2.7 associated with three or more cups daily, we estimate the proportion of pancreatic cancer that is potentially attributable to coffee consumption to be slightly more than 50 per cent.[17] This estimate emphasizes the need to determine whether the association exists in other data and to evaluate its causal or noncausal nature.

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linoleic acid per day was required to reduce total cholesterol by 13 to 14 mg per deciliter. At this same dosage, bile acid sequestrates will produce a threefold to fourfold greater reduction in cholesterol level. Therefore, linoleic acid is at best a relatively poor cholesterol-lowering agent, and it cannot be recommended for cholesterol reduction, as it frequently was in the 1950s and 1960s.

Finally, let me say that our studies on oleic acid were stimulated by Dr. Keys' important seven-country study, which showed the potential of oleic acid as a replacement for saturated fatty acids, and I believe that our findings support the usefulness of diets high in oleic acid.

Roubenoff and Roubenoff criticize our use of glucose as a carbohydrate, but complex carbohydrates are hydrolyzed to glucose in the intestine. The whole question of the difference in actions of complex and simple carbohydrates on lipoprotein metabolism is too complicated to discuss here, but from the literature, I am not convinced that there is much difference. Dr. Shealy criticizes our study because it did not use olive oil. We were interested in oleic acid, not olive oil itself. In reply to Dr. Snetselaar, I believe that the P/S ratio should be discarded; it has many defects typically associated with ratios. For instance, there are no data to support the concept that the P/S ratio has any meaning if fat intake is low.

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SURVIVAL ADVANTAGE AMONG PATIENTS WITH BREAST CANCER DIAGNOSED AT 45 TO 49 YEARS OF AGE

To the Editor: Data regarding the influence of age on prognosis in breast cancer appear to conflict, with some studies reporting better survival among young women[1-5] and others reporting an improved prognosis among older women.[6-11] We reviewed the literature from the past 20 years on this subject and found that the survival data are not inconsistent. Rather, past studies defined and grouped patients inconsistently. For example, "young" women were under 50 years of age in some studies but under 30 in others.

In all reports except one,[12] the age groups that included patients 45 to 49 years old had the best prognosis. No other five-year age group had a consistently improved survival among all the studies. Palmer et al. studied 1022 patients in 10-year age groups and found that those 40 to 49 had the best survival rate.[13] A recent study of 46,959 patients found that those 45 to 54 years old had better survival than younger or older patients.[14]

We also calculated five-year survival among 12,994 white women with breast cancer whose data were drawn from the tumor registry of the San Francisco–Oakland Bay Area SEER (Surveillance, Epidemiology and End Results program of the National Cancer Institute). The disease had been diagnosed between 1973 and 1982, when the patients were 18 to 74. The overall five-year survival rate was highest among patients 45 to 49 years old (Fig. 1). We performed staging (the information on 9752 patients [75 percent] was sufficient to permit staging) using a scheme based on the staging system of the American Joint Committee on Cancer, and found no differences in the distribution of stages according to five-year age group. Patients 45 to 49 years old had improved survival in Stages I, II, IIIB, and IV.

Two characteristics of the patients in this age group may be responsible for their increased survival. First, they are most likely to undergo natural menopause near the time of diagnosis of breast cancer. This disease is hormonally mediated, and the hormonal changes that occur at menopause may slow tumor growth and thus prolong survival in these patients as compared with patients who do not undergo menopause.

Second, women below the age of 45 may have a survival disadvantage because of a pregnancy close to the time of breast-tumor growth. If the hormonal and immunologic changes that occur with pregnancy create an environment that promotes tumor growth, women who are pregnant close to the time of early tumor-cell replication will have a more rapidly growing neoplasm and thus a survival disadvantage. Patients in whom breast cancer develops during pregnancy or shortly thereafter have a very poor prognosis.[8,15] Women 45 or older are less likely to be pregnant or in a postpartum state than are younger women, and thus are less likely to have a poor prognosis because of pregnancy.

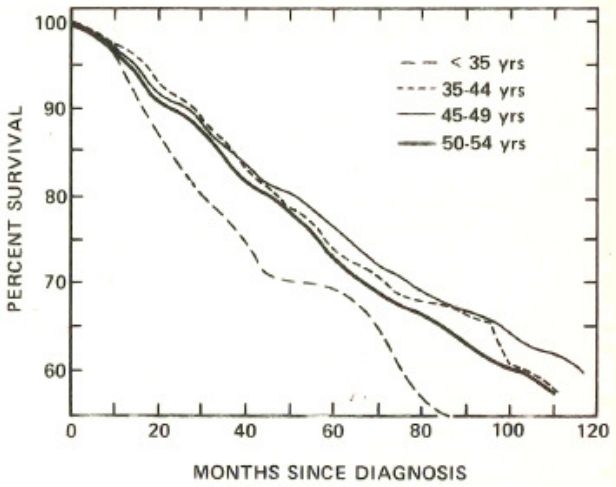

Figure 1. Survival after Diagnosis of Breast Cancer in 12,994 White Women, According to Age at Diagnosis.

Rates among patients 55 or older (not shown) were uniformly lower than among those 50 to 54.

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COFFEE AND PANCREATIC CANCER (CHAPTER 2)

To the Editor: We have obtained more data on the association of coffee and pancreatic cancer since a paper by some of us was published in the *Journal* in 1981.[1]

Table 1. Distribution of Coffee Consumption by Cases and Controls 10 Years before Diagnosis and Estimates of Risk Ratios.*

Sex	Category	Coffee Drinking (Cups per Day)				Total
		0	1–2	3–4	≥5	
Male	Cases (no.)	15	34	22	14	85
	Controls (no.)	28	58	32	11	129
	Adjusted relative risk	1.0	1.1	1.0	2.4	1.3
	95% confidence interval	—	0.5–2.4	0.4–2.5	1.0–5.8	0.6–2.6
Female	Cases (no.)	14	46	14	13	87
	Controls (no.)	35	64	24	15	138
	Adjusted relative risk	1.0	1.3	1.0	2.2	1.4
	95% confidence interval	—	0.6–3.0	0.4–2.5	0.8–6.0	0.7–2.9

*Estimates of adjusted relative risks and their confidence intervals were derived with the method of Mantel and Haenszel[2] and Miettinen.[3] The estimates of relative risk in the "Total" column are for consumers of any amount of coffee as compared with nonconsumers. Chi-square (Mantel extension)[4] with equally spaced scores, adjusted over age in decades: 2.8 for men, 1.3 for women.

A case–control study was conducted between April 1981 and June 1984 in 11 large hospitals in the Boston metropolitan area and in Rhode Island — the same hospitals that participated in the study we reported earlier. Our analysis is based on data on 176 patients with histologically confirmed pancreatic cancer who were under 80 years of age, who resided in the United States, and whose interview information was judged by the interviewer to be reliable. The control series was made up of other patients who were under the care of the same physician in the same hospital at the time of the interview with each case. Information was obtained on 273 controls who were under 80 years of age, who resided in the United States, and whose interview information was judged to be reliable. The principal diagnoses of patients in the control series included cancers of the breast, colon, stomach, and uterus, benign tumors, hernia, colitis, enteritis, and bowel obstruction; other conditions accounted for only 1 or 2 subjects each.

A revised questionnaire that elicited detailed information on coffee consumption was used. The information on coffee drinking included the patient's age when coffee drinking began, the number of cups drunk per day, the patient's preference for regular or decaffeinated coffee, the method of preparation (ground or instant), and any change in preference, amount consumed, or method of preparation up to the time of interview. Inquiries were also made regarding additives to coffee (milk, sugar, artificial sweetener, and others). For the purpose of the analysis reported here, we classified coffee drinking in several ways: consumption 1, 10, and 20 years before the diagnosis and total cumulative cups of regular, decaffeinated, and all types of coffee consumed.

The results of the analysis of coffee drinking 10 years before the diagnosis are shown in Table 1. There was a slightly increased risk associated with the heaviest coffee-consumption category (five or more cups per day). However, in contrast to the earlier study, no trend in risk was observed for men or women. When controls were separated according to diagnosis into gastrointestinal-related and nongastrointestinal-related groups, the results were similar: for one to two, three to four, and five or more cups consumed per day, the age- and sex-adjusted risk ratios were 1.2, 1.0, and 2.5 (95 percent confidence interval, 1.2 to 5.3) when controls with nongastrointestinal-related diagnoses were used as the comparison group, and 1.5, 1.2, and 2.6 (95 percent confidence interval, 1.1 to 6.4) when controls with gastrointestinal-related diagnoses were used. The results of our analysis of coffee drinking 1 and 20 years before the diagnosis were similar.

For consumption of regular and decaffeinated coffee, all categories of coffee drinkers had estimated risk ratios between 1.0 and 2.0; none of the estimates reached statistical significance, and no trend in risk related to the amount consumed was observed (Table 2). These results, along with other recent studies,[5,6] suggest that, if there is any association between coffee consumption and cancer of the pancreas, it is not as strong as our earlier data suggested.

Some differences between cases and controls in cigarette smoking were observed. The age- and sex-adjusted risk ratios were 1.0 (95 percent confidence interval, 0.6 to 1.7), 1.8 (0.8 to 3.9), and 1.9 (1.1 to 3.3) for ex-smokers, current smokers of less than one pack a day, and current smokers of one pack or more a day, respectively, as compared with those who had never smoked (Mantel extension chi-square for trend, 5.0; $P = 0.03$). No increased risk was found to be associated with the consumption of alcohol or tea.

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Table 2. Distribution of Total Cumulative Cups of Regular, Decaffeinated, and All Types of Coffee Consumed by Cases and Controls and Estimates of Risk Ratios.*

Category	Total Coffee Consumption (Number of Cups)					Total
Regular Coffee						
	0	*<20,000*	*20,000–39,999*	*40,000–59,999*	*≥60,000*	
Cases (no.)	25	38	48	27	32	170
Controls (no.)	50	86	67	25	37	265
Adjusted relative risk	1.0	1.0	1.3	1.8	1.4	1.3
95% confidence interval	—	0.5–2.0	0.7–2.5	0.9–3.8	0.8–2.7	0.7–2.2
Decaffeinated Coffee						
	0	*<2,000*	*2,000–3,999*	*4,000–5,999*	*≥6,000*	
Cases (no.)	105	18	13	10	24	170
Controls (no.)	180	28	21	10	26	265
Adjusted relative risk	1.0	1.0	1.0	1.5	1.6	1.2
95% confidence interval	—	0.5–1.9	0.5–2.3	0.6–3.9	0.8–2.9	0.8–1.9
All Coffee						
	0	*<20,000*	*20,000–39,999*	*40,000–59,999*	*≥60,000*	
Cases (no.)	22	36	48	29	35	170
Controls (no.)	48	71	78	27	42	266
Adjusted relative risk	1.0	1.4	1.2	2.0	1.5	1.4
95% confidence interval	—	0.7–2.9	0.6–2.4	0.9–4.3	0.8–2.8	0.8–2.4

*Risk ratios were adjusted for age (in decades) and sex. Chi-square (Mantel extension) with equally spaced scores, adjusted over age (in decades) and sex: 3.3 for regular, 2.1 for decaffeinated, and 2.4 for all types of coffee.

1. MacMahon B, Yen S, Trichopoulos D, Warren K, Nardi G. Coffee and cancer of the pancreas. N Engl J Med 1981; 304:630-3.
2. Mantel N, Haenszel W. Statistical aspects of the analysis of data from retrospective studies of disease. JNCI 1959; 22:719-48.
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5. Wynder EL, Hall NEL, Polansky M. Epidemiology of coffee and pancreatic cancer. Cancer Res 1983; 43:3900-6.
6. Gold EB, Gordis L, Diener MD, et al. Diet and other risk factors for cancer of the pancreas. Cancer 1985; 55:460-7.

THE FUTURE OF MEDICARE

To the Editor: "The Future of Medicare" by Blumenthal et al. (March 13 issue)* recommends mandatory Medicare assignment for physicians — which demands rebuttal.

The current Massachusetts experiment with mandatory assignment does not allow the physician to set his or her own fees. Under this law, the physician caring for a Medicare patient is required to charge only what Medicare allows. For services for which the Medicare "allowance" is below the physician's costs (such as home visits or yearly physicals), the physician has the distasteful choice of providing the service at a loss or not providing a needed service. Blumenthal et al. suggest remedies for the inequitable reimbursements, but the mandatory-assignment law leaves the patient dependent on bureaucratic adjustments and the vagaries of the federal budget. This version of the mandatory-assignment law also restricts patients' freedom, as it does not allow the patient to choose a physician who has structured his or her practice to charge more per visit and spend more time with patients.

Another version of the mandatory-assignment law would give the patient the freedom to pay privately for medical care, but neither patient nor physician would receive any reimbursement if the physician did not accept assignment. This proposal is also objectionable, as it "welfarizes" Medicare and would lead to a two-tier system.

The philosophical objections to mandatory assignment are great. Why should the government set physicians' fees? How much governmental interference is acceptable in a "free" society? Certainly, the government should not unquestioningly pay the fees of physicians who have an overblown opinion of their own worth or who have overburdened themselves with unwise overhead. And yet, aren't those decisions to be made freely by free people?

Historically, the doctorate has signified the ability to think critically and to advance knowledge independently. Will the public be best served by turning all practicing M.D.s into technicians bound by law to do as they are told? The profession can hardly agree on even such an ancient procedure as circumcision. Can we expect an honest, prompt evaluation by the government's experts when a new procedure would further strain the federal budget?

The fee-for-service physician's great glory is that he or she can freely decide on and recommend a treatment plan in the patient's best interest. In the future, let us seek better medical care that is cheaper, rather than just mandating cheaper care.

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*Blumenthal D, Schlesinger M, Drumheller PB, et al. The future of Medicare. N Engl J Med 1986; 314:722-8.

To the Editor: As a medical oncologist whose practice consists largely of elderly sick persons, I must comment on the article by Blumenthal et al. and the Harvard Medicare Project. Like many reports in medical and nonmedical publications, it is primarily concerned with the economic aspects of Medicare while ignoring the quality of care for our aged people. In addition, we cannot think of the future of Medicare without addressing its present problems.

First, our medical care system has become procedure-oriented. Physicians are compensated far more for performing medical and surgical procedures than for the time spent in taking care of critically ill patients. This compensation system has to be modified to make it more equitable for doctors in various disciplines, such as family practice and internal medicine. Now, even a family practitioner receives a higher reimbursement for doing minor surgery than for providing much-touted primary care. High surgical and radiologic fees and expenses contribute a great deal to the high cost of medical care.

Second, there are other discrepancies. For example, Medicare, through its rules about diagnosis-related groups, allows only 6.4 days of hospitalization for the induction therapy of acute leukemia in adults. This amount of time is totally inadequate. Acute leukemia aside, one administrator of a peer-review organization told me, "There is no reason to give chemotherapy to old people." This, in spite of the fact that age in years has little bearing on the selection of treatment. It is the patient's quality of life and functional status that are more important determinants of treatment.

Third, current Medicare policies are creating rifts between patients and their doctors, and between physicians and hospitals. No amount of legislation will improve the quality of care if there is discord between these groups. Just call a Medicare office in your area to find out. Patients are given conflicting information. They are not told that the doctors must follow the criteria set for the diagnosis-related groups. Top administrators in the Department of Health and Human Services are no exception.[1,2] Medicare should tell its beneficiaries ahead of time, in a straightforward manner, that it has limited resources and, therefore, can allow only limited medical services. When patients are sick, the last thing they want to hear about from their physicians is Medicare rules and restrictions.

Finally, giving bonuses to physicians as an inducement so that a hospital can make a profit is unacceptable. As things stand now, no nursing home or hospital wants a patient with expensive medical problems.

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1. Rahman F. Medicare makes a wrong diagnosis. New York Times. January 23, 1986.
2. Bowen OR. How Medicare hospital reimbursement works. New York Times. February 6, 1986.

The above letters were referred to Dr. Blumenthal, who offers the following reply:

To the Editor: Dr. McIntyre argues that mandatory assignment under Medicare would represent unjustified governmental intrusion into transactions between elderly patients and physicians and that it threatens to "welfarize" Medicare. The justification for federal regulation of physicians' Medicare fees is the same as its justification for seeking the lowest prices from defense contractors: As the taxpayers' agent, the government seeks to control the costs of an expensive, albeit essential, public service. As Dr. McIntyre points out, in exercising this prerogative the government must balance cost control with other goals, such as treating the elderly and their physicians fairly and preserving freedom of choice for both groups. Our view is that a fee schedule based on a relative-value system and including mandatory assignment provides a reasonable compromise among these sometimes competing goals.

If it is to be preserved at all, the fee-for-service sector within Medicare must be made less costly. Otherwise, it will be abandoned altogether — a far greater intrusion on Medicare patients and physicians than anything we propose. To make it less costly, it is essential to constrain fees. Once those fees are constrained, it is essential to protect Medicare patients, especially the poor elderly, from attempts by physicians to recoup from beneficiaries what Medicare will no longer pay. Unlike the state of Massachusetts, we do not propose that physicians be required to see Medicare patients on assignment or risk the loss of their license. We do propose that when physicians refuse assignment, neither they nor their patients be allowed to bill Medicare. Some physicians may with-