

ALCOHOL CONSUMPTION AND SMOKING HABITS IN MALE PATIENTS WITH PULMONARY TUBERCULOSIS

BY

J. G. LEWIS AND D. A. CHAMBERLAIN

The Brompton and Charing Cross Hospitals, London

In the early part of the 20th century there were many reports on the direct and indirect relation of alcohol to the aetiology of tuberculosis, and these were reviewed by Bogen (1942), who added evidence of his own on the harmful effects of alcohol on the course of the disease. Others have denied that it could be an important factor because in the past the disease was specially common in women who did not drink (Woolf, 1906) and young children (Arnould, 1925). Two factors have led to the need to reassess this relationship. First, the age and sex distribution of pulmonary tuberculosis has changed, so that the disease is now most prevalent in the adult male (M.O.H. Notifications, 1958). Secondly, with the advent of chemotherapy, the incidence of the disease has decreased considerably and special attention should now be paid to those factors preventing its eradication.

Recent reports from France (Ledermann, 1955), Italy (Rabino and Osegia, 1958), United States (Fergus and Jackson, 1959), and Australia (Brown and Campbell, 1961) have emphasized anew the association between drinking and tuberculosis, and have also stressed the problem of treating the disease in the alcoholic. However, in Great Britain, the alcohol consumption of patients who develop pulmonary tuberculosis and their subsequent progress have received little recent consideration, whereas smoking has been incriminated as a predisposing factor (Lowe, 1956; Royal College of Physicians Report on Smoking, 1962). The purpose of this study was to investigate the alcohol consumption and smoking habits of patients with pulmonary tuberculosis in comparison with a control group.

MATERIAL AND METHODS

Male patients aged 20 years and over admitted with pulmonary tuberculosis under the care of two physicians at the Brompton Hospital were questioned about their smoking and drinking habits. The first

one hundred *consecutive* cases in which the diagnosis was proven bacteriologically were considered in the present study. Each was asked to give an estimate of his average daily consumption for a period arbitrarily taken as 6 months before the development of any symptoms of the illness. The accuracy of the estimate was checked as far as possible by detailed questioning. A series matched for social class (General Register Office, 1956) and for age by decades was obtained by similarly questioning all appropriate male patients admitted to medical and surgical beds at the Brompton Hospital for illness other than tuberculosis until the required control "spaces" had been filled. There was found to be a large number in this group with chronic diseases, necessarily modifying social habits; further, some had conditions known to be associated with smoking. This was therefore a control group of limited value, and an additional matched series was taken from the acute medical and surgical wards of a general hospital (Charing Cross). Both tuberculous patients and controls were questioned by one of us, and in a standard manner. None refused to answer.

For the purpose of the inquiry, a "short" was taken as equivalent to a pint of beer, and an ounce of tobacco as twenty cigarettes. Only those who drank on average the equivalent of two pints or more daily were considered to be regular drinkers; the criterion for regular smoking was a consumption of ten or more cigarettes each day. It is appreciated that some patients are not always truthful about their alcohol intake. The results here are based entirely on the patients' word; unfortunately we cannot be sure that any inaccuracy introduced in this way would affect the three groups equally.

Numbers in some of the age groups and social classes were small. Therefore, for the purposes of comparison, the decades have been grouped in pairs, and Social Classes I and II, and IV and V have been taken together.

RESULTS

There was an excess of regular drinkers in the pulmonary tuberculosis group compared with both control groups, the difference in each case being significant at the 1 per cent. level of probability (Table I).

TABLE I
INCIDENCE OF REGULAR DRINKERS

Series	Pulmonary Tuberculosis Cases	Brompton Controls (a)	Charing Cross Controls (b)
Total in Series	100	100	100
No. of Regular Drinkers	39	17	22

(a) $\chi^2=12$; $P<0.01$. (b) $\chi^2=6.82$; $P<0.01$.

The present-day peak incidence of tuberculosis in middle age is well shown by the proportion of patients in the fifth and sixth decades (Table II). This age group also contained the highest percentage of regular drinkers in each of the three series. The

excess of drinkers can be seen to apply to all ages.

The series contained more patients in Social Classes I and II than would be expected from the distribution in the general population (Table III). This may be due to the inclusion in the study of patients in private beds. The proportion of regular drinkers does not differ significantly between the tuberculous and the control series for Social Classes I and II; in the lower social classes there was a clear excess of drinkers in the tuberculous patients.

Other factors which might be expected to have a bearing on drinking habits were also considered.

MARITAL STATUS.—There was a similar proportion of single men in each group (Table IV), and the percentage of drinkers among the single men was high throughout; of those who were married there was a comparable incidence only in the tuberculous series.

TABLE II
AGE OF PATIENTS

Series		Pulmonary Tuberculosis Cases			Brompton Controls			Charing Cross Controls		
		Total	Regular Drinkers		Total	Regular Drinkers		Total	Regular Drinkers	
			No.	Per cent.		No.	Per cent.		No.	Per cent.
Age Group (yrs)	20-39	28	9	32	28	2	7	28	4	14
	40-59	48	23	48	48	11	23	48	14	29
	60+	24	7	29	24	4	17	24	4	17

TABLE III
SOCIAL CLASS

Series		Pulmonary Tuberculosis Cases			Brompton Controls			Charing Cross Controls		
		Total	Regular Drinkers		Total	Regular Drinkers		Total	Regular Drinkers	
			No.	Per cent.		No.	Per cent.		No.	Per cent.
Social Class	I and II	32	10	31	32	7	22	32	11	34
	III	39	18	46	39	6	15	39	3	8
	IV and V	29	11	38	29	4	14	29	8	28

TABLE IV
MARITAL STATUS

Series		Pulmonary Tuberculosis Cases			Brompton Controls			Charing Cross Controls		
		Total	Regular Drinkers		Total	Regular Drinkers		Total	Regular Drinkers	
			No.	Per cent.		No.	Per cent.		No.	Per cent.
Marital Status	Single, separated, etc.	33	12	36	23	6	26	29	11	38
	Married	67	27	40	77	11	14	71	11	15

TABLE V
CONSUMPTION OF CIGARETTES

Series		Pulmonary Tuberculosis Cases			Brompton Controls			Charing Cross Controls		
		Total	Regular Drinkers		Total	Regular Drinkers		Total	Regular Drinkers	
			No.	Per cent.		No.	Per cent.		No.	Per cent.
Daily Cigarette Consumption	10 or More... Less than 10	68 32	32 7	47 22	62 38	14 3	23 8	64 36	18 4	28 11

SMOKING HABITS.—The similar proportion of smokers in the three series is noteworthy and offers no support for the contention that smoking predisposes to pulmonary tuberculosis. Indeed, more smokers in the tuberculous group would have been expected from the known association between smoking and drinking reflected by the figures in Table V. An excess of drinkers in the tuberculosis series is present irrespective of smoking habits.

OTHER DATA.—Table VI shows the figures for heavy, moderate, and light drinkers in the three series. There is no close correlation between greater alcohol intake amongst the regular drinkers and increased risk of tuberculosis, but the numbers are too small for valid conclusions to be drawn. There was no significant difference in the numbers engaged in manual or heavy work in the three series; nor was there an excess of immigrants or any other racial factor to account for the higher alcohol intake in the tuberculous patients.

TABLE VI
HEAVY, MODERATE, AND LIGHT DRINKERS IN THE
THE THREE SERIES

Series		Pulmonary Tuberculosis Cases	Brompton Controls	Charing Cross Controls
Daily Consumption of Alcohol (pints)	Heavy (more than 8) ..	7	3	5
	Moderate (4 to 8) ..	18	8	7
	Light (2 to 3) (Under 2)	14 61	6 83	10 78
Total in Series		100	100	100

DISCUSSION

The investigation showed a significantly higher percentage of regular drinkers in patients with pulmonary tuberculosis than in two control groups. There are several possible reasons for this: first, regular drinking may increase the chances of exposure to tuberculosis; secondly, an increased susceptibility

to the disease may be produced; thirdly there may be an indirect association whereby alcohol intake is linked with some other factor predisposing to tuberculosis.

The data obtained in this series gave no evidence that indirect factors, such as occupation, marital status, smoking habits, or race, were responsible for the findings. Increased susceptibility cannot be assessed by this type of study. However, if it were of prime importance, the ratio of heavy to light drinkers should have been significantly greater in the tuberculous patients, and this was not the case.

Any increased risk of exposure to infection in drinkers is likely to occur in public houses. There is some support for this in that the association between regular drinking and tuberculosis is apparent only in the lower social classes who tend to drink at the bar rather than at home. The possibility that meeting places such as public houses might be favourable to the spread of infection was also suggested by Elwood (1961) when he was investigating tuberculosis in a common lodging house and the surrounding district. That the public house should be a source of infection is not surprising when one considers the usual recalcitrance of the tuberculous alcoholic patient, who is particularly difficult to treat successfully (Hurford, 1962). More consideration deserves to be given to the management of tuberculous alcoholics if tuberculosis is to be finally controlled.

SUMMARY

(i) A comparison of the stated drinking and smoking habits of tuberculous and non-tuberculous patients has been made.

(ii) A significant excess of regular drinkers was found in the tuberculous patients, but they did not smoke more than those in the control groups.

(iii) Possible reasons for the association of tuberculosis with regular drinking are discussed.

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REFERENCES

- Arnould, E. (1925). *Rev. Hyg.*, **47**, 614.
 Bogen, E. (1942). *Quart. J. Stud. Alc.*, **3**, 176.
 Brown, K. E., and Campbell, A. H. (1961). *Brit. J. Dis. Chest.*, **55**, 150.
 General Register Office (1956). "Census 1951, Classification of Occupations". H.M.S.O., London.
 Elwood, P. C. (1961). *Brit. J. prev. soc. Med.*, **15**, 89.
 Fergus, E. B., and Jackson, J. K. (1959). *Amer. Rev. Tuberc.*, **79**, 659.
 Hurford, J. V. (1962). *Tubercle (Lond.)*, **43**, 192.
 Ledermann, S. (1955). *Acta phtisiol.*, **20**, 9.
 Lowe, C. R. (1956). *Brit. med. J.*, **2**, 1081.
 Ministry of Health (1958). "Notification of Infectious Disease". H.M.S.O., London.
 Rabino, G., and Oseglia, G. (1958). *Minerva med. (Torino)*, **49**, 3495.
 Royal College Physicians (1962). "Smoking and Health". Pitman, London.
 Woolf-Wolf (1905-6). *Beitr. Klin. Tuberk.*, **4**, 239.