

PERSONALITY IN MALE LUNG CANCER PATIENTS*

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INTRODUCTION

THE possibility that psychological factors might be relevant to the development of cancer is not a new idea. Three recent reviews of the literature by Kowal [5], LeShan [6], and Perrin and Pierce [8] reveal a steady, though not prolific, contribution to the literature from the 18th Century onwards. It is probably a much older idea than these dates suggest, bearing in mind the view attributed to Galen (A.D. 131–201) that cancer was much more frequent in “melancholic” than in “sanguine” women [7].

Lung cancer does not appear to have obtained special attention from the psychosomatic approach. One of us (D. M. K.) is carrying out what might be termed psychosocial studies on lung cancer patients. During the course of these studies, some of the clinical material elicited suggested the hypothesis that lung cancer patients had a significantly diminished outlet for emotional discharge compared with non-cancer patients. To test this hypothesis, the original studies were extended to include (1) a clinical questionnaire designed to elicit pertinent factual clinical data by direct questioning, and (2) a personality inventory—the Maudsley Personality Inventory. This paper is a preliminary report describing that part of the investigation relating to the use of the personality inventory. The results of the clinical questionnaire will be published separately.

The Maudsley Personality Inventory (M.P.I.)

This inventory was developed over many years by one of us (H. J. E.) and is designed to measure two personality dimensions, extraversion and neuroticism. Extraversion, as opposed to introversion, refers to the individual's outgoing, uninhibited, social proclivities. Neuroticism refers to the individual's general emotional lability, emotional overresponsiveness and liability to neurotic breakdown under stress. Each of these traits is measured by 24 questions, a total of 48 questions. A short form of the M.P.I. has also been prepared consisting of two scales of 6 items each taken from the long form of the scales. This short form of the inventory, containing a total of 12 questions, is the one used in this study. Both the long and the short form of the scales have been well validated and are reliable. Details regarding these have been published elsewhere[1].

MATERIAL AND METHOD

The material consists of patients admitted to three chest units for diagnosis and treatment. Two of these units are surgical units and contain not only patients in whom lung cancer may be suspected but also patients admitted with other suspected thoracic disorders. To obviate possible criticism of a bias to the inclusion of surgical cases, patients from a medical chest unit are also included. This unit admits patients with a variety of chest disorders including suspected lung cancer.

Although the intention was to see all patients in these units, whatever the suspected diagnosis, this has not been possible because of absence of the interviewer on holiday or for other reasons. There is no intentional selection, however. There is only one interviewer (D. M. K.) and he has seen all the

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patients studied, each patient being seen alone. Each unit is visited usually once weekly, and patients are mostly seen during the week following their admission. No patients are seen after surgical operations. In no case is a diagnosis known to the interviewer at the time of the interview. Some patients may be aware of a diagnosis on admission, for instance, pneumonia or bronchitis or other non-malignant condition, but a proportion of these patients subsequently prove to be suffering from neoplasm. In most instances it is true to say that at the time of the interview the physician or surgeon in charge of the unit has not yet confirmed the true nature of the diagnosis, especially where cancer is a possibility. Patients with pulmonary tuberculosis are not routinely admitted to these wards and although some patients with this diagnosis are included in the series they were originally admitted because of suspicion of a non-tuberculous condition.

The completion of the M.P.I. is the last item of the interview. Each patient is given a copy of the short form of the M.P.I. and asked to fill it in, in accordance with the instructions given in the Manual [1].

The total number of patients included in this report is 239, in 116 of whom a diagnosis of primary lung cancer was made and in 123 of whom cancer of any organ was excluded. There were no refusals. All the patients are males. Females are also being studied but so far their numbers are too small for assessment.

A sample of the patients in this study shows no significant differences in social class between those diagnosed as suffering from lung cancer and those not having cancer [4].

In a previous study [4] a high proportion, 43 per cent, of patients admitted with lung cancer were found to have a past history of psychosomatic disorders—about twice as many as non-cancerous admissions. The finding that a high proportion of lung cancer patients had in fact found an outlet, in the form of psychosomatic disorders, for emotional discharge, would seem to be at variance with the hypothesis that lung cancer patients have a diminished outlet for emotional discharge. Because of this, and also because it was suspected that there might be personality differences between lung cancer patients without and with a history of past psychosomatic disorders, it was decided, for the purposes of statistical analysis, to separate lung cancer patients into two groups—those without and those with a history of psychosomatic disorders. The non-cancerous admissions are likewise divided into two groups without and with a history of psychosomatic disorders. These subdivisions into groups without and with a history of psychosomatic disorder were made by the interviewer (D. M. K.) and are based on the medical history obtained at the interview or on a diagnosis, by the physician or surgeon in charge, of a psychosomatic condition on admission. For the purposes of this paper, the term "psychosomatic disorder" refers to one of the commonly accepted psychosomatic disorders such as have been listed by Kissen [3, 4] and Sainsbury [9].

The M.P.I. results were scored and analysed by the co-author (H. J. E.) who, at the time of analysis, was unaware of the clinical personality findings that prompted the M.P.I. study. His interest in the M.P.I. study of lung cancer was a natural sequel to a study by him and his colleagues of cigarette smokers in relation to extraversion and neuroticism [2]. He predicted that lung cancer patients in general would give results similar to those given by cigarette smokers in that study, that is that they would be extraverted as opposed to introverted and tend towards neuroticism.

Ninety seven per cent of the lung cancer patients and 93 per cent of the controls in the present study were, or had been, regular cigarette smokers. Thirteen per cent of the lung cancer patients and 14 per cent of the controls were ex-smokers. A cigarette smoker was regarded as a person who had smoked at least one cigarette daily for not less than one year. Those who had given up smoking at least one year previous to the interview were regarded as ex-smokers.

RESULTS

The main results of the study are given in Tables 1 and 2.

The cancer and control groups have been divided into age groups (up to 54; 55-64; 65 and over), because of the disproportion of control and cancer patients in these various age groups. The tables show the numbers in each sub-group, the means and the standard deviations; they also show the same values for all the age groups combined.

Taking the extraversion scores first (Table 1) we note that in the overall comparison there is practically no difference between cancer and control patients when we are comparing groups A and C i.e. those *without* psychosomatic disorder. In comparing groups B and D, however, i.e. those *with* psychosomatic disorder, we find that the cancer group is considerably more extraverted than the control group. The higher extraversion scores, as group B is compared with group D, are found in all three age

TABLE 1.—EXTRAVERSION SCORES

Age groups	Cancer		Control	
	A	B	C	D
(1) up to 54	7.45 ± 2.70 (N = 20)	7.64 ± 2.46 (N = 22)	7.17 ± 2.88 (N = 41)	7.39 ± 2.50 (N = 23)
(2) 55-64	7.88 ± 2.71 (N = 25)	8.11 ± 2.75 (N = 27)	7.00 ± 2.66 (N = 18)	6.00 ± 3.54 (N = 19)
(3) 65 +	6.50 ± 2.68 (N = 14)	7.00 ± 2.62 (N = 8)	9.60 ± 2.80 (N = 10)	6.00 ± 3.07 (N = 12)
Total	7.41 ± 2.71 (N = 59)	7.77 ± 2.61 (N = 57)	7.48 ± 2.91 (N = 69)	6.59 ± 3.05 (N = 54)

groups, but most strongly in the middle one (55-64 years). For groups A and C there is a similar trend for the two younger age groups, but this is violently reversed by the oldest of the three C groups, which has a mean extraversion score of about one standard deviation above the mean of all the other control groups; as this group is also the smallest, containing only ten cases, we may be justified in regarding this as a statistical freak, leaving open the possibility that in another sample we would find a similar trend in groups A and C as we found in groups B and D. It is noteworthy that the mean scores of all the groups are not very far from the mean of the original sample of 1600 subjects which constituted a quota sample of the population, and which formed the standardization group of the M.P.I.; their mean score was 7.961 ± 2.97 [1]. Both in cancer and in control groups, scores are slightly below this mean value, with standard deviations very much like the standardization group.

When we turn to the statistical analysis of the data we must clearly analyse the three age groups separately as the results are not sufficiently concordant to make it possible to maintain without the possibility of doubt that age may not in some complex way be related to score, cancer and psychosomatic involvement. In view of the uneven numbers in the groups, the analyses were carried out by a method for dealing with disproportionate sub-class numbers recommended by Snedecor [10], and suggested to us by Dr. A. E. Maxwell. Using this method failed to show any significant main or interaction effects in the youngest age group. When we come to the 55-64 year old groups we find a difference between cancer and control patients which is significant at the 5 per cent level; the interaction effect is not significant, and neither is the effect due to psychosomatic disorder. In the oldest group there are no significant main effects but an interaction effect significant at the 5 per cent level. An analysis of the total scores fails to reveal significant main or interaction effects. While the statistical analysis is, therefore, suggestive of a true relationship between extraversion and cancer, and also possibly of an interaction effect with psychosomatic disorder, it would not be wise at the moment to regard these relationships as definitively established; much larger samples of subjects would be required in order to put these issues beyond reasonable doubt.

When we turn to Table 2, we note that the control group has much higher neuroticism scores than the cancer group, regardless of psychosomatic involvement; we also note that the two psychosomatic groups (B and D) have somewhat higher neuroticism scores than do groups A and C, i.e. those without psychosomatic involvement. An analysis of variance, carried out with the use of the same formula as mentioned above, shows that the difference between cancer and control patients is significant

TABLE 2.—NEUROTICISM SCORES

Age groups	Cancer		Control	
	A	B	C	D
(1) up to 54	3.85 ± 3.76 (N = 20)	4.64 ± 3.82 (N = 22)	5.83 ± 3.84 (N = 41)	4.70 ± 4.03 (N = 23)
(2) 55-64	2.08 ± 2.20 (N = 25)	3.15 ± 2.97 (N = 27)	3.83 ± 3.82 (N = 18)	5.89 ± 3.97 (N = 19)
(3) 65 +	3.43 ± 4.33 (N = 14)	3.25 ± 4.13 (N = 8)	2.70 ± 3.06 (N = 10)	5.58 ± 4.70 (N = 12)
Total	3.00 ± 3.39 (N = 59)	3.74 ± 3.50 (N = 57)	4.86 ± 3.89 (N = 69)	5.31 ± 4.12 (N = 54)

beyond the 1 per cent level; that between the psychosomatic and non-psychosomatic groups fails to be significant even at the 5 per cent level. The scores of all the groups are well below those of the standardization sample (6.15 ± 3.33) although the standard deviations are very similar. This difference may in part be a function of the different way in which the scale was applied in the present study, as compared with the original investigation [1].

In order to deal with the problem of age, analyses were carried out along analogous lines for the three age groups. In no case was there a significant interaction effect and neither for the oldest nor the youngest group were there any significant main effects. For the 55-64 group, however, significant main effects were observed both for the cancer/control differences, and for the "psychosomatic involvement" variable. The data, therefore, suggest rather more strongly than in the case of extraversion that there is a true relationship between personality and cancer, and they also suggest, although less strongly, that there may be interaction effects with psychosomatic disorder. It again seems possible that age may be another complicating feature, and we do not feel on the whole that our results should be regarded as in any sense definitive. Repetition of the experiment with much larger numbers, and if possible with larger and more varied personality inventories, is obviously called for.

DISCUSSION

We have pointed out that this is a preliminary report and that our results should not be regarded as definitive. Bearing this in mind, some observations are in order.

The low rate for neuroticism in lung cancer patients appears to be consistent with the observation that prompted this study—that lung cancer patients have a diminished outlet for emotional discharge.

The low score for neuroticism in lung cancer patients does not bear out the prediction for neuroticism based on the findings of Eysenck *et al.* [2] for cigarette smokers. Lung cancer patients do not appear to be a random selection of cigarette smokers. It is unlikely that the personality differences between lung cancer patients and controls are due to the slightly greater preponderance of smokers in the former group, because (1) this difference is very small; (2) the correlation between smoking and personality, although significant, is also quite small; and (3) the difference in the case of neuroticism between lung cancer cases and controls is opposite in direction to that between smokers and non-smokers.

The findings in lung cancer patients also differ from the findings in non-cancer patients with commonly accepted psychosomatic disorders because patients with

commonly accepted psychosomatic disorders were found by Sainsbury [9] to be relatively neurotic and relatively introverted. Sainsbury's report also includes findings for 16 non-specified cancers presumably of different sites. These tended to higher neuroticism and lower extraversion than his non-cancerous, non-psychosomatic controls.

The relationship between personality and lung cancer may be modified by interaction effects with psychosomatic disorder but in what way is far from clear.

SUMMARY

A preliminary account is given of a controlled personality investigation of 116 male lung cancer patients and 123 male non-cancer controls, in respect of extraversion and neuroticism, using the short form of the Maudsley Personality Inventory.

The study was undertaken as one test of a hypothesis that lung cancer patients had a significantly diminished outlet for emotional discharge as compared with non-cancer patients.

Account was taken of the presence or absence of a history of psychosomatic disorders in both lung cancer patients and non-cancer controls.

The main findings, which are tentative, are that lung cancer patients are somewhat extraverted and markedly lower in neuroticism compared with non-cancer controls, and that there may be interaction effects with psychosomatic disorders.

The available evidence suggests that lung cancer patients have personality features distinct from (1) the general cigarette smoking population, (2) non-cancer patients with a history of commonly accepted psychosomatic disorders, and possibly (3) patients with cancer in other sites.

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