

## Depression and Anxiety in Patients Undergoing Diagnostic Investigations for Head and Neck Cancers

A. D. M. DAVIES, C. DAVIES and M. C. DELPO

Patients attending a regional head and neck Oncology Unit were assessed for depression and anxiety (using the Leeds self-assessment scales) before diagnostic biopsy investigations. At the time of the assessments, neither patients nor investigators knew the biopsy results. Patients whose biopsies subsequently proved positive (showing the presence of a tumour) had significantly higher depression scores than those whose biopsies were negative. Differences in mean anxiety scores did not differ between groups. It is suggested that depression is part of the clinical picture of head and neck cancer.

Interest in the psychological concomitants of cancer has increased in recent years (Greer & Silberfarb, 1982; Feinstein, 1983; Wellisch *et al*, 1983; Manos & Christakis, 1985). Five areas of psychological research have been identified: the psychological morbidity of cancer and its treatments; precursors of the disease; the relation of psychological characteristics to outcome; psychobiological studies; and intervention studies (Greer & Silberfarb, 1982). In head and neck cancer psychological research has focused on the first area, especially on the quality of life of patients following treatment (Olson & Shedd, 1978; Shedd *et al*, 1980; Morton *et al*, 1984). Morton *et al* report that 40% of patients treated for buccopharyngeal cancers satisfied the DSM-III criteria (American Psychiatric Association, 1980) for depression six months after active treatment ended; i.e. depression is part of a pattern of residual disability in these patients. Depression was not related to the type of cancer treatment received, and was itself largely untreated. Massie & Holland (1984) point out that depression in cancer patients is underdiagnosed and undertreated partly because it is believed to be reasonable for cancer patients to be depressed and partly because it is believed that all cancer patients are depressed from the start of their illness. It is not known what proportion of patients are depressed at the beginning of their illness, nor at what stage (if any) depression deepens.

In order to investigate mood disorder from the start of the patient's hospital attendance, mood levels were studied in a group of patients undergoing biopsy as part of a procedure to investigate possible buccopharyngeal tumours. The study was carried out in the same unit as was the work of Morton *et al* cited above, but deals with the early contact of patients with the unit.

### Method

#### Sample

Seventy-five patients (46 men and 29 women) admitted to a regional head and neck oncology unit for diagnostic investigations were given the Leeds scales for self-assessment of anxiety (SAA) and depression (SAD) (Snaith *et al*, 1976); data from the General Health Questionnaire (Goldberg, 1978) were available for 44 patients. Patients were referred from a variety of sources, including general medical and dental practitioners and other hospital departments, and were examined in an out-patients clinic. If there was any suspicion that the patient had a neoplasm, arrangements were made for a 48 hour in-patients stay, during which time a biopsy was carried out. The psychological interview was carried out during this period, on the day before the biopsy investigation.

Data were discarded for three patients (one was discharged before biopsy, one did not reattend, and one had a pre-existing psychiatric disorder); analysis of data was based on the remaining 72 patients. The sample was collected in two stages, each part of separate larger studies (DelPo, 1985), but using the same procedures. There were 18 men and 10 women at stage 1 (mean age 51.9, s.d. 16.0), of whom 17 had a negative biopsy result (i.e. no evidence of a malignant neoplasm was found); the other 11 patients examined had evidence of a malignant buccopharyngeal tumour. Six of the 11 patients were suffering recurrence of a previously treated neoplasm. At stage 2 there were 44 patients, 26 men and 18 women (mean age 54.0, s.d. 8.5), 17 of whom had no evidence of malignancy and 27 of whom were found to be suffering from a buccopharyngeal cancer.

#### Mood measures

The Leeds scales are self rating scales with four alternatives provided for each of 15 statements, e.g. "I feel scared or frightened". Possible replies are "Yes, definitely"; "Yes, sometimes"; "No, not much" and "No, not at all". Since some of the patients were elderly or of low educational level, the paper and pencil format was modified; all items and

response categories were retained, but the items were read out by an interviewer. The interviewer, a psychologist, went through each item with the patient and ascertained the response that the patient said best fitted what he or she felt.

The scales provide a six item anxiety scale and six item depression scale, with a 'general' and a 'specific' measure for each. The general measures are designed to be used as indicators of severity of symptoms in patients who have not received a primary diagnosis of affective illness; this is the measure appropriate for the present study. (The 'specific' measure is concerned with severity of diagnosed affective illness.) The maximum score possible for depression (SAD) and for anxiety (SAA) is 18. The recommended cut-off is between 6 and 7, and scores on each subscale above 6 are regarded as indicating anxiety or depression (Snaith *et al*, 1976). (In the present study the Leeds scales were used to investigate mood, not as a diagnostic tool.) The General Health Questionnaire (30 item version) was scored according to the bimodal method recommended by Goldberg, (1978); patients scoring over 4 were considered to have a mood disturbance.

### Results

Data from patients in stages 1 and 2 were examined using *t*-tests for independent groups. There were no significant differences for age, or anxiety and depression scores. Further analysis were therefore carried out on the combined group of 72 patients.

Table I shows the means and standard deviations of self-assessed depression and anxiety and the number above the recommended cut-off points both for the whole sample and broken down by biopsy outcome. Separate analysis of variance of SAD and SAA scores (with age and sex as covariates) were carried out with biopsy outcome as an independent variable. Biopsy outcome was a significant

TABLE I  
Means and standard deviations of mood measures and patients scoring above the test cut-off points

	<i>n</i>	Mean	<i>s.d.</i>	Above cut-off	
				<i>n</i>	%
All patients					
Depression (SAD)	72	4.5	2.9	16	22
Anxiety (SAA)	72	6.0	3.2	29	40
GHQ	44	4.4	2.3	19	43
Biopsy positive					
Depression (SAD)	38	5.1	3.0	11	29
Anxiety (SAA)	38	6.3	3.1	15	40
GHQ	27	4.6	2.6	13	48
Biopsy negative					
Depression (SAD)	34	3.8	2.5	5	15
Anxiety (SAA)	34	5.6	3.3	14	41
GHQ	17	4.2	1.9	6	35

factor for depression scores ( $F=5.59$ ; d.f. 1,68;  $P<0.02$ ), but not for anxiety scores ( $F=1.64$ ; d.f. 1,68; NS). The covariates age and sex did not exert a significant effect. Raw score correlations of the SAD and SAA with age were not significant (confirming the results of Snaith *et al*, 1976). The analyses showed that patients with positive (malignant) outcome had higher depression scores than those with negative (non-malignant) outcome. The direction of result was the same for anxiety. Analysis of variance of GHQ scores (with age and sex as covariates) showed no relationship between mood disturbance and biopsy outcome, however ( $F=0.7$ , NS). GHQ raw scores showed a weak significant negative correlation with age ( $r=-0.25$ ,  $P<0.05$ ) and, in the 44 subjects for whom scores were available, moderately high positive correlations with SAD ( $r=+0.64$ ,  $P<0.001$ ) and SAA ( $r=+0.47$ ,  $P<0.001$ ).

The number of patients with positive biopsy scoring above the cut-off for SAD was double that of those with non-malignant outcome. Rates of SAA and GHQ mood disturbance were comparable over the two groups. In no case, however, did differences reach statistical significance.

In the procedure section of this paper it was mentioned that the two stages in which the present sample was collected were each part of larger studies. Although examination of the distribution of scores suggested that data could be pooled, nevertheless the data were collected 12–18 months apart. It was observed that the proportion of positive biopsies in the clinic changed over that interval, from 39% to 61%. The criteria for inclusion in the study did not change; eligible patients were those admitted for biopsy. However, introduction of out-patient diagnostic facilities in the interval between the two stages made it possible for patients with easily accessible tumours to be examined at their first visit to the clinic. Comparison of mean SAD and SAA scores of patients in stages 1 and 2 showed non-significant differences for those with negative biopsy outcome; however, differences were larger for those with positive outcome, and in each case scale scores were higher for patients in stage 1. One inference is that the out-patient facilities filtered out patients with easily accessible (e.g. mouth) tumours who nonetheless had substantial psychiatric distress. The higher rate of malignancies in stage 2 coupled with lower (although not significantly so) levels of mood-related symptoms is consistent with this.

### Discussion

The finding that patients who are found subsequently to have buccopharyngeal tumours have higher depression scores prior to biopsy than those with negative biopsy results was not expected, and must be regarded as tentative, but it accords with some previous reports. Brown & Paraskevas (1982) reviewed the literature and suggested that depression may present as an early symptom of cancer, antedating discovery of the malignancy. This would have implications for early diagnosis and the prevention of avoidable delay in investigation. In the case of head and neck cancers, however, the effect may also

be due to the patient's subjective appraisal of the seriousness of the physical symptom: patients with hoarseness or difficulty in swallowing attributable to a tumour may have more profound discomfort or interference with functioning than patients whose symptoms have other causes. Additionally, the non-verbal and verbal interaction of medical staff with patients (e.g. reassurance or its lack) are likely to be different even before biopsy. However, these factors do not explain why the psychological effect is more marked for depression than for anxiety. Brown & Paraskevas's preferred hypothesis is in terms of a specific immunological interference with the activity of serotonin. We have no relevant data on this, but dissociation between depression and anxiety (measured by the Leeds scales) is suggestive. No significant differences were found using a less specific measure of psychiatric disturbance (GHQ)

Maguire (1984) has drawn attention to the lack of information concerning prevalence of affective disorders in head and neck cancers. He advocates screening patients with GHQ as one strategy to increase physicians' sensitivity to the presence of mood disturbance. In the present study 48% of those with

positive biopsy fell above the GHQ cut-off, almost 40% were above the Leeds SAA (anxiety) cut-off and almost 30% were above the SAD (depression) cut-off. These findings, in conjunction with those of Morton *et al's* (1984) study of patients at a later stage in the treatment process, suggest that symptoms of depression are part of the clinical picture of head and neck cancer both early and late in its history. Clinic staff also need to be aware of the high anxiety of those undergoing diagnostic investigations for buccopharyngeal cancers, even among those patients who are subsequently found not to have a malignant neoplasm.

#### Acknowledgements

We should like to thank Professor P. M. Stell for providing facilities for this study and Mr J. T. Newton for computational assistance.

#### Editorial note

The Leeds Self-Assessment Scale has undergone further revision in order to improve suitability for assessment of mood disorder in the setting of physical illness. The revised instrument is the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983).

#### References

- AMERICAN PSYCHIATRIC ASSOCIATION (1980) *Diagnostic and Statistical Manual of Mental Disorders (3rd ed.)* (DSM-III). Washington DC: APA.
- BROWN, J. H. & PARASKEVAS, F. (1982) Cancer and depression. Cancer presenting with depressive illness: an autoimmune disease? *British Journal of Psychiatry*, **141**, 227-232.
- DELPO, M. C. (1985) To tell or not to tell: a psychological assessment of increased biopsy patient recall. *M A Dissertation*, University of Liverpool.
- FEINSTEIN, A. D. (1983) Psychological interventions in the treatment of cancer. *Clinical Psychology Review*, **3**, 1-14.
- GOLDBERG, D. (1978) *Manual of the General Health Questionnaire*. Windsor: National Foundation for Education Research.
- GREER, S. & SILBERFARB, P. M. (1982) Psychological concomitants of cancer: current state of research. *Psychological Medicine*, **12**, 563-573.
- MAGUIRE, P. (1984) The recognition and treatment of affective disorder in cancer patients. *International Review of Applied Psychology*, **33**, 479-491.
- MANOS, N. & CHRISTAKIS, J. (1985) Coping with cancer: psychological dimensions. *Acta Psychiatrica Scandinavica*, **72**, 1-5.
- MASSIE, M. J. & HOLLAND, J. C. (1984) Diagnosis and treatment of depression in the cancer patient. *Journal of Clinical Psychiatry*, **45**, 25-28.
- MORTON, R. P., DAVIES, A. D. M., BAKER, J., BAKER, G. & STELL, P. M. (1984) Quality of life in treated head and neck cancer patients: preliminary report. *Clinical Oto-rhino-laryngology*, **9**, 181-185.
- OLSON, M. L. & SHEDD, D. P. (1978) Disability and rehabilitation in head and neck cancer patients after treatment. *Head and Neck Surgery*, **1**, 52-58.
- SNAITH, R. P., BRIDGE, G. & HAMILTON, M. (1976) The Leeds scale for the self assessment of anxiety and depression. *British Journal of Psychiatry*, **128**, 156-165.
- SHEDD, D. P., CARL, A. & SHEDD, C. (1980) Problems of terminal head and neck cancer patients. *Head and Neck Surgery*, **2**, 476-482.
- WELLISCH, D., LANDSVERK, J., GUIDERA, K., PASNAU, R. O. & FAWZY, F. (1983) Evaluation of psychosocial problems of the homebound cancer patient. *Psychosomatic Medicine*, **45**, 11-21.
- ZIGMOND, A. S. & SNAITH, R. P. (1983) The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, **67**, 361-370.

\*Ann D. M Davies, BA, PhD, DipPsych, FBPoS  
Carole Davies, BA, SRN  
Marianne C. DelPo, MA

*Department of Psychology, University of Liverpool, PO Box 147, Liverpool L69 3BX*

\*Correspondence

(Accepted 5 December 1985)