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Pain and Depression

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Summary: This paper explores the relationship between depression and chronic intractable pain in which somatic pathology is playing a minor role. In this study, 114 patients with chronic pain were compared with 53 patients with depression. Patients with chronic pain were older, more likely to be married, more frequently attributed difficulties in activity and sleep to pain, and reported greater impairment of motor functions. They had less dysphoria and an illness behaviour profile (on the Illness Behaviour Questionnaire) suggestive of a conversion reaction. Depressed patients recalled more life events in the year prior to presentation, whilst pain patients recalled more events of nine and ten years earlier. It is concluded that the two patient groups cannot be considered identical. It is argued that the concept of abnormal illness behaviour helps to distinguish the two groups.

The association of depressive illness and chronic pain has been recognized for some time (Sternbach, 1974), but the exact nature of this association remains unclear. Merskey and Spear (1967) reported that in a series of 200 consecutive admissions to a psychiatric clinic, 53 per cent included pain among their complaints and of those patients in the series who received a diagnosis of depression, 56 per cent had pain as one of their symptoms. Pilowsky *et al* (1977) examined the incidence and characteristics of depression as part of a study of depression and illness behaviour in pain clinic patients. They found that 10 per cent of patients could be classified as having a depressive syndrome, with depression scores in the mild to moderate range and an equal distribution of depressed patients between the endogenous and non-endogenous depressive syndromes.

Melzack and Chapman (1973) reported the clinical impression that an association existed between chronic pain and 'depressive personalities' characterized by intropunitiveness, accident and injury proneness, and hypochondriacal traits. Pinsky (1979) considered the apparent depression of chronic pain patients to be more a form of demoralization than depression. This issue was further elucidated by Maruta *et al* (1976) who compared patients with low back pain to a group with depression. They found that the pain patients tended to have more siblings, reported a poorer academic record, with less formal education, and a history of having started work earlier in their lives, and to have been employed less often in clerical, and more often in blue collar jobs. In addition, they showed less acceptance of psychological concepts, and dealt with current life stresses through the medium of somatic complaints rather than emotional distress, with the frequent involvement of compensation claims. These authors concluded that low back pain and depression were distinct disorders requiring quite different treatment approaches.

This paper reports a study undertaken to further clarify the relationship between depression and chronic pain by comparing more closely the features of patients presenting with chronic pain to a pain clinic, to those presenting primarily with depressed affect for treatment in a psychiatric setting.

Methods

One hundred and fourteen unselected patients referred to the pain clinic of a large metropolitan hospital comprised the chronic pain group, and were compared to 53 patients who were being treated for a depressive illness in the psychiatric unit of the same hospital.

All patients referred to the pain clinic have invariably been thoroughly investigated for somatic pathology which might be contributing to their pain. On referral they are carefully examined physically and it is exceedingly rare for any substantial somatic pathology to be detected. A small number of patients suffering from cancer are referred for pain control, but no such patients were included in this study. Thus the pain patients in this study showed minimal, if any evidence, of somatic pathology.

Demographic information concerning each patient

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was obtained and included age, sex, marital status, educational level achieved, occupation, spouse's occupation, socioeconomic and work status. Each individual completed the Levine-Pilowsky Depression (LPD) Questionnaire (Pilowsky *et al*, 1969; Pilowsky and Spalding, 1972), the Zung Depression Scale (Zung, 1965), the Spielberger State-Trait Anxiety Inventory (Spielberger, 1975; Spielberger *et al*, 1970), the Illness Behaviour Questionnaire (Pilowsky and Spence, 1975; 1981), the Sickness Impact Profile (Gilson *et al*, 1975) and the modified Schedule of Recent Experience (Tennant and Andrews, 1976).

The Illness Behaviour Questionnaire (IBQ) provides measures on seven factorially derived scales. These comprise general hypochondriasis, disease conviction, psychological focussing (high score) versus somatic focussing (low score), affective inhibition, affective disturbance, denial of life problems, and irritability. In addition, two second order measures are derived. These are 'disease conviction' (scales 2-3) and 'affective disturbance' (scales 1+5+7). A discriminant score is also calculated to estimate the probability of the patient manifesting illness behaviour of the form typically seen in pain clinic patients.

The Levine-Pilowsky Depression Questionnaire provides a measure of depressive severity (range 0–20), and also a decision-rule on the basis of which individuals can be classified into one of three categories (non-endogenous neurotic depression, endogenous depression and non-depressive syndrome). The Zung Depression Scale consists of 20 self-report questions to each of which four possible responses are offered. A single score representing the severity of depressed mood is obtained.

The Spielberger State-Trait Anxiety Inventory is a 40-item self-administered questionnaire which generates two scores reflecting 'state' anxiety and 'trait' anxiety.

The Sickness Impact Profile is a measure of illness-related dysfunction based on answers to questions, grouped into 14 categories: social interaction, ambulation or locomotion activity, sleep and rest, taking nutrition, usual daily work, household management, morbidity and confinement, movement of the body, communication activity, leisure pastimes and recreation, intellectual function, interaction with family members, emotions, feelings and sensations, and personal hygiene. The instrument provides a score for each category and a total score. The size of each score represents the severity of problems in an area of behaviour and is expressed as a percentage of the maximum possible score.

A record was also made of the time spent by each patient (asleep or reclining, awake and active), the reasons for any sleep disturbance, and the amount of assistance requested for various activities.

The modified Schedule of Recent Experience is an inventory of recalled life events taken from a standard list of such events. In collating the data, the number of individuals recalling each of a series of specified life events over the previous 10 years is tabulated, as well as the total number of life events recalled by each patient for each year, over the 10 year period.

Patients were also asked to recall any time spent in hospital as a child, with note being made of the number of admissions and their duration, as well as the ages at which they occurred. The data was grouped into admissions occurring during preschool years (birth to 6 years) and school years (6–16 years).

Results

A number of significant demographic differences emerged between the two groups (Table I). The pain patients tended to be older (mean age 44.7 years) compared with 38 years in the depression group. They were more likely to be married and had larger families. Although there was no significant difference in the distribution of occupations among the patients, there was a difference in the occupation of spouses, in that a greater proportion of spouses of the pain group were in skilled and professional occupations.

With regard to general activity patterns it was found that pain and depressed patients reported spending similar amounts of time asleep (6–7 hours) and resting (8–9 hours) during the day. However, the pain patients rested *due to pain* for an average of 4.2 hours each day as compared to 0.3 hours in the case of the depressed patients ($P < 0.01$).

There were no differences in the quality of sleep reported by the two groups, but pain patients were far more likely to attribute their sleep loss to pain ($P < 0.01$).

In relation to areas of perceived need, pain patients placed a significantly lower priority on help with emotional and interpersonal problems ($P < 0.01$), and higher priorities on help with pain reduction ($P < 0.01$) and improvement of activity levels ($P < 0.05$) (Table II).

Further information concerning impairment patterns is derived from the Sickness Impact Profiles presented in Table III. Pain patients described less impairment in areas of emotional behaviour (e.g. weeping), home management (e.g. housework), alertness behaviour (e.g. time awake) and communication (e.g. time spent writing, talking) than depressed patients. On the other hand, they reported greater degrees of impairment in areas of body care and motivation (e.g. bathing unaided) and ambulation.

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TABLE I

Chronic pain (114) and depressed (53) patients–demographic data

Variable	Category	Pain group	Depression group
Sex	Male	48	18
	Female	66	35
Age**		44.7 (12.4)	38.8 (17.3)
Marital status**	Married	85	20
	Single	8	18
	Widowed	9	5
	Divorced	4	3
	Separated	5	6
	Other	3	1
Education	< Intermediate	80	39
	> Intermediate	23	9
	Matriculation	3	1
	Tertiary	6	3
	Student	2	1
Receiving pension	Yes	36	21
	No	78	32
Occupation	Professional	9	8
	Clerical	18	6
	Tradesmen	37	10
	Home duties	38	22
	Student	1	1
	Unemployed	3	2
	Aged pensioners	8	4
Spouse's occupation**	Professional	13	3
	Clerical	12	0
	Tradesmen	39	9
	Home duties	27	6
	Student	0	1
	Unemployed	2	3
	Aged pensioners	3	1
	Not applicable (no spouse)	18	29
	Not known	0	1
Mean no. of children**		2.5	1.5

*P <0.05; **P <0.01.

Illness behaviour and affect

The pain patients' scores on the IBQ indicate significantly lower levels of general (phobic) hypochondriasis, psychological focussing, affective inhibition, affective disturbance and irritability; they had higher scores on disease conviction and denial (Table IV). This pattern was also reflected in the second order scale scores, with pain clinic patients exhibiting higher levels of disease conviction and lower levels of affective disturbance. The discriminant score was significantly lower in pain clinic patients than in depressed patients indicating a higher probability of abnormal illness behaviour of the conversion type.

On the LPD, pain clinic patients attained significantly lower scores on the depressive severity scale than depressed patients, and a similar result was found with the Zung Questionnaire depression scores. State and trait anxiety scores, as generated by the Spielberger Inventory, were both lower in pain clinic patients than in depressed patients.

Life events

It was found that events labelled 'change in eating habits', 'in-law troubles,' 'illness in a family member' and 'initiation of a new line of work' one year prior to presentation as well as the 'death of a family

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TABLE II

Comparison of areas of perceived need

Area of perceived need	Category	First priority	Second priority	Third priority	Fourth priority	No help wanted
Level of drug intake	Pain	1	8	4	8	90
	Depression	0	3	1	0	34
Pain reduction**	Pain	101	7	1	0	2
	Depression	0	0	0	2	37
Activity level*	Pain	5	33	13	1	59
	Depression	3	3	3	0	30
Emotional and interpersonal problems**	Pain	4	15	11	5	76
	Depression	21	5	1	0	12

*P <0.05
**P <0.01

TABLE III

Comparison of sickness impact profile (S.I.P.)

	Pain (N = 106) patients		Depression (N = 50) patients			
	$\bar{x}$	(S.D.)	$\bar{x}$	(S.D.)	t value	Significance P
S.I.P. Scale						
1. Sleep and rest	14.2	(9.5)	16.2	(12.0)	−1.2	n.s.
2. Emotional behaviour	20.99	(16.6)	28.9	(15.7)	−2.84	<0.01
3. Body care and motivation	32.7	(26.8)	9.0	(11.2)	5.82	<0.001
4. Home management	22.99	(15.7)	36.5	(16.4)	−4.87	0.001
5. Mobility	13.9	(13.4)	16.3	(11.4)	−1.1	n.s.
6. Social interaction	37.23	(28.0)	2.4	(31.2)	−3.05	<0.01
7. Ambulation	18.8	(14.4)	7.0	(8.7)	5.3	<0.001
8. Alertness behaviour	21.2	(20.96)	34.3	(25.3)	−3.21	<0.01
9. Communication	6.08	(9.8)	10.5	(12.1)	−2.24	<0.05
10. Recreation	18.7	(9.9)	19.3	(11.4)	−0.35	n.s.
11. Eating	2.8	(4.4)	4.02	(4.5)	−1.64	n.s.

member' nine years before presentation all occurred more frequently in the depressed group than in the pain group. Overall, depressed patients had a greater number of life events one year prior to presentation, while pain patients had significantly more life events in the ninth and tenth years prior to presentation (Table V).

Childhood hospitalization

Pain patients recalled fewer admissions during childhood but longer periods in hospital per admission than depressed patients. However, none of the differences achieved statistical significance.

Discussion

The findings of this comparative study indicate a pattern of differences between pain clinic and depressed patients which is consistent with the findings of Maruta *et al* (1976). Specifically, the pain clinic patients emerged as an older group with a greater

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TABLE IV

Illness behaviour and affect (IBQ)

Variable	Pain			Depression		
	N	Mean	S.D.	N	Mean	S.D.
IBQ Scales						
General hypochondriasis**	114	1.48	1.80	53	2.96	2.35
Disease conviction**	114	3.58	1.63	53	2.83	1.54
Psychological/somatic**	114	0.76	0.98	53	2.74	0.94
Affective inhibition**	114	2.62	1.67	53	3.43	1.35
Affective disturbance**	114	2.69	1.69	53	4.15	1.29
Denial**	114	3.76	1.57	53	2.23	1.67
Irritability**	114	2.42	1.85	53	3.40	1.90
Hypochondriasis (Whiteley)	114	5.16	3.16	53	4.94	3.33
Second order factors:						
Disease conviction**	114	7.91	2.07	53	5.09	1.86
Affective state**	114	6.60	4.12	53	10.51	4.37
Discriminant score**	114	22.87	16.03	53	52.41	14.51
Depression score (LPD)**	113	6.73	3.37	53	10.70	3.83
Depression Zung**	113	53.19	11.58	53	62.92	13.38
Anxiety (STAI)						
State**	114	43.47	13.35	51	57.12	12.96
Trait**	114	41.74	11.04	52	55.17	10.19

*P < 0.05
**P < 0.01

TABLE V

Recent life experiences

Years prior to presentation	Pain group		Depression	
	Mean	S.D.	Mean	S.D.
One*	100.52	117.78	168.76	183.45
Two	175.64	119.03	195.04	134.71
Three	148.79	115.59	143.35	115.16
Four	113.49	91.99	97.24	82.39
Five	109.71	117.42	97.92	105.27
Six	86.71	97.51	95.88	104.52
Seven	75.98	94.70	81.08	91.29
Eight	65.44	83.27	56.33	74.49
Nine*	70.11	96.21	45.57	54.88
Ten*	58.49	87.14	35.55	50.45

*P < 0.05

likelihood of being married, with larger families, and with spouses in a higher socioeconomic group. The pain patients reported substantially less affective disturbance (including both anxiety and depression) and less anxious or phobic concern about health. At the same time, they manifested much higher levels of conviction as to the presence of somatic illness and maintained a much more strongly somatic orientation to their health than depressed patients. The pain patients tended to deny life problems and were generally more apt to exhibit abnormal illness behaviour of the conversion type.

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When more overt behavioural disturbances were assessed by the Sickness Impact Profile the results were consistent with other measures of illness behaviour. Thus the pain clinic group reported most difficulty in areas of body care and motivation as well as ambulation, but less difficulty in more 'psychological' areas such as emotional behaviour, communication, social interaction, home management and alertness behaviour.

These observations suggest that the notion that patients with chronic pain suffer from a form of masked depression is likely to represent an oversimplification of the issue. It appears that chronic pain patients referred to pain clinics tend to suffer from a disorder in which the salient feature is a denial of both affective disturbance and life problems unrelated to their pain. In this respect, they exhibit features consistent with those reported in conversion reactions and to some degree in hypochondriacal reactions, in which the displacement of emotional distress onto somatic problems is associated with a lower level of 'psychological' problems.

The demographic characteristics of the pain clinic population indicate that they came from an older population in whom one may expect an inevitable increased level of somatic disease as well as the experience of events such as bereavement and the departure of children from the family home. While the effects of these factors upon illness behaviour are not entirely clear, it is possible that somatic focussing is enhanced by them.

The fact that the spouses of chronic pain patients tend to be of a higher socioeconomic level than those of depressed patients, is of some interest, and may reflect the differences in age and marital status between the two groups. However, this finding is consistent with that of Rawnsley and Loudon (1964) who studied Tristan da Cunha islanders at the time of their sojourn in England during a threatened volcanic eruption on their island. They found that psychogenic headaches were significantly commoner in the wives of community leaders. These findings raise the question of how the social class of a spouse might influence illness behaviour. It may be speculated that the relative absence of support through reduced access to a high achieving professional or executive spouse is a factor. Alternatively, the verbal and non-verbal communication of somatic problems may be used to outflank the defenses of a spouse whose verbal skills are perceived as superior and a barrier to more meaningful communication.

The differences in the nature and frequency of recalled life events may contribute to the elucidation of the genesis of the differences observed between the two groups. Thus the depressed group showed a significantly greater number of life events occurring in the year prior to their presentation, while the pain patients recalled more events nine and 10 years before presentation to the pain clinic. These findings suggest that illnesses of the depressed patients were a response to recent stressors, while the chronic pain patients were manifesting longstanding unresolved distress many years after significant events in their lives. While it is interesting to conjecture that chronic intractable pain may represent an extended response to losses, it must be acknowledged that in their efforts to discount the relevance of current life stresses to their illnesses, chronic pain patients may actively suppress information about recent problems. This is certainly not an unusual finding in clinical practice.

The differences in recalled childhood hospitalization raise some interesting issues. The data suggests that pain clinic patients may more frequently have had long admissions to hospital during childhood with consequent effects upon the predisposition to use illness behaviour maladaptively.

This study has not examined the utility of regarding chronic pain patients as having depressive illnesses on the basis of their response to treatments which are usually effective in the management of depression. However, clinical practice and the published literature suggests that ECT is rarely if ever used in pain patients, and that antidepressants are more likely to be effective in the small group of patients who on closer examination show fairly clear-cut evidence of the presence of endogenous depression.

None of this is to say that the forms of abnormal illness behaviour (chiefly conversion reactions) shown by chronic pain patients may not be triggered in some way by a loss. Unresolved reactions to such stresses may certainly play a part, but it would not seem particularly useful to regard every illness contributed to by a loss, as constituting a form of depressive illness.

It is also interesting to consider the possible role played by sleep difficulties accompanying pain, in producing some of the clinical features associated with depression. It may be that any condition associated with sleep loss is liable to produce some of the biological changes seen in endogenous depression. However, such possibilities must indeed be speculative at this point, and it is interesting to consider that the sleep problems attributed by pain patients to their pain, may be in part due to the restriction of their physical activities during the day (Baekeland and Lasky, 1966).

On the other hand, Moldofsky (1976) proposes, on the basis of his studies on 'psychogenic rheumatism,' that traumatic life situations may trigger a non-REM sleep disturbance which produces fatigue, irritability,

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depression, anxiety and musculo-skeletal aching and stiffness. Such a mechanism may well contribute to the intractable pain syndromes seen in pain clinic patients.

While it is surely to be expected that patients referred to a pain clinic are a psychologically heterogeneous group, a number of reports suggest that it is the abnormal illness behaviour of these patients which distinguishes them as a group, from psychiatric patients and from those with distinct somatic inputs to their pain (Pilowsky *et al*, 1977; Pilowsky and Spence, 1976). As a consequence, it is chiefly the tendency to use illness behaviour as a coping strategy which the clinician has to take into consideration when he attempts to understand and treat the patient with chronic pain out of proportion to the amount of somatic disease present.

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