

Psychological aspects of cardiac rehabilitation

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Despite major developments in cardiology in the past three decades, ischaemic heart disease remains a major cause of mortality and morbidity in all developed countries, particularly in men of working age. Thus the principles of rehabilitation, which have long been recognised as important in the treatment of patients with psychiatric, locomotor and neurological illness, are now considered relevant in cardiac disease.

DEVELOPMENT OF REHABILITATION

In the early 1950's Work Classification Units in the USA produced the first evidence that some individuals could go back to work after a myocardial infarction, provided that cardiac function and the physical requirements of their job were thoroughly evaluated. The idea developed that it might be possible to improve an individual's physical capacity by exercise training programmes.

During the 1960's centres in the USA, Sweden, Israel and Australia used graduated increasing exer-

cise to improve physical fitness in selected post infarct patients. Kellermann demonstrated that his infarct patients were fitter than their peers (Kellermann, 1975) and some Canadian patients successfully completed the Boston marathon. Rehabilitated patients appeared to do better than those treated routinely: 80-90% of those selected for rehabilitation returned to work, compared with 20-30% of the others. The need to evaluate these new methods of treatment resulted in increasing interest in outcome. Physical factors were not the sole cause of poor results and a variety of psychological and social reasons, such as anxiety, depression, personality, motivation and adverse social factors, began to appear. Cardiac rehabilitation could no longer be regarded as synonymous with physical training for the selected few but had to be a comprehensive programme with physical, psychological and social aspects. As such, it was applicable to all patients.

More recently, studies in patients after coronary artery bypass graft surgery have revealed that poor outcome after operation depends on the same variety of interrelated medical, demographic, psychological and social factors. Non cardiac causes of invalidism are as important as cardiac ones. (Russell, Abi-Mansour, Wenger, 1986). Comprehensive cardiac rehabilitation, developed for the unpredictable acute event, is as necessary after the elective revascularisation procedure.

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PSYCHOLOGICAL PROBLEMS FOLLOWING MYOCARDIAL INFARCTION

The Onset of Symptoms

To the patient, the onset of a myocardial infarction means a sudden, bewildering progression of pain, emergency admission to hospital, usually to an intensive care unit and forced complete inactivity. Not surprisingly the immediate reaction is fear; in some there is a specific fear of death, but more commonly there is fear the illness presents a potent threat to an established pattern of living. The patient's spouse is frightened and anxious with possibly, superadded feelings of guilt. Their immediate reaction to the infarct will be influenced by the mores of the culture to which they belong and will depend on how they have learned to cope with other emergencies of adult life.

Psychological Reaction

Many patients hospitalised with a myocardial infarction are anxious or depressed. In a group of some 200 men admitted to a coronary care unit, over 2/3 had some evidence of emotional upset that was severe in more than 1/3 (Cay Vetter, Philip, Dugard, 1972). If steps are not taken to alleviate emotional upset, symptoms tend to persist; one year later half the survivors still had symptoms which were significantly disturbing in 25% (Cay, Vetter, Philip, Dugard, 1973).

Anxiety is at its peak within 24-36 hours, though denial of illness appears within the next day or so and depression becomes more common (Hackett, Froese, Vasquez, 1973). Although manifest anxiety does occur, symptoms are often disguised. Anxiety can present with a rise in blood pressure or pulse rate without a clear cardiological, explanation, or as hypochondriasis, overdependency or aggression. Patients try to relieve their fears by denying the illness or by identifying with those whom they know have had an infarct. Similarly, the patient may be obviously depressed, expressing hopelessness about his future, or he may appear merely to be overconcerned about his symptoms, bodily function and medication. He may be considered as «the model patient», quiet well behaved and easy to manage

— as he accepts treatment and advice without question.

Psychological reactions are unrelated to physical state or severity of infarction; they are linked to the patient's expectations of environmental problems, especially those connected with return to work (Cay, Vetter, Philip, Dugard, 1972). The role of expectations in the regulation of actions, emotions and thought is important. A stable psychological state and a positive attitude to the future were linked to an early return to work, while over 2/3 of patients who initially expected future work problems in fact reported a year later that they had encountered difficulties (Croog, Levine, 1979). Negative expectations of return to work were closely related to the patient's initial reaction to his illness particularly if he was depressed and expressed hopelessness about the future. Both factors correlated highly with later work status (Garrity, 1973). Very few depressed patients returned to work and even when they did go back only 16% were working as well as before their illness, compared with 56% of those who had adjusted well in the first few days following an infarct (Cay, Vetter, Philip, Dugard, 1973).

Personality Traits

A number of studies have looked at the influence of personality traits or coping styles on outcome. Denial, health locus of control and repression — sensitisation have been examined but, in general, they appear to exert a much weaker influence than the patient's reactions to and expectations of the illness (Stern, Pascale, McLoone, 1976; Shaw, Cohen, Doyle, Paleshy, 1985).

Patients Perception of the Illness

Within this concept four separate aspects have been defined and delineated: (i) understanding of the medical facts (knowledge), (ii) subjective interpretation of the illness (beliefs), (iii) evaluation of personal implications and future functioning (expectations), and (iv) perception of own health status (health perception) (Maeland, Havik, 1987).

Expectations and health perception have been shown to be closely correlated with return to work.

There is now evidence that knowledge and beliefs are also linked; insufficient knowledge and wrongly held beliefs are associated with negative expectations and symptoms of maladjustment and, in turn, with failure to go back to work (Maeland, Havik, 1987). The individual's attempt to cope with the stress of his illness can be regarded as a series of problems which have to be solved. As this proceeds successfully there is an increasing likelihood of the patient returning to an active life. The reverse is also true and, in addition, the area in which the patient is likely to encounter difficulties can be identified.

Reaction during convalescence

Early discharge from hospital has its psychological hazards; within a week or two the patient and his spouse lose the security of the hospital environment. They are faced with the reality of living with ischaemic heart disease with obvious weakness, intermittent chest pain, insomnia lack of activity, irritability that may arise from stopping smoking and anxieties concerning what is and is not safe for the patient to do. Unless patient and spouse are reassured that these feelings are part of convalescence, tension within the family may be high for the first few weeks. They may be worried about when it is safe to resume sexual activities. When the time comes for the patient to start work again (after 4-6 weeks in the uncomplicated case) they may both be frightened that he will be unable to cope.

PSYCHOLOGICAL PROBLEMS ASSOCIATED WITH CORONARY ARTERY BYPASS GRAFT SURGERY

Relief of symptoms following cardiac surgery benefits the patient psychologically. Most studies have demonstrated improvement in quality of life, although, as after myocardial infarction, the patient's own opinion of his functional capacity seems to be more important in determining outcome than are clinically measurable changes (Stanton, Jennins, Denlinger, Savageu, Weintraub, Goldstein, 1933). Similarly adverse reactions are common and tend to persist; 2/3 of patients reported anxiety, depression,

confusion and feelings of irritability in the weeks following operation (Soloff, 1979). They complain of loss of confidence, fear of reopening the sternal wound or dislodging the grafts and worry about residual swelling of the ankles. One year later 1/3 still had moderate or severe symptoms (Mayou, Bryant, 1987). Lack of knowledge, anxiety and cardiac invalidism are correlated; they form a vicious circle resulting in a frightened individual who knows little about his illness, makes his own interpretations of little understood advice and is scared to indulge in any physical activity. 249 patients were asked after operation how well they felt they had been prepared for its results. The topic best covered was level of exercise but only 55% felt they had been very well prepared; 1/3 thought they had been very well prepared for return to work and sexual activity but only 24% thought their possible emotional reactions had been discussed properly (Stanton, Jenkins, Savagu, Thurer, 1984). The expectations of the patients are as important now as after an infarct; out of a large number of variables the patient's preoperative expectations of return to work was found to be the best predictor of post operative employment status (Stanton, Jenkins, Denlinger, Savageu, Weintraub, Goldstein 1983).

REACTION OF THE SPOUSE

After an infarct the patient's spouse also reacts to the implications of her husband's sudden illness and to the practical difficulties following his speedy admission to hospital. During the initial period of hospitalisation the wives were more anxious than their husbands and those patients facing the future with fear and anxiety and with little confidence in their ability to resume an active life were likely to have wives even more anxious than themselves (Cay, 1982).

TREATMENT OF PSYCHOLOGICAL PROBLEMS

Any cardiac rehabilitation programme must be comprehensive containing four basic components;

education, progressive mobilisation, aid to promote psychological adjustment and help with specific problems. The aim of psychological intervention, whatever method is used, is to ensure a good quality of life for the patient and his family. This is in direct contrast to secondary prevention with its goal of increased healthy years of life. It is important to remember that a good quality of life means different things to different people; each individual and his family will have their own expectations of what constitutes a good outcome.

The Psychological Benefits of Cardiac Rehabilitation

These can be summarised:

- improvement in mood and outlook,
- as patients improve physically they have a sense of energy, well being, and increased self confidence,
- anxiety and depression are diminished and they feel less under stress,
- they can relax more easily,
- sleep patterns are improved,
- sexual activity returns to normal,
- the use of tranquillizers and hypnotics drops dramatically.

These beneficial results appear within weeks and persisting long term benefits have been observed five years later (Hedback, Perk, 1987).

The psychological benefits of rehabilitation may occur independently of physiological improvement. This means that even severely impaired patients can be helped to adjust to their disabilities and to make the most of their limited physical stamina. Results in elderly patients are as good as those obtained in much younger age groups (Broustet, Rodrigues, Wenger, Jones, Hacher, Jacir, Neiderberger, Eder, 1986).

Methods of Achieving Psychological Benefits

Many different kinds of intervention, from the simple to the sophisticated, have been shown to improve patients psychologically.

Virtually all clinical trials of exercise training programmes which have measured psychological

variables have shown improvement in patients' outlook and morale. This has been demonstrated in patients after myocardial infarction where 86% of the exercising group reported decreased fear of physical exertion, 65% lost their feeling of being invalids and 57% experienced less chest pain (Sanne, 1977). A higher rate of return to work in those who had been working at the time of coronary artery bypass graft surgery was ascribed to increased self confidence in the group undergoing an exercise programme (Gutmann, Knapp, Pollock, Schmidt, Simon, Watson, 1982). Group programmes help to overcome the individual's feeling of social isolation and foster peer encouragement and support; members feel they share the same experience, residual symptoms and practical difficulties and they help each other to overcome their problems.

Educational, stress management and vocational programmes have also produced good results. Those who took part in a structured teaching programme while recovering in hospital following an infarct faced discharge with little anxiety compared to controls whose anxiety mounted as leaving hospital became imminent. 70% of the educated patients resumed their former activities while only 48% of control patients did so (Raleigh, Odothan, 1987). Psychological health, physical activity and symptoms of heart disease were significantly improved in the year following infarction in patients who took part in educational and counselling groups compared to controls (Oldenberg, Perkins, Andrews, 1985). Similar benefits for post infarct patients were observed after more psychologically orientated intervention including supportive psychotherapy and methods of stress management (Gruen, 1975; Langosch, Seer, Brodner, Kallinke, Kulick, Helm, 1982). Introducing an educational programme for patients awaiting coronary artery bypass graft surgery was of distinct short term benefit; these patients were more knowledgeable about their operation and they willingly accepted medical advice on a suitable rate of recovery following surgery. They did not retain knowledge in areas which required long term behavioural change such as stress modification and diet (Steele, Ruzicki, 1987).

The Influence of the Family

Psychological benefits are enhanced if the spouse and family are included in the rehabilitation pro-

gramme. Patients in a coronary care unit whose families received an information booklet and who had access to a nurse counsellor were less anxious than controls (Doerr Jones, 1979) and patients whose wives had received instruction before surgery on how to support their husbands were better orientated, less confused, had fewer delusions and slept longer in the days after operation than controls (Chatham, 1978).

The same beneficial effect is apparent when the wives are involved at a later stage in their husband's recovery; patients involved in a cardiac rehabilitation programme whose wives joined in educational group discussions adjusted more easily than other groups who either did not participate or, if the patient did, the wives did not (Dracup, 1982). In a large series of patients from Utah, the numbers of those working after operation doubled compared to their work status before coronary artery bypass graft surgery; a figure which compares favourably to practically every other study on return to work in a surgically treated group. The authors ascribed this to the fact that both patients and families were psychologically prepared before operation to understand that complete return to normal, including work, was the aim of the bypass operation (Liddle, Jensen, Clayton, 1982).

Methods of Cardiac Rehabilitation

The rehabilitation package can be delivered in many different ways, often very simply and inexpensively. Approximately three quarters of patients following an infarct or after coronary artery bypass graft surgery do not have serious psychological problems and will do well, using simple methods which are equally applicable in the hospital or community setting. Sophisticated rehabilitation techniques are necessary only in the proportion, about 25%, who have moderate or severe upset. The basic principles are the same, whatever the method used.

REFERENCES

- BROUSTET, J.-P., RODRIGUES, L. G., WENGER, K. K., JONES, E. L., MACHER, C. R., JACIR, A., NEIDERBERGER, M., EDER, A. A. (1986) — *Rehabilitation of elderly coronary patients*. *Adv. Cardiol*, 33; 152-159.
- CAY, E. L., VETTER, N. J., PHILIP, A. E., DUGARD, P. (1972) — Psychological reactions to a coronary care unit. *J. Psychosom Res.*, 16; 437-447.
- CAY, E. L., VETTER, N. J., PHILIP, A. E., DUGARD, P. (1972) — «Psychological status during recovery from an acute heart attack». *J. Psychosom Res.*, 16; 425-435.
- CAY, E. L. (1982) — *Psychological problems in patients after a myocardial infarction in Denolin, Psychological Problems Before and After a Myocardial Infarction*, S. Karger, Basel.
- CHATHAM, M. A. (1978) — «The effect of family involvement in patient's manifestations of post cardiectomy psychosis». *Heart Lung*, 7; 995-1001.
- CROOG, S. H., LEVINE, S. (1977) — «The Heart Patient Recovers». *Human Sciences Press*, New York.
- DOERR, B. C., JONES, J. W. (1979) — «Effect of family preparation on the state anxiety level of the CCU patient». *Nurs Res*, 28; 315-319.
- DRACUP, K. A. (1982) — «The effect of a role supplementation program for cardiac patients and spouses of the at-risk role». *Diss Abst Int*, 43; 3534B-3535B. Doctoral Dissertation, University of California, San Francisco.
- GARRITY, T. F. (1973) — «Vocational adjustment after the first myocardial infarction; comparative assessment of several variables suggested in the literature». *Soc. Sci. Med.*, 7; 705-707.
- GRUEN, W. (1975) — «Effects of brief psychotherapy during the hospitalisation period in the recovery process in heart attacks». *J. Consult Clin Psychol.*, 43; 223-232.
- GUTMANN, X. D., KAPP, D. N., POLLOCK, M. L., SCHMIDT, D. H., SIMON, K., WATSON, G. (1982) — «Coronary artery bypass patients and work status». *Circulation* 66, Suppl. III; 33-42.
- HACKETT, T. P., FROESE, A. P., VASQUEZ, E. (1973) — «Psychological management of the CCU patient». *Psychiatry Med.* 4; 89-92.
- REDBACK, B., PERK, J. (1987) — «5-year results of a comprehensive rehabilitation programme after myocardial infarction». *Eur Heart J* 8; 234-242.
- KELLERMANN, J. J. (1975) — «Rehabilitation of patients with coronary artery heart disease». *Prog. Cardiovasc. Dis.*, 17; 303-329.
- LANGOSCH, W., SEER, P., BRODNER, G., KALINKE, D., KULICK, B., HELM, F. (1982) — «Behavioural therapy with coronary heart disease patients. Results

- of a comparative study». *J. Psychosom. Res.*, 26; 475-484.
- LIDDLE, N. V., JENSEN, R., CLAYTON, P. D. (1982) — «The rehabilitation of coronary surgical patients». *Ann Thor Surg*, 34; 374-382.
- MAELAND, J. G., HAVIK, O. E. (1987) — «Psychological predictors for return to work after a myocardial infarction». *J. Psychosom. Res.*, 31; 471-481.
- MAYOU, R., BRYANT, B. (1987) — «Quality of life after coronary artery surgery Quart». *J. Med.*, 234; 239-248.
- OLDENBERG, B., PERKINS, R. J., ANDREWS, G. (1985) — «Controlled trial of psychological intervention in myocardial infarction». *J. Counsell. and Clin. Psychol.*, 53; 852-859.
- RALEIGH, E. H., ODTCHAN, B. C. (1987) — «The effect of a cardiac teaching program on patient rehabilitation». *Heart Lung*, 16; 311-317.
- RUSSELL, R. O., ABI-MANSOUR, P., WENGER, N. K. (1986) — «Return to work after coronary artery bypass surgery and percutaneous transluminal angioplasty: issues and potential solutions». *Cardiology*, 73; 306-322.
- SANNE, H. (1977) — «Selection of patients for cardiac rehabilitation in Amsterdam, Coronary Artery Disease, Exercise Testing and Cardiac Rehabilitation». Stratton, New York.
- SHAW, R. E., COHEN, F., DOULE, B., PALESKY, J. (1985) — «The impact of denial and repressive style on information gain and rehabilitation outcomes in myocardial infarction patients». *Psychosom. Med.*, 47; 262-273.
- SOLOFF, P. H. (1979) — «Medically and surgically treated coronary patients in cardiovascular rehabilitation — a comparative study». *Int. Psychol. Med.*, 9; 93-106.
- STANTON, B. A., JENKINS, C. D., DENLINGER, P., SAVAGEU, J. A., WEINSTRaub, R. M., GOLDSTEIN, R. L. (1983) — «Rediction of employment status after cardiac surgery». *J. Am. Med. Assoc.*, 249; 907-911.
- STANTON, B. A., JENKINS, C. D., SAVAGEU, J. A., THURER, R. L. (1984) — «Functional benefits following coronary bypass graft surgery». *Ann Thor Surg*, 37; 286-290.
- STEELE, J. M., RUZICKI, D. (1987) — «An evaluation of the effectiveness of cardiac teaching during hospitalisation». *Heart Lung*, 16; 306-311.
- STERN, M. J., PASCALE, L., McLOONE, J. B. (1976) — «Psychosocial adaptation following an acute myocardial infarction». *J. Chron. Dis.*, 29; 513-526.