Psychosocial Aspects of Cardiac Pacing

H. PRICE, I. W. P. OBEL, R. N. SCOTT MILLAR

SUMMARY

The psychosocial effects of pacemaker implantation were analysed in 96 randomly selected patients receiving their first pacemaker at the Johannesburg General Hospital from August 1976 to December 1977. Premorbid personality together with emotional acceptance of the pacemaker was assessed by a social worker at interviews before implantation and 3 months and 1 year after implantation. Depression was measured by the Hamilton rating scale, and a psychosocial history was taken from each patient. The nature and severity of symptoms and associated diseases were assessed medically. Pacemaker implantation restores most patients to occupational, social, emotional and physical usefulness. The degree of relief of symptoms played an important part in rehabilitation. Inadequate adjustment and rehabilitation may occur in the presence of additional disease, unrealistic patient expectations, an inadequate, depressive personality type, poor doctor-patient communication, or in patients who have experienced symptoms for less than 1 month before the implantation. Adequate pre-operative preparation by a team of social workers and doctors together with public education and the provision of postoperative psychosocial support for the inadequate, depressive personality type and for patients suffering from additional disease is likely to enhance rehabilitation greatly.


An increasing number of people throughout the world are receiving pacemaker implants. The numbers vary from approximately 10 per million in underdeveloped countries to 200 per million in some highly developed countries of Western Europe. At the Johannesburg General Hospital approximately 80 new patients per year receive an implant. It has been shown that the life expectancy of patients with cardiac conduction disturbances has been significantly increased with the implantation of a permanent pacemaker. When cardiac conduction disturbances are symptomatic, cardiac pacing is extremely efficient in relieving the symptoms. A relevant question is whether the procedure merely prolongs life or whether the quality of life is improved. Relevant studies to date have suffered from either being too small or from a lack of the longitudinal design (longitudinal design is important in the identification of those variables which may influence the patient's psychological reactions over a period of time). It is the purpose of this study to analyse the psychosocial effects of pacemaker implantation and identify those factors which may affect rehabilitation.

PATIENTS AND METHODS

Ninety-six patients who received pacemakers between August 1976 and December 1977 were randomly selected. There were 58 males and 38 females. The age range was 42-80 years, with a mean of 64 years.

All patients had been medically examined by two of the authors (I.W.P.O. and R.N.S.M.), who filled in a medical form which indicated the nature and severity of the symptoms as well as the presence of associated disease. The presence of symptoms (cardiac or non-cardiac) unlikely to be relieved by pacing was noted. Psychosocial histories were taken and questionnaires administered by one of the authors (H.P.) to assess the patient's occupational and physical capacity. The latter was based largely on the patient's own assessment. The interaction between the patient and his family, friends or occupational associates was the principal means of assessing his degree of social integration, and his engagement in or alienation from community or club activities was noted.

The patients' premorbid personalities were assessed at the first social work interview before pacemaker implantation. Particular attention was paid to identifying previous responses to stress and crises. Depression was measured by the Hamilton rating scale, and classified as mild or severe. Symptoms of severe depression included insomnia, incessant thoughts of death, feelings of helplessness and loss of appetite. Emotional acceptance of the pacemaker was defined as 'that state when a patient recognizes, rather than denies, his dependent passive position in relation to the implanted mechanical device, and adjusts realistically to this'. Acceptance or rejection of the pacemaker was subjectively assessed by the interviewer.

The patients were assessed pre-operatively (while in hospital awaiting permanent pacemaker implantation) and 3 months and 1 year after the operation.

RESULTS

Psychosocial Adjustment

Physical activity. Most patients were either more active (48%) or had no change in their physical activity (41%); 11% were less active after the implantation. Before the operation 33.5% could climb more than two flights of stairs, and afterwards this percentage increased to 71%.
The percentage of patients able to walk more than two blocks without exhaustion increased from 48% to 85%.

**Emotional state** (Table I). After 1 year, the number of patients showing no symptoms of depression increased from 22% to 81%. The 8 severely depressed patients showed no change with time. Before the implantation, 43% of patients were easily able to accept the idea of living with a permanent pacemaker. At 1 year, however, 91% had emotionally accepted the fact. The severely depressed patients could not adjust.

**Social integration** (Table I). In patients whose symptoms had commenced less than 1 month before pacemaker implantation, early adjustment was less satisfactory than in those whose symptoms had been present for more than 1 month.

**TABLE I. PSYCHOSOCIAL EFFECT OF 1 YEAR OF PACING**

<table>
<thead>
<tr>
<th></th>
<th>Before implantation (%)</th>
<th>3 months (%)</th>
<th>1 year (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nil</td>
<td>22</td>
<td>25</td>
<td>81</td>
</tr>
<tr>
<td>Mild</td>
<td>69</td>
<td>63</td>
<td>10</td>
</tr>
<tr>
<td>Severe</td>
<td>9</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>Acceptance</td>
<td>43</td>
<td>87</td>
<td>91</td>
</tr>
<tr>
<td>Social integration</td>
<td>54</td>
<td>68</td>
<td>83</td>
</tr>
</tbody>
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**Employment** (Table II). In most cases, patients were restored to their former occupational or vocational capacity, the implantation only acting as a transient hindrance to employment for the 3 months after the operation.

**TABLE II. WORK STATUS**

<table>
<thead>
<tr>
<th></th>
<th>Before implantation (%)</th>
<th>3 months (%)</th>
<th>1 year (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>50</td>
<td>14</td>
<td>56</td>
</tr>
<tr>
<td>Retired</td>
<td>31</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Voluntarily unemployed</td>
<td>11</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Disabled</td>
<td>8</td>
<td>39</td>
<td>6</td>
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The overall effect of long-term pacing was beneficial in most cases (Table III).

**TABLE III. OVERALL EFFECT AFTER 1 YEAR OF PACING**

<table>
<thead>
<tr>
<th></th>
<th>Same (%)</th>
<th>Better (%)</th>
<th>Worse (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>41</td>
<td>48</td>
<td>11</td>
</tr>
<tr>
<td>Emotional state</td>
<td>46,5</td>
<td>53,5</td>
<td>—</td>
</tr>
<tr>
<td>Employment</td>
<td>92</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Social integration</td>
<td>71</td>
<td>29</td>
<td>—</td>
</tr>
<tr>
<td>Average</td>
<td>62,6</td>
<td>34,1</td>
<td>3,25</td>
</tr>
</tbody>
</table>

**DISCUSSION**

**Physical Activity**

The physical capacity of the majority (89%) of patients who underwent pacemaker implantation was restored to the level existing before the onset of illness. The implantation enabled the patients to be more active, mobile and independent. Edhag and Wedelin found an improvement in physical capacity after the operation. Those patients who experienced no change in physical capacity considered their capacity to be normal at the time of implantation. All subjects reporting decreased physical activity after the implantation suffered from additional diseases. This suggests that lack of ancillary good health may prevent satisfactory physical rehabilitation after the operation. In-depth discussion with these patients revealed that unrealistically high expectations had complicated the adjustment process. Patient education before the implantation is therefore essential.

It must be conceded, however, that physical deterioration after pacing could be caused by retrograde ventricular-atrial conduction of paced beats.

**Depression**

It appears that depression which arises in response to pacemaker implantation is time-related and transient. It is almost always a mild response, which dissipates over time as confidence in the pacemaker develops. Severe depressive responses are seen only in patients with inadequate, depressive premorbid personalities. Such patients are often isolated in the community, having no social supports. The same patients demonstrated severe depression at the first and last interviews. Such patients clearly require pre- and postoperative emotional support and treatment.

**Acceptance**

Some patients find it difficult to accept the implantation at the time of the initial procedure. Symptomatic relief usually leads to increased confidence and acceptance of the pacemaker. The patients who could not accept their dependence on the pacemaker (9%) were those assessed pre-operatively as having inadequate, depressive personalities. These were the patients who reported poor doctor-patient relationships and communication. They also complained of poor relationships with family and friends. The patients (13%) who could not accept their dependence on the pacemaker at 3 months reported poor doctor-patient communication. This suggests that a good doctor-patient relationship helps early acceptance of the pacemaker. There is much support for the existence and importance of this correlation in the medical literature. A poor doctor-patient relationship may reflect an inadequate response to treatment. Probably the most important factor influencing rejection of pacing is lack of physical improvement. Residual symptoms, even those caused by unrelated diseases, appear to be important in affecting rehabilitation. That rehabilitation can to some extent be facilitated by realistic detailed pre-operative...
discussion is suggested, but this is not proved by the present study.

**Employment**

Despite the high average age of the patients, employment had increased from 50% to 56% 1 year after the implantation. Most patients could earn a living after the implantation, or were able to enjoy their retirement or leisure activities. Like Sowton, therefore, we found that having a pacemaker did not hinder employment. Pacing only hindered employment within the 3-month period after implantation; this was a more or less self-imposed convalescent period in a generally opulent South African White population. However, the 5% of patients who found their ability to obtain employment threatened reported this largely to be due to employer ignorance concerning the implications of pacemaker implantation. Only one of these patients had an inadequate, depressive premorbid personality.

**Social Integration**

The social integration of most patients in their community was enhanced by the relief of symptoms and the maintenance or improvement of physical capacity resulting from the implantation. They therefore experienced less alienation and more mobility and independence. They gradually found themselves capable of interacting more frequently with family and friends and participating in club and community activities. Rossel and Alyn found that approximately 76% of their patient sample reported positive changes in lifestyle after pacemaker implantation. Those patients who demonstrated social alienation 1 year after the procedure were either those with inadequate, depressive premorbid personalities, patients without social support, or patients suffering from ancillary diseases.

**Duration of Symptoms**

It appears that a clear correlation exists between the duration of symptoms before implantation and emotional adjustment to implantation. Those patients with a long duration of symptoms saw it as a 'relief-providing device'. Those who had experienced symptoms for only a short time before the operation were faced with loss of function and at the same time had to face the crisis of pacemaker implantation and its implied dependence. Emotional adjustment was therefore more difficult. Patients with a recent onset of symptoms require more professional support before and after the operation to facilitate successful emotional rehabilitation.

**CONCLUSIONS**

Pacemaker implantation restores most patients to occupational, social, emotional and physical usefulness, and at times enhances the quality of the patient's life. There appear to be two forms of symptomatic relief arising from implantation — freedom from syncope and improved physical capacity; some patients experience both forms and others only one. Complications in adjustment and rehabilitation may occur in the presence of additional disease, unrealistic patient expectations, an inadequate, depressive premorbid personality type, poor doctor-patient communication, and short duration of symptoms before implantation. Adequate pre-operative preparation by a team of social workers and doctors together with public education and the provision of postoperative psychosocial support for the inadequate, depressive personality type and for patients suffering from additional disease are likely to enhance rehabilitation greatly.

**REFERENCES**