Defense mechanisms in hemodialysis-dependent patients

R. Zoccali¹, G. Bellinghieri², A. Mallamace², M.R.A. Muscatello¹, A. Bruno¹, D. Santoro², D. Mallamace¹, G.P. Barillà¹, P. Scardamaglia¹, D. La Torre¹ and M. Meduri¹

¹Department of Neurosciences, Division of Psychiatry, and ²Department of Medicine and Pharmacology, Division of Nephrology, University of Messina, Italy

Abstract. Defense mechanisms are automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors. The influence of defense mechanisms in patients on chronic hemodialysis treatment was studied. There were 53 uremic subjects (37 males and 16 females), aged between 22 and 88 years (mean age 60.11, SD 15.03), on chronic dialysis and 50 healthy subjects as controls have been enrolled in the study. According to the duration of dialysis, uremic patients were divided in two subgroups: 21 patients with less than 5 years and 19 patients with more than 10 years of dialytic treatment. Assessment was conducted using the Defense Mechanisms Inventory DMI. The inventory identifies five defensive styles: turning against the object (TAO), projection (PRO), principalization (PRN), turning against the self (TAS) and reversal (REV). Results showed DMI scores within the normal range both for uremics and controls with significant differences in TAO (t=-3.053, p = 0.003) and REV (t = 5.067, P < 0.0001) between groups. No significant differences in the use of defensive styles related to the duration of dialytic treatment were observed. Besides other psychological features, the assessment of defense mechanisms in patients with chronic and invalidating diseases may contribute to ameliorate the knowledge of the adjustment processes and of the psychological well-being of the patients.

Introduction

Hemodialysis as a treatment modality for patients with end-stage renal disease (ESRD) has resulted in an increase of survival rates and in a prolonged expectancy of life and, as a consequence, the topics of quality of life, psychological well-being and psychosocial adjustment in patients treated with hemodialysis have become fundamental aspects in the management and general care of ESRD. Quality of life in hemodialysis (HD) patients may predict survival [Kalantar Zadeh et al. 2001] and it has been correlated with psychosocial (social support), demographic (gender) and disease-related (diabetes, albumin) variables [Tovbin et al. 2003]. HD patients experience an existential condition characterized by the prolonged contact with a machine from which their survival derives; in this context, patients must cope with severe restrictions of their own independence not only due to the dialysis regimen, but also to the adherence to medications and to a variety of limitations in fluids and food intake and in physical activities [Cormier-Daigle et al. 1997]. Consequently, a number of studies have focused on coping strategies in HD patients [Christensen et al. 1995, Hyde 1998, Roesch and Weiner 2001]. Coping responses are usually divided into two categories: problem-focused coping, which deals with threatening environmental stress, and emotion-focused coping, involving strategies which minimize distress caused by the stressful event. In dialysis-dependent subjects, problem-focused strategies are prevalent [Bombardier et al. 1990]; a recent study indicated that an optimistic coping style was widely adopted by men and women on dialysis resulting in a most effective strategy in terms of dealing with the stressful aspects of the treatment [Lindqvist et al. 1998].

To the best of our knowledge, the research on the psychological features and adjustment in HD patients has not included the assessment of defense mechanisms, a critical component of the ability to maintain psychologi-
cal homeostasis. Defense mechanisms largely differ from coping mechanisms, even if both the processes correspond to adaptational strategies which protect the individual from the emotional consequences of adversity. According to Cramer [1998], while coping strategies involve an intentional and purposeful effort to manage a problem, defense mechanisms occur without conscious effort, only modifying an internal psychological state with no effect on external reality and so may result in non-veridical perceptions, that is, in reality distortion. The protective function of defense mechanisms is, therefore, achieved through modifications, distortions and removal of disturbing feelings, perceptions and thoughts.

According to the Diagnostic and Statistical Manual of Mental Disorders DSM IV [American Psychiatric Association 1994], defense mechanisms “are automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors. Individuals are often unaware of these processes as they operate”. As suggested by Rutledge and Linden [2000], different patterns of defense correspond to distinct behavioral and physical correlates, such as ratings of physical health and psychosomatic illnesses [Vaillant 1998].

Based on the assumptions that the use of defense mechanisms is significantly related to psychological well-being, physical health and psychosocial adjustment and that defense mechanisms may affect the adjustment to the symptoms of medical illnesses and to chronic, disabling diseases, our study aims to assess defense mechanisms in a sample of HD patients on chronic hemodialysis, evaluating possible differences in the use of defenses on the basis of the duration of hemodialytic treatment.

**Material and methods**

There were 60 uremic outpatients on chronic treatment with hemodialysis, consecutively selected from the dialysis unit of the Policlinico Universitario di Messina. All the subjects underwent an interview conducted by a psychiatrist with at least 5-year clinical experience in order to exclude the presence of concurrent psychiatric disorders classified on I or II Axes of the Diagnostic and Statistical Manual of Mental Disorders DSM IV; seven patients were excluded from the study because the psychiatric interview showed the presence of a concurrent psychiatric disorder (three patients were affected by major depressive disorder, 2 patients by generalized anxiety disorder and the last 2 by personality disorders not otherwise specified).

The final sample was formed by 53 subjects (37 males and 16 females), aged between 22 and 88 years (mean age 60.11 ± 15.03 SD). The duration of dialytic treatment ranged between 1 and 27 years (M = 9.20 years, SD = 7.85). Patients were subsequently divided into 2 subgroups according to the duration of dialytic treatment: 21 patients with less than 5 years and 19 patients with more than 10 years of dialytic treatment.

The control sample was constituted by 50 healthy controls (35 males and 15 females), aged between 27 and 81 years (mean age 61.08 years, SD = 12.79), matched for sex and age. All control subjects underwent a psychiatric interview and were screened for mental disorders. Both clinical and control subjects signed written informed consent prior to the participation in the assessment study.

All the subjects were assessed using the Defense Mechanisms Inventory DMI [Ihle-vich and Gleser 1994]. DMI is a pencil and paper test which measures the frequency of usage of five major groups of defense mechanisms. The test consists of 10 brief stories, 2 for each “conflict area” (authority, independence, femininity/masculinity, competition, unexpected events), followed by 4 questions. The questions are: What would your actual reaction be? What would you impulsively (in fantasy) want to do? What thought might occur to you? How would you feel and why? Five choices are given for each question, each corresponding to one of the defense groups being measured. The subject has to select the most representative answer for each question, and the one least representative of his/her way of reacting.

The inventory identifies 5 defensive styles:

- Turning against object (TAO): deals with conflicts through attacking a real or presumed external frustrating object. Such classical defense mechanisms as displacement and identification with the aggressor can be included in this category.
Defense mechanisms in dialysis

Table 1. Means and t-test for independent samples at DMI in HD patients (n = 53) and controls (n = 50).

<table>
<thead>
<tr>
<th></th>
<th>HD patients</th>
<th>Controls</th>
<th>t-value</th>
<th>t-sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAO</td>
<td>44.07</td>
<td>50.92</td>
<td>-3.053</td>
<td>0.003</td>
</tr>
<tr>
<td>PRO</td>
<td>49.94</td>
<td>52.94</td>
<td>-1.887</td>
<td>0.062</td>
</tr>
<tr>
<td>PRN</td>
<td>47.89</td>
<td>49.84</td>
<td>-1.139</td>
<td>0.258</td>
</tr>
<tr>
<td>TAS</td>
<td>46.64</td>
<td>43.16</td>
<td>1.934</td>
<td>0.056</td>
</tr>
<tr>
<td>REV</td>
<td>62.92</td>
<td>51.36</td>
<td>5.067</td>
<td>&lt; 0.0001</td>
</tr>
</tbody>
</table>

Table 2. Mean DMI scores in the two subgroups of HD patients divided according to HD treatment duration (< 5 years and > 10 years). The scores were compared through the analysis of variance (ANOVA).

<table>
<thead>
<tr>
<th></th>
<th>&lt; 5 years (n = 21)</th>
<th>&gt; 10 years (n = 19)</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>D.S.</td>
<td>Average</td>
<td>D.S.</td>
</tr>
<tr>
<td>TAO</td>
<td>46.19</td>
<td>12.60</td>
<td>46.42</td>
<td>11.18</td>
</tr>
<tr>
<td>PRO</td>
<td>53.85</td>
<td>7.81</td>
<td>49.47</td>
<td>5.75</td>
</tr>
<tr>
<td>PRN</td>
<td>46.57</td>
<td>8.93</td>
<td>45.78</td>
<td>7.38</td>
</tr>
<tr>
<td>TAS</td>
<td>43.28</td>
<td>8.06</td>
<td>48.36</td>
<td>9.38</td>
</tr>
<tr>
<td>REV</td>
<td>59.61</td>
<td>11.40</td>
<td>61.73</td>
<td>8.25</td>
</tr>
</tbody>
</table>

- Projection (PRO): consists in the attribution of negative characteristics or intent to an external object without unequivocal evidence.
- Principalization (PRN): deals with conflicts through the splitting of thought content from affect which is repressed. Defense mechanisms as rationalization, intellectualization and isolation fall in this category.
- Turning against self (TAS): includes those defense mechanisms that handle conflicts through directing aggression toward the subject him- or herself. Masochism is an example of defense mechanism in this category.
- Reversal (REV): deals with conflicts responding in a positive or neutral way to a frustrating object that might rather evoke a negative reaction. Reaction formation, denial and repression are defense mechanisms included in this category.

The Defense Mechanism Inventory has been used in broad samples, both clinical [Ihlevich and Gleser 1994] and non-clinical [Greenberg and Fisher 1984]. To the best of our knowledge, the use of the DMI in clinical samples of subjects affected by organic illnesses has been limited, the validity of a shortened form of the Defense Mechanisms Inventory was examined in different clinical populations such as adult females undergoing abdominal surgery, infarct patients and females affected by migraine [Hoffman-Delvaux and Mertens 1978, Passchier et al. 1988, Wilson 1982]. The instrument, however, shows good test-retest reliability, internal consistency, content, concurrent and discriminative validity, and it has a factor structure which is relatively uniform across different populations.

Statistical analysis

Data obtained from the study underwent check and quality control and, subsequently, descriptive and inferential statistical analysis.

Normality tests were applied for all the variables, then we applied parametric tests for the quantitative variables:
- t-test for independent samples for evaluating differences in median score of DMI between patients on chronic hemodialysis and controls,
- analysis of variance (ANOVA) for evaluating differences in the two subgroups of patients (less than 5 years and more than 10 years on dialysis).

Results

All analyses were carried out using the SPSS package. Mean scores, SD and t-test at DMI scales for HD patients and controls are shown in Table 1.

Mean scores at DMI were all in the normal range for both groups. Comparing the two groups, significantly higher scores at REV scale (t = 5.067, p < 0.0001) and lower scores at TAO scale (t = -3.053, p = 0.003) were found in HD patients.

No significant differences resulted in DMI scores comparing the two subgroups of HD patients divided according to HD treatment duration (< 5 years and > 10 years), however, a tendency to a prevalence of PRO type defense mechanisms in HD subjects treated for a shorter period was observed (see Table 2).
Discussion

Results obtained from the present study whose aim was to assess defense mechanisms in a sample of HD patients compared with controls, showed that the defensive profile of both selected groups fell within the normal range. In HD patients compared to controls, the tendencies to a higher use of REV, defensive style and a lower use of TAO can be observed. Similar results were found by Minsky [1978] in samples of hypertensive subjects. REV refers to several defense mechanisms (reaction formation, repression and denial) which share common features of cognitive distortions in neutralizing unpleasant affects or frustrating events. Reaction formation transforms an unacceptable impulse into its opposite, while repression involves the expulsion of a distressing idea and/or negative feelings from consciousness. Denial has been traditionally considered as an immature defense and, for this reason, it has been commonly associated with maladjustment and psychopathology. As suggested by Goldbeck [1997], the patients characterized by high levels of denial usually tend to reject their diagnosis, to minimize the implications of the illness, to refuse or poorly comply with the treatment and the check-ups, to appear indifferent and detached toward their illness and its implications. Despite its negative connotations, however, under stressful situations, such as severe medical illnesses, denial may play a role in safeguarding the self, protecting patients from distressing emotions [Sarantidis et al. 1997], as shown by the prevalence rates of depression and sleep disturbances which resulted significantly higher in HD patients with lower use of denial [Short and Wilson 1969].

The lower prevalence of TAO defensive style observed in our HD sample compared with healthy controls may raise adaptive implications, as overtly aggressive expressions directed toward the environment might reduce the possibility of receiving emotional and empathic support from the social network and from family members.

According to the assumption that the adjustment to illness and to treatments may require a long time in which the remodeling of defense mechanisms might be involved, HD subjects were divided into two subgroups according to the duration of dialytic treatment. The two subgroups did not significantly differ in the prevalence of defensive styles, it can be hypothesized that defense mechanisms tend to remain stable during time, probably reflecting stable individual features.

A number of limitations have to be considered. First, the selected sample was relatively small and, consequently, the results obtained need to be confirmed on a larger population. Second, we did not include quality of life measures and any possible implication of the impact of defenses on quality of life remains merely speculative. Third, it can be presumed that the assessment of defense mechanisms in two distinct subgroups of patients, divided according to the duration of dialysis, does not constitute a suitable methodology to evaluate possible changes in the use of defenses. It should be more accurate to assess defense mechanisms at the beginning of dialytic treatment and, in a follow-up perspective, the same patients should be re-evaluated after a number of years.

The findings, however, suggest that the management of HD patients should involve an accurate psychological evaluation including the assessment of defense mechanisms, with the aim to identify those patients who may be at risk for maladjustment and non-adherence to treatment. The presence of dysfunctional and maladaptive defense styles may require appropriate psychological supports and cognitive psychotherapeutic treatments designed to improve HD patients' ability to cope with a chronic, invalidating disease and with the limitations related to the dialytic treatment.

References

Defense mechanisms in dialysis


Hoffman-Delvaux C, Mertens C 1978 Homogeneity of defence mechanisms in a group of infarct patients and impact of these defences on the expression of their emotions. Acta Psychiatr Belg 78: 337-347

Hyde C 1998 Quality of life and coping in home hemodialysis patients. EDTNA ERCA J 24: 10-12

Ihilevich D, Gleser GC 1986 Defense mechanisms. Their classification, correlates and measurement with the Defense Mechanisms Inventory. DMI Associates, Owosso


Minsky JP 1978 High blood pressure and interpersonal “disagreement”: a study of maladaptive coping styles and ameliorative treatments. Loyola University, Chicago


