

Manual for the psychotherapeutic treatment of acute and post-traumatic stress disorders following multiple shocks from implantable cardioverter defibrillator (ICD)

Manual zur psychotherapeutischen Behandlung akuter Stressfolgen und posttraumatischer Belastungsstörungen nach multiplen Schocks durch Implantierbare Kardioverter-Defibrillatoren

Abstract

Background: In view of the increasing number of implanted cardioverter defibrillators (ICD), the number of people suffering from so-called “multiple ICD shocks” is also increasing. The delivery of more than five shocks (appropriate or inappropriate) in 12 months or three or more shocks (so called multiple shocks) in a short time period (24 hours) leads to an increasing number of patients suffering from severe psychological distress (anxiety disorder, panic disorder, adjustment disorder, post-traumatic stress disorder). Untreated persons show chronic disease processes and a low rate of spontaneous remission and have an increased morbidity and mortality. Few papers have been published concerning the psychotherapeutic treatment for these patients.

Objective: The aim of this study is to develop a psychotherapeutic treatment for patients with a post-traumatic stress disorder or adjustment disorder after multiple ICD shocks.

Design: Explorative feasibility study: Treatment of 22 patients as a natural design without randomisation and without control group. The period of recruitment was three years, from March 2007 to March 2010. The study consisted of two phases: in the first phase (pilot study) we tested different components and dosages of psychotherapeutic treatments. The final intervention programme is presented in this paper. In the second phase (follow-up study) we assessed the residual post-traumatic stress symptoms in these ICD patients. The time between treatment and follow-up measurement was 12 to 30 months.

Population: Thirty-one patients were assigned to the Department of Psychocardiology after multiple shocks. The sample consisted of 22 patients who had a post-traumatic stress disorder or an adjustment disorder and were willing and able to participate. They were invited for psychological treatment. 18 of them could be included into the follow-up study.

Methods: After the clinical assessment at the beginning and at the end of the inpatient treatment a post-treatment assessment with questionnaires followed. In this follow-up measurement, minimum 12 months after inpatient treatment, posttraumatic stress was assessed using the “Impact of Event Scale” (IES-R).

Setting: Inpatient treatment in a large Heart and Thorax Centre with a Department of Psychocardiology (Kerckhoff Heart Centre).

Results: From the 18 patients in the follow-up study no one reported complaints of PTSD. 15 of them reported a high or even a very high decrease of anxiety and avoidance behaviour.

Conclusions: The first step of the treatment development seems to be successful. It shows encouraging results with an acceptable dosage. The second step of our work is in process now: we evaluate the treatment manual within other clinical institutions and a higher number of

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psychotherapists. This leads in the consequence to a controlled and randomised comparison study.

Keywords: implantable Cardioverter Defibrillator, ICD shocks, multiple ICD shocks, electrical storm, anxiety, depression, post-traumatic stress disorder, trauma symptoms, adjustment disorder, psychotherapy, Eye Movement Desensitisation and Reprocessing (EMDR)

Zusammenfassung

Hintergrund: Angesichts der ständig steigenden Zahl implantierter Defibrillatoren steigt auch die Zahl der Menschen, die sog. Mehrfachschocks erleben. Fünf oder mehr Schocks (adäquate oder inadäquate) innerhalb von 12 Monaten oder drei und mehr Schocks innerhalb einer Episode (24 Stunden) führen nach derzeitigem Kenntnisstand zu einem Anstieg von psychopathologischen Symptomen (Angststörung, Panikstörung, Anpassungsstörung und posttraumatische Belastungsstörung). Unbehandelt führt dies zu einer Chronifizierung bei niedriger Spontanremission und zu einer Erhöhung der Morbidität und Mortalität. Es gibt nur wenige Publikationen zur psychotherapeutischen Behandlung dieser PatientInnen.

Ziel: Ziel der Studie war die Entwicklung und Erprobung einer multimodalen psychotherapeutischen Intervention für Menschen nach Defi-Mehrfachschocks und einer Anpassungsstörung oder posttraumatischen Belastungsstörung.

Design: Es handelt sich um eine Machbarkeitsstudie: PatientInnen wurden in einem naturalistischen Design (unausgewählt, ohne Randomisierung und ohne Kontrollgruppe) stationär behandelt. Der Einschluss der PatientInnen erfolgte zwischen März 2007 bis März 2010. Die Studie bestand aus zwei Phasen. In der ersten Phase der Pilotstudie entwickelten und erprobten wir verschiedene Behandlungskomponenten und die Behandlungsdosis variierte. In der zweiten Phase (Follow-up-Studie) fand eine postalische Nachuntersuchung mittels Fragebögen statt. Der Nachbefragungszeitraum variierte zwischen 12 und 30 Monaten.

Stichprobe: Im Untersuchungszeitraum wurden 31 PatientInnen in die Klinik für Psychokardiologie der Kerckhoff Klinik überwiesen. Die von uns behandelte Gruppe bestand am Ende aus 22 Personen, die eine Anpassungsstörung oder posttraumatische Störung hatten und die in der Lage und Willens waren, an der Studie teilzunehmen. In die Follow-up-Studie konnten wir 18 von diesen 22 PatientInnen einschließen.

Methoden: Zu Beginn und am Ende der stationären Behandlung stand eine klinische Diagnostik (z.T. mit Fragebögen, die aber wechselten und daher nicht systematisch ausgewertet werden konnten). Für die Follow-up-Studie wurden eigene Fragebögen sowie die Impact of Event Scale verwendet.

Setting: Es handelt sich um ein stationäres multimodales Behandlungsetting in einer sehr großen Herz- und Thoraxklinik. Die Klinik für Psychokardiologie ist Teil der Kerckhoff Klinik.

Ergebnisse: Von den 18 PatientInnen die an der Follow-up-Studie teilnahmen, berichtete keiner Symptome einer posttraumatischen Belastungsstörung. Eine starke oder sehr starke Abnahme von Angst und Vermeidungsverhalten wurde von 15 der 18 Behandelten berichtet.

Schlussfolgerungen: Der erste Schritt einer Entwicklung eines systematischen und konsistenten Therapiepaketes kann als erfolgreich bewertet werden. Die Ergebnisse sind ermutigend und die erforderliche Behandlungsdosis (3 Wochen) ist durchaus kostengünstig. Der nächste Forschungsschritt ist derzeit in Arbeit: Wir erproben das entwickelte Konzept an weiteren 40 Personen, wobei verschiedene TherapeutInnen zum

Einsatz kommen. Eine kontrollierte und randomisierte Vergleichsstudie kann hierdurch vorbereitet werden.

Schlüsselwörter: implantierter Kardioverter-Defibrillator, ICD-Schocks, multiple ICD-Schocks, Angststörung, Panikstörung, posttraumatische Belastungsstörung, Anpassungsstörung, Trauma-Symptome, Psychotherapie, EMDR

1 Introduction

The increasing number of implanted cardioverter defibrillators (ICD) causes an increasing number of patients who suffer from psychological distress after multiple ICD shocks. These patients need psychological counselling and treatment.

Scientific literature shows substantial differences in the classification of the psychological distress in this patient group: the majority is classifying anxiety disorder or panic disorder. Only few are classifying adjustment disorder or post-traumatic stress disorder.

The number of publications concerning psychotherapeutic treatment is dissatisfying.

In the last ten years before this study our own experience in psychotherapeutic treatment of patients after multiple ICD shocks was disappointing. In light of a very small rate of spontaneous remission and a high rate of morbidity and mortality of patients with post-traumatic stress disorder (PTSD) after multiple ICD shocks, we decided to invest time and to develop a treatment for these patients. The following manual was developed as part of a research project funded by the W. R. Pitzer Foundation (Bad Nauheim). It is based on the treatment of 22 patients. This initial pilot study tested different components of a treatment programme. The final version of our treatment is presented here.

The results of our pilot study are encouraging and justify the publication of this manual even though no controlled study has been made. It is the author's hope that suitable pilot projects will be set up in many places to further investigate the feasibility and effectiveness of this therapy. The treatment can be described as an *intensive, short-term, inpatient, focussed therapy using a variety of methods for patients with post-traumatic stress disorder (PTSD) after multiple shocks from an implantable cardioverter defibrillator (ICD)*.

For ease of reading, we are citing only a few scientific publications and it is assumed that readers, i.e. potential therapists, possess professional knowledge and training in psychotherapy (psychodynamic and behavioural therapy, eye movement desensitisation and reprocessing (EMDR) therapy, relaxation therapy, etc.) and are willing to purchase the corresponding literature.

2 Current research

Scientific research concerning psychosocial adaptation after ICD implantation increased over the last few years [1], [2], [3], [4], [5], [6].

Additionally, there is a growing corpus of literature concerning psychological interventions to improve coping shortly after ICD implantation [6], [7], [8], [9], [10], [11], [12], [13].

The psychological impact of single ICD shocks is still contradictory. Some studies suggest that the number of single shocks is not strongly associated with psychopathological symptoms and other studies show that the number of psychological complaints increases. The fear of dying is probably increasing. If anxiety and depression develops shortly after implantation, it seems that they decrease during the first year, but not to a level which is satisfactory [1], [2], [14], [15], [16], [17].

Five or more ICD shocks in 12 months or more than 3 shocks consecutively (24 hours) are considered high risk for psychological complaints. The experience of multiple shocks is seen as a high risk for anxiety, depression, panic disorder and very often these symptoms exist within a PTSD [3], [15], [16], [18], [19], [20], [21]. Very important is the knowledge that the existence of a PTSD after multiple shocks is a factor which increases risk in the prognosis of the disease (including the risk of mortality [21], [22]). This is the motivation for the present study.

2.1 Prevalence of multiple shocks

The prevalence of multiple shocks is unclear. The findings vary from 4% to 28% in the first three years [9], [23], [24], [25], [26], [27], [28], [29], [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40]. The reasons for the differences in prevalence result from different screening instruments.

2.2 Emotional distress following multiple ICD shocks

Scientific literature and clinical experience result in the following emotional reactions:

- Severe and continually recurring fears, panic attacks, fearing death, helplessness and hopelessness, depression, nervousness and irritability, nightmares, insomnia
- Flashbacks at the slightest physical discomfort
- Flashbacks in the context of premature beats, increase of heart frequency or blood pressure
- A constant recollection of fearing dying during the shock delivery, and daily repeated reappearance of intrusive memories of the shocks
- Resulting is a pronounced avoidance behaviour

- As well as withdrawal and distancing antisocial behaviour, and also feeling detached from the social environment
- Inability to show emotions and a limited perspective on the future
- Of significance is the strong psychological burden on the partners, who respond by becoming markedly anxious and/or depressed themselves and who also experience severe adverse, psychological effects.

The prevalence of acute stress reactions (ICD-10: F 43.0 or F 43.2) and post-traumatic stress disorder (ICD-10: F 43.1) is presently unclear but can be estimated at between 20% and 40% [7], [12], [15], [16], [41], [42], [43]. Many researchers classify the symptoms still as anxiety or panic disorder. Our experience suggests that the diagnostic process should include the assessment of traumatic reactions.

2.3 Scientific literature: Treating patients with post-traumatic stress disorder following multiple ICD shocks

To date, there are only a few publications on psychotherapy after multiple ICD shocks.

A case report of the treatment of a 74-year-old man who received a number of single shocks is published by Urizar et al. [44]. Their (outpatient) cognitive behaviour stress management intervention included five weekly sessions and is described in detail.

Another case report has been published by Eads et al. on a treatment of a 47-year-old man who received multiple consecutive shocks and was prepared for transplantation. The report characterises the patient's symptoms and medical history but does not describe the psychological intervention in detail [45].

Sears et al. conducted a randomized trial for patients who had received one or more ICD shocks in a period of 12 months. Their structured intervention with elements of education and cognitive-behavioural strategies (the ICD stress and shock management program) was able to reduce psychological distress and to improve quality of life [12].

Kovacs et al. published a very dramatic case study of a patient who wanted an explantation of his ICD because he was not able to cope with his stress after multiple shocks. A multidisciplinary inpatient treatment helped him to cope with his anxiety and reimplantation of a new device was possible [46].

Overviews can be found in Salmoirago-Blotcher & Ockene and Ginzburg et al. [19], [47].

3 Methods

Some authors of this paper are working in the field since 15 years. In the first years of ICD implantations (1990 following) the number of patients with traumatic reactions after multiple shocks was very low. The increasing number

of implantations resulted in the necessity to find psychological treatments for these distressed patients. Very often our results were disappointing and in the scientific literature we did not find helpful descriptions and recommendations for the psychotherapeutic interventions. This was the motivation for our research.

The advances in psychotraumatology were encouraging and we had positive experiences with the integration of EMDR in the treatment. It also became clear that the integration of elements of behaviour therapy to cope with anxiety and avoidance behaviour is necessary. As well as an intensive cardiologic counselling and elements of cardiac rehabilitation were important for our patients.

After treating nearly 20 patients in the years between 1995 and 2006 we started a pilot study with different psychotherapeutic components (psychodynamic psychotherapy, behavioural therapy, EMDR, relaxation therapy, exercise therapy, group support therapy) and different dosages of stationary therapy. Between 2007 and 2010 we were collecting experiences with these patients and at the end we had a basic treatment programme, which is described in this publication. In this first study we did not have a control group and the psycho-diagnostic assessment changed and was not realised systematically. The aim was to find a method to treat these patients with good results and to prepare a systematic study.

4 Results of the pilot study

In the first phase of our pilot study between March 2007 and March 2010 a total of 31 people were referred after ICD multiple shock episodes. In 22 of those patients either a PTSD or a serious adjustment disorder was diagnosed (by not standardised clinical interview oriented on the SKID, DSM IV) and (if they were motivated) they were promptly treated in our inpatient programme. The programme varied during these three years, because we were searching for sufficient components and effective dosage. Therefore the patients received different compilations of therapeutic components and dosage was varied. According to the clinical interview 21 of 22 patients reported no symptoms of a post-traumatic or adjustment disorder at the end of the treatment. All 22 patients were contacted for a follow-up study, conducted with questionnaires. Only 18 were available (one death, two people had moved and were unable to be located, one person refused to cooperate). The time between treatment and follow-up was 12 to 30 months.

The group consisted of 6 women (33%) and 12 men (67%) with an average age of 62 years (age 45 to 79). The average number of ICD shocks was 19 (ten people had between 4 and 15 shocks, four people had between 15 and 31 shocks and four people had between 32 and 70 shocks).

Follow-up results: As in a first pilot study the treatment modules, the dosage and timescale of the follow-up interviews differed from person to person we used a short self-constructed Likert-scale to assess anxiety, avoidance

Table 1: Assessment first day of admission in an ongoing multicentre study

Case	Clinical diagnosis: PTSD after anamnesis	SCID diagnosis: PTSD	IES PTSD	BDI Clinical Depression	HADS Depression	HADS_Anxiety	Vital Exhaustion
1	yes	yes	yes	yes	yes	yes	yes
2	yes	yes	yes	./.	yes	yes	yes
3	yes	yes	yes	yes	yes	yes	yes
4	no**	./.	./.	./.	./.	./.	yes
5	yes	yes	yes	yes	./.	yes	yes
6	yes	./.	yes	./.	./.	yes	yes

** Adjustment disorder; ./ no clinical significant value

Table 2: Assessment one day before discharge in an ongoing multicentre study

Case	Clinical diagnosis: PTSD after anamnesis	SCID diagnosis: PTSD	IES PTSD	BDI Clinical Depression	HADS Depression	HADS_Anxiety	Vital Exhaustion
1	yes	yes	yes	yes	yes	yes	yes
2	yes	yes	./.	yes	yes	yes	yes
3	./.	./.	yes	yes	yes	./	yes
4	./.	./.	./.	./.	./.	./.	./.
5	./.	./.	./.	./.	./.	./.	yes
6	./.	./.	./.	yes	./.	./.	yes

./ no clinical significant value

behaviour, mood, sleep, nervousness and loss of interest. In a retrospective design we asked for differences between the time before the inpatient treatment and the time of the follow-up [18], [19].

Fifteen (83%) of the eighteen patients reported a significant reduction of anxiety and avoidance behaviour. More than half of the patients reported to have no affective symptoms like depressiveness, sleep disorder, reduction in every day activities and loss of interests.

The Impact of Event Scale (IES-R) shows that none of the treated patients showed signs of a PTSD at the follow-up time.

However it is important to note that, after treatment, 21 of 22 patients were free of PTSD symptoms and that avoidance behaviour was reduced significantly. For some patients it took some weeks or months until a satisfactory life style was once again attained. The exploratory follow-up history therefore naturally contains gaps.

A present multi-centred study is the next step of our work and currently underway with more precise measuring instruments and more standardized measuring intervals. It is anticipated that a further 35 patients will be treated according to the manual in four different hospitals by different psychotherapists to verify that the treatment is sufficient.

Our standardized diagnostic instruments in this present study are shown here just to inform readers which instruments are helpful and promising:

- BDI (Beck Depression Inventory): Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J (1961). An inventory for measuring depression. Arch. Gen. Psychiatry, 4 (6): 561–71
- HADS (Hospital Anxiety and Depression Scale): Zigmond, AS; Snaith, RP (1983). The hospital anxiety and

depression scale. Acta Psychiatrica Scandinavica, 67 (6): 361–370

- IES (Impact of Event Scale): Horowitz, M. Wilner, N. & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. Psychosomatic Medicine, 41, 209–218
- Vital exhaustion (Maastricht-Questionnaire short): Appels A, Mulder P (1988). A questionnaire to assess premonitory symptoms of myocardial infarction. Int. J. Cardiol., 17, 15–24
- SCID (Structured clinical interview for DSM disorders, DSM-IV): <http://www.scid4.org>

At that time the first diagnostic assessments from the first seven participating patients of this present study show consistent results between these instruments (see Table 1 and Table 2).

5 Description of the multimodal intervention

In the following section we describe our treatment manual in detail. As an advance organiser we list the headings of the chapter:

5.1 Diagnostic routine: Medical case history, relationship building

5.2 Components of the intervention

5.2.1 Psychodynamic aspects

5.2.2 EMDR

5.2.3 Behaviour therapy

5.2.4 Relaxation therapy

5.2.5 Cardiac care

5.2.6 Psychoeducation

5.3 Institutional setting and dosage

5.1 Diagnostic routine: Medical case history, relationship building

General practices for medical case history are not presented here as they are an integral part of any training in psychotherapy.

Establishing a good trustful relationship is especially important with traumatised patients, who have often already attempted other counselling. On the one hand, they feel anxious, helpless and hopeless, they sometimes had bad experiences and encountered a lack of understanding, and fear a recurrence of previous events and disappointments. On the other hand, however, in their anxiety, they are eager to try once again and to grasp at any possible source of help.

It is very important, therefore, that sufficient time (75–90 minutes) is available for the first meeting, so that there is ample opportunity to recount what has been experienced.

It is strongly recommended that the therapist acquires a wide breadth of experience in preparation for dealing with ICD patients: for example, talking with those concerned, participating training in an ICD clinic, observing implantation and monitoring und reprogramming an ICD etc.

In this context, within the framework of the case history, it is very important to record how exactly the multiple shocks episode took place. This would include questioning under which conditions the multiple shocks occurred, where the episode took place, the people present, who called for help and requested an emergency ambulance, how the ambulance crew behaved, and how hospital admittance and treatment were carried out. It is particularly important to ask about the presumed cause of the shocks as patients often have their own theories and assumptions which can have far-reaching implications for future behaviour. Finally, it is important to explore the medical explanation for the multiple shocks and whether this is considered plausible by the patient. The case history should also include a so-called “trauma map” of previous experiences of a serious or traumatic nature as this is a significant basis for subsequent EMDR therapy. Very important for estimating the extent of the disorder is a precise assessment of the avoidance behaviour as this significantly curtails the quality of life and reflects clearly the degree of anxiety being experienced.

An examination with psychological tests is very helpful (see above) because patients and therapists can see the changes at the end of treatment.

The detailed classification of the nature of ICD shocks is very important for the further work (see Table 3).

5.2 Components of the intervention

The most important point of our treatment is the intensive psychotherapy (8–15 sessions). Within this context, elements of psychodynamic psychotherapy, anxiety centred behavioural therapy, cognitive behavioural therapy and EMDR will be applied.

From the point of view of current research it cannot be concluded whether only this specific setting leads to a successful treatment. Different doses and components, as well as different settings could lead to comparable results. This is a question for further studies.

5.2.1 Psychodynamic aspects

Some psychodynamic reflections treating cardiac patients have been recently published [9], [48], [49], [50], [51]. Specific aspects of psychodynamic treatment of people with heart disease are not known. However, some of our experience and mentalizing should be described to help other psychotherapists to imagine in which way we conducted the intervention.

Transference and counter-transference processes always need to be observed and provide valuable material for developing psychodynamic hypotheses. In terms of a focused therapy, the focus of our attention in this intensive short-term inpatient therapy is the trauma suffered. All of the reported relationship episodes and experiences, all dreams, mishaps and emotional swings are first considered as material for processing the trauma and placed within this hypothetical context. The same applies to the transference and counter-transference processes, which were observed in general but not explained. In addition to this general level of observation, attentive care needs to be given to the existential aspects of both the disease itself and the handling of the disease.

As this is an intensive inpatient short-term therapy, it is clinically very helpful if particular attention is paid to the narrative. Details of the patient's stories often open up numerous options of working with central themes which are additionally more plausible and have more value for those effected because of their concreteness and relevance. The preconceptions and mentalizing, sensory distortions, disruptions of meaning and conflicting experiences thus exposed frequently open up formidable corridors to the way in which life is experienced by the patient, and, for the most part, also reflect long-established biographical patterns, which are helpful to work through. The analytical system of examining different relationship episodes, as developed by Lester Luborsky, was also very helpful for our therapeutic work (Core Conflictual Relationship Theme – CCRT [52], [53], [54]).

People who suffer from multiple ICD shocks usually have already had to deal with a whole series of stressful psychological problems (e.g. cardiac arrest and resuscitation, a myocardial infarction, cardiomyopathy etc.). In the patient's experience, they feel threatened by the possibility of recurring multiple ICD shocks, but, at the same time, almost always experience the shocks as surprising and sudden. Patients are almost never prepared for the possibility of experiencing multiple shocks within a short space of time and this event is usually not anticipated. The suddenness and seriousness of a renewed life threatening situation is in most cases so stressful and disturbing that it reactivates the memory of all previous life-threatening situations. Patients are once again torn

Table 3: Classification of the nature of multiple ICD shocks

It is important to differentiate between different types of multiple ICD shocks. This is because particular circumstances and causes trigger, to a certain extent, significantly different psychological processes.

First, one must distinguish between appropriate and inappropriate shocks: (A-S = an appropriate shock and NA-S = an inappropriate shock). This difference is very significant from the perspective of those experiencing the shocks. In the case of appropriate shocks, a considerable degree of alarm is involved as patients conclude that their condition has deteriorated severely and that the chances of dying have thus increased accordingly.

With so-called “inappropriate shocks”, it is very important that the causes of these are discussed in detail with patients. It is not uncommon for overt or covert accusations to arise, with the patients themselves and also their relatives assuming that these shocks were avoidable. Additionally, sometimes the doctors providing treatment or the manufacturers of the medical equipment are blamed. These are other psychological constellations that would need to be addressed during the psychotherapeutic process.

As a second step, the time interval between shocks needs to be classified:

- a. Five shocks or more within 12 months
- b. Three shocks or more within 24 hours, albeit not in immediate succession but with time interval between each shock
- c. Three shocks or more within a single shock episode (minutes)

This classification leads to six constellations:

- A-S a, b, c (appropriate shocks in time interval a, b, c)
- NA-S a, b, c (inappropriate shocks in time interval a, b, c)

Conscious or unconscious during the shocks: It is also clinically relevant to differentiate between patients who were fully conscious when the shocks took place and those who were unconscious before they occurred. This difference is clearly associated with different experiences. The consequent anxieties are also different (e.g. a fear of injuring oneself by falling, the fear of becoming unconscious in a particular situation or in front of other people).

from their trusted daily world and confronted with having to adapt to a whole new challenge (a life crisis). Indeed, immediately after the shocks have taken place, many already fear that they will never be able to recover psychologically.

The loss and uncertainty experienced in respect to social roles that is prompted by this traumatic experience takes the form of a catastrophic existential crisis. Therefore, our focus was how the patient is overcoming or fighting against the fear of death which has been developed (minimising its importance, being in denial, minimising the extent to which it is present or rationalising its presence). From our experience the issue of defence mechanisms should not be addressed too early. Whilst most sufferers fear death at the moment the multiple shocks occur, the defence mechanisms in the period thereafter are necessary for survival, in terms of reducing the intolerable threat and overwhelming sense of anxiety experienced.

Our therapeutic method preferred here was an exploration of how the partners and family members experience and process the event. In this way, fears can be pinpointed and worked through without immediately explanation the personal experience of the patient. However, in our experience, the fear of death is, for most sufferers, the predominant theme and is therefore the focal point of their experience and also the therapy.

From a technical point of view, treatment using a defibrillator is an extremely ingenious therapy option: it imparts a certain sense of security and can effectively stop life-

threatening heart rhythm disturbances. Sufferers undoubtedly appreciated the impressive technical possibility of the treatment and they are very grateful for all that it offers. This does not contradict the fact that patients must first mentally come to terms with living with this device and that they are psychologically traumatized and insecure after the experience of electric shocks. Following multiple shocks, the beneficial device can become the focal point of anxiety.

In our work Stern's [55] so-called “present moments” had great importance in the treatment of our traumatised patients. Often, very personal and unique relationship patterns and manners of response emerge during the traumatic situation; ones that, in a biographical context, develop as “typical” patterns and which are thus very useful in allowing patients to understand what has been experienced (see below).

In our experience, at the level of the transference/counter transference dynamic, it is of key importance that, on the one hand, the helplessness of patients displays itself and that, on the other hand, the dynamic concerning the traumatised person and each specific situational context unfolds. A common first form of transference which is very understandable and also helpful was the initial idealisation of the treating psychotherapist. Patients arrive in a helpless, frightened state of mind and have often, over weeks and months, developed a strong sense of resignation and have come to accept their depression. The possibility of treatment in a highly specialised hospital hence raises positive expectations. The patients in the

pilot study knew that the clinic has a long and successful tradition of dealing with these problems.

Patients mostly sense during the first talks that they are met with sympathy, that they are not the only people to suffer from these symptoms, and that their emotional distress is understood and can be treated systematically. In this way, a positive transference relationship develops; one which may be primary for progress and which the psychotherapist must handle in a responsible and cautious manner.

The second form of transference to be noted should certainly always be observed in the trauma therapy: one should neither over-identify and over-engage with the patient nor remain too distantly neutral. Nothing is possible without a personal relationship borne out of deep compassion and sympathy, but the monitoring of closeness and distance must be carefully observed and controlled.

An empirically unsubstantiated hypothesis of the authors (possibly one that cannot be substantiated) suggests that deep dependency conflicts are activated in people by the multiple shocks. This then reactivates layers of conflict in the patient's biography. It would appear that people with conflicting patterns of dependency prior to the onset of the disease are worse at coping with the multiple shocks and require a longer period of therapy. It is clear from a psychodynamic point of view that the total loss of any kind of control over a situation and over the progress of one's own life rouses deep-rooted dependency conflicts. Besides this loss of control, it is also experienced that the once idealised doctors sometimes become helpless helpers.

5.2.2 Eye movement desensitisation and reprocessing – EMDR

From our point of view, the integration of the EMDR method in the treatment process has had a surprisingly positive effect. Similarly, this does not mean, that effective treatment is also possible without EMDR (as the experience of one author demonstrates). Nevertheless, a calm and exclusively emotional processing is, from our perspective, an amazing tool; one which significantly alleviated the partial helplessness of the psychotherapist.

In our study the EMDR method is integrated into psychotherapy sessions and carried out according to EMDR norms. However, we modified the protocol sometimes with regard to individual circumstances. As per the standard protocol, different elements have their place, i.e. positive and negative thoughts, physical feelings, worst case scenarios and an estimation of present stress, activation of resources. Together with the patient, the worst and most stressful situations in terms of multiple shock episodes are worked out. Involved here are those situations that come to mind most frequently. During EMDR-sessions, we closely observed body language. This observation provides an indication of the extent to which the patient is under emotional distress. In the first ses-

sions, an EMDR sequence lasts about 5 to 15 minutes. In further sessions, its duration gradually increases.

For many patients, significant symptoms, mostly related to strong physical discomfort, appear during the first EMDR sessions. Often, these involve the physical problems that emerged immediately before the multiple shocks occurred. Accordingly the patients fall into a state of severe anxiety and succumb to panic attacks. Great care and frequent pauses were needed in order to allow for introspection, and for the memory of what has been experienced to subside. Afterwards, sufficient time must be available for discussion. Sequences of relaxation techniques and activation of resources are also necessary in order to reduce the high level of hyperarousal or emotional numbing.

For us, the integration of EMDR into psychotherapy seemed extremely creative. In this way, the different stages that emerge during the EMDR episodes can be viewed and analysed afterwards. Thereby, it becomes clear again and again that particular aspects of the trauma experienced – often those not initially considered – enable a more complete biographical picture to emerge. As supposed, it appears that there are, of course, very different individual options of processing experiences and that the trauma of multiple shocks is understood within very different biographical contexts. Indeed, the processing and coping of multiple shocks, is sometimes very strongly influenced by the biography of the patient. Of course, it is highly significant that traumatic experiences encountered at other times in life resurface during the EMDR session; these are reactivated by the trauma of the multiple shock event and flood back into memory. An example of the latter could be the approximately 60-year-old woman who, in the middle of processing her multiple shocks in an EMDR session (she had experienced 35 shocks in a row whilst fully conscious), raised her hand to interrupt the session and broke down into tears, recounting how she had been sexually abused by her brother during late adolescence. She reported that she had never before spoken to anyone about this and that she had largely forgotten what had been experienced at the time: this experience she could not recall for many, many years until that particular day. Another example of psychodynamic integration involving experiences that are recalled during EMDR sessions is presented below.

What could be the psychodynamic function of EMDR in our treatment?

In addition to the direct impact of the EMDR technique (for all intents and purposes, neurological), the use of EMDR for us has also an essentially subconscious role as regards the relationship dynamic. It could be, when offered by an experienced person, in a setting that imparts a sense of security, a last resort for a completely hopeless situation.

There were patients who are so desperate that they beg their doctors to explant the device or to switch it off and are thus willing to contend with the certain prospect of

death. They have experienced that no one is able to understand this existential desperation, and have all too often received well-meant words of comfort from helpless helpers, such as: "Be happy you have a birthday twice a year!"

Given that the process involved seems comparable with hypnosis, they approach it with skepticism but trust the proposed technique as a last hope for survival and see (or imagine) the psychotherapist as a person who has already seen many similarly desperate people, who very well knows how one feels, and who exudes the belief that it can be of help. The therapist is perhaps a parental figure and saviour who at a time of deepest despair allows for an emotional storm to be calmed.

The EMDR session unearths, in many cases, a detailed recollection of the traumatic situation and reactivates the trauma in an intensity that even surprises the patient. Often, only small snippets of dialogue come to light which cannot be classified immediately, but whose extreme significance is inexplicably perceptible. These in turn facilitate the directly connected psychodynamic therapy. Often further questioning is necessary and these snippets need to be "brought to life"; one must coax out fragments of memories and emotions, as those concerned do not remember them or have not awarded them any relevance. Indeed, it is not uncommon that these fragments prove to be extremely pertinent relationship episodes; ones which not only illuminate the context of the traumatic situation, but also deliver the biographical patterns of paramount importance to the treatment.

Clinical example: The biographical background of coping with ICD shocks

One female patient said during an EMDR session simply: "I am walking past three men who are smoking". The EMDR was continued and only later in the discussion was this sentence picked up. In previous detailed descriptions, she had never mentioned that people were nearby when she suffered her shocks.

This was the scene: The woman had severe rhythm disturbances and felt so unwell that she left the room. She found herself in a large room in a community centre where a friend's birthday was being celebrated. In order not to disrupt the celebration or attract attention, she left this room, fearing that her defibrillator would soon deliver a shock. She left the centre and sought out a hidden corner where she could rest against a wall for a while. Whilst she was resting against the wall, the defibrillator emitted a shock. It was only the third shock that she had received in the three years since the implantation of the device. This time, however, there was a further shock and, unfortunately, five others, at 50 second intervals.

The three men who were smoking and who were spontaneously recalled during the EMDR session were discussed later. Firstly, in an inquiring and exploratory manner, and later with a slightly surprising question directed at the patient: "Did you ask these men for

help?" Her negative response sounded as if this was a rather absurd question to ask. She said that the men had presumably noticed how bad she was and offered to help.

Further cautious inquiries prompted a strong memory jolt. In effect, the therapist queried whether it was usually rare for her to ask others for help or if she could accept help. Whilst trying to respond, she broke into a flood of tears.

For Daniel Stern, this would probably be one of those significant "present moments" in psychotherapy. All the misery of the patient's life was unearthed: an unloved and ignored child; two foster families (both parents were alcoholics) with little love and many dramatically humiliating situations. The multiple shock event was thus significantly contextualised from a biographical perspective, as essential elements re-occurred as re-enactments.

Although she was in a seriously bad condition before recounting this shock experience and suffered from severe anxiety about the prospect of a defibrillator shock, she left the room alone, without giving a signal to her husband or the brother present. She had not been able to ask the three men who were smoking for help. The architecture of her "psychic apparatus", if one may use such a technical term, had prevailed again, for the umpteenth time: "You are alone in this world and have to deal with it yourself." Calling for help leads to degradation.

After three weeks, she went home without PTSD-symptoms and any avoidance behaviour and with a clear internal plan of how to tackle the next emergency situation.

Through working with the themes present in the trauma, work is opened up in terms of relationship processing and patterns of association present in the biography. Without the intensive psychotherapeutic processing of prior traumas, this is our conviction, it is certainly not possible to work through the traumatising resulting from multiple shocks. It is likely that prior traumas significantly influence the way in which new traumas are experienced – in this case, multiple ICD shocks – and possibly even reinforce the severity of the disorders which result. Many research results show this. Additionally, treatment often shows that the trauma map collected as part of the case history needs to be revised during the treatment process because numerous repression and defence mechanisms have adjusted patient memory.

It appears to be a plausible thesis that processing trauma via EMDR releases exactly such significant memory traces because it is so little constrained (or "disrupted") by language and because, at the same time, an unconscious, deep, parental, positive transference relationship can come into being: a matter of deep non-verbal trust; simply being there, and sharing moments in life and the experiences encountered. The transference counter transference dynamic can be described as follows: the patient sits like a child in its father's (or mother's) lap, cries and

recounts a harrowing experience, is gradually soothed by comforting back strokes and then finally falls asleep with a deep sigh. A basic trust develops; a regression to deep experiences which are little understood by rational thought and interpretation, but rather through a deep existential bond. This only happens if the therapist is able to offer such a close trustful relationship.

Many, but surely not all patients experience the treatment in this way and contribute a deep-rooted trust because they feel that their terribly unacceptable fear of death is accepted and that the subject of death is not excluded. The exceptionally harrowing experience of multiple shocks, the unbearable feeling of dependency and uncertainty, and the indeterminate nature of the future are drawn out of an uncommon experience and initially brought together through sympathetic understanding and biographical contextualisation. Sometimes the processing of the trauma and activating of resources is helpful without biographical context-analysis and sometimes other traumatic events and their processing become more importance.

Trauma therapy with these patients is sometimes like accompanying the terminally ill to their death. A deep mutual feeling of closeness to death can be incorporated into the relationship without any further words having to be said. Sometimes we felt, that there is almost a philosophical dimension to the psychotherapy: two people are sitting here now, knowing that death is near. Both also know that at any time, without warning, the next ICD shock can also happen here and now. Both find it inconceivable that one can come to terms with this situation, yet confront it: they want to overcome it and, with courage and confidence, to restructure life and break down avoidance behaviour. On both sides, it is an existential contact with a seemingly unbearable fact: mortality.

Time and the indeterminate nature of life are shared in this situation; the possibility of an immediate end, and, for exactly this reason, the possible decision to live life here and now and not to reject it. These are not empty formulas. After traumatising, it is the present moment that one cannot manage without psychotherapy.

5.2.3 Behaviour therapy

Integrative approaches to therapy are currently standard in the treatment of post-traumatic stress disorders that occur within the context of disease. This means that behaviour therapy and particularly cognitive behavioural therapy (CBT) was integrated in our treatment.

Behavioural therapy is important for treating anxiety and panic disorders and their consequences (avoidance behaviour, inability to adapt, and irrational thoughts) and to modify dysfunctional cognitive processes concerning the defibrillator device. We believe that these techniques are well known and it is not necessary to describe them in detail.

Managing panic attacks, emergency situations and feelings of shame

Our experience suggests that sufferers of multiple ICD shocks have, understandably, a great fear of the next ICD shock and are most afraid of multiple shocks.

We are totally convinced that people with PTSD following multiple ICD shocks should not be treated with the same strategy as people without other illnesses who experience panic attacks. It is our conviction that it is not the therapy goal for our patients to learn how to tolerate states of panic attacks. In contrary we believe that these particular patients should do everything possible at an early stage to prevent a panic attack from fully developing. This involves a differentiated and individual treatment programme for each patient. For many sufferers, it may be extremely important to offer help in the form of a fast-working tranquillizer which is responsibly and carefully monitored. Experience shows that with each panic attack another one becomes more likely and the level of stress hormones rises further. Alternatively, the management and skilled handling of a panic attack can have a very calming effect and prompt a decrease in the frequency of such attacks. Thus, from our point of view, a responsible application of this medication is justifiable.

Clinical depression, a medical condition which is common in this patient group, would necessitate the use of antidepressants (i.e. selective serotonin reuptake inhibitors, SSRI).

One aspect of this anxiety is the behaviour displayed in the immediate situation. Hence, for many (not all), the issue of shame also plays an important role. Patients fear that, in such a situation, they could be seen as being mentally ill or drunk and the subject of ridicule. This aspect also frequently leads to extensive avoidance behaviour. Social withdrawal is often justified by the argument that one wants to spare others or prevent them from feeling bad by witnessing the multiple shock episode. It is also out of shame that some sufferers do not speak at all about their medical condition and the implanted device, and thus remain trapped in a spiral of increasing isolation. These dysfunctional cognitions are of special interest for CBT.

The preparation of a detailed emergency plan

In stressful situations it is very difficult to make decisions and emotions, including subconscious biographical motives, often control feelings and behaviour. Therefore, we developed detailed emergency plans together with our patients which are also put down on paper. These involve different situations depending on the individual concerned.

The preparation of such a plan usually leads to issues of deep social anxiety and feelings of shame being addressed thematically and so prompts their processing. The creation of an emergency action plan also leads to a conscious confrontation with the fact that a defibrillator

shock can recur at any time and that one must develop a routine for dealing with it.

Furthermore, with a view towards minimising anxiety, it is also discussed with patients that they could find out in advance of any weekend trips or holidays where there is a hospital with a defibrillator monitor at hand that is appropriate for their device.

It is also discussed with our patients that they can visit the local hospital on the second day of their holiday in order to deposit the most important medical documents and to inform the administration of the cardiology department that they will be staying in the vicinity for the following days and plan to be brought there in case of an incident. In this way, they can relax in because they know that there is a hospital with the right machine available and that their medical data is already on file there: and, thus, spend their vacation in peace.

5.2.4 Cardiac care

Furthermore, there should also be the possibility to discuss the experience of multiple shocks with a cardiologist. Without a basic understanding of the underlying illness, indications and workings of the ICD, an understanding of the experience of a multiple shock episode is impossible. Indeed, patients often seem very calmed simply knowing that an experienced cardiologist is always on hand.

The patient's trust in the cardiologic care provided is an essential component of therapy; implying that cardiologists often have to allocate much more time to these particular patients. Our experience shows that proximity to cardiology services is a key point in respect to dealing with anxiety and developing a trusting relationship with a cardiologist who takes the time to patiently discuss problems (often repeatedly).

In addition to the cardiologic consultation, increasing the patient's ability to endure stress to the heart is one of the important targets of therapy. This means that regular ergometer training should be undertaken following a thorough introduction (ideally, using an exercise electrocardiogram) and under the best supervision.

5.2.5 Relaxation techniques

Significant psychophysiological symptoms of post-traumatic disorders are to be seen in the high degree to which these people are affected by sympathetic nervous system mechanisms and in their inability to relax and to sleep peacefully. It is a subject of discussion whether traumatised patients are suited for relaxation training. In our experience, there was no contraindication: the high amount of relaxation training offered to all patients was well tolerated and found to be a highly valuable experience. The following methods were applied:

- Meditation
- Progressive muscle relaxation, autogenic training
- Relaxation massage
- Biofeedback relaxation
- Breathing therapy.

5.2.6 Psychoeducation

In the section that follows certain aspects are presented which, given their key significance, must be taken into consideration and should be integrated into the processing of the trauma. Over the years we can review to more than 50 treated patients. It is our conviction that the following aspects are of importance for our patients, because they only can cope with their trauma, if they have the knowledge, which is written down in this section. That is, why we took the headline "psychoeducation", which is part of the psychotherapeutic sessions.

5.2.6.1 Variables and variants of the traumatic situation arising from multiple ICD shocks

The delivery of even a single shock from the defibrillator is, for many people, an event that triggers intense ambivalence: on the one hand, the defibrillator is considered to be an ingenious, life-saving technical device and the shock experienced not only shows that it is actually working, but also that it is necessary and that it fulfils its function of prolonging life. Yet, at the same time, a frightening and disturbing situation arises. Uncertainty develops regarding the question of whether an immediate hospital visit is required, whether the arrhythmia is permanently corrected or will recur, how one should now behave, etc. Even if only a single shock is delivered, some patients are very alarmed for many days and develop extensive avoidance behaviour. Friends and relatives are also affected by this event and often remain highly alarmed for days and weeks.

From a psychological point of view, the delivery of a shock, as a clear signal of arrhythmia, is not only life-saving but also a reminder that one is so sick that one would have died without the device. Life being saved is also a reminder of the closeness of death. In this case both thankfulness and fear go hand in hand.

For patients, the experience of multiple shocks is very unusual, unexpected and something that was not mentioned within the context of implantation. In this respect, the event precipitates a high level of anxiety or panic because it leaves the impression that one is not immediately in control of the situation. Only when the ICD is read out can it be known what the precise nature of the rhythm disturbance was and whether appropriate or inappropriate shocks were involved. Adjustments in medication or changes in programming follow. Ultimately, however, no one can predict whether such multiple shocks will recur or not. An essential dimension of the traumatic experience becomes clear here: a total loss of control.

The situation itself is not controllable for the sufferer who also experiences that even the professionals are often watching helplessly and are unused to dealing with the situation. Even after the end of the shock and the corresponding medical explanation and problem solving, uncertainty remains as to whether such an event will recur. Indeed, no one can really make any promises and we

have become acquainted with a number of patients who have suffered from multiple shocks more than once.

This drastic total loss of control over both the illness and the workings of the defibrillator is sometimes so unbearable that those afflicted request an explanation of the device or its deactivation, thereby accepting the certainty of death with the next severe arrhythmia. This demonstrates the level of despair associated with the unbearable feeling of dependency, of being abandoned and of the loss of any type of control.

The patients we treated in this regard always immediately suffered from a severe fear of death; one which persisted for weeks, months and years (and under which their relatives also suffered). What is consciously imagined at this time differs from patient to patient. Some fear that their defibrillator will continue to deliver shocks until the heart fails and stops beating. Others are afraid that the multiple shocks will drain the battery and that they will then die from the arrhythmia. Some patients cannot believe that the shocks are sufficient and imagine that the device is defective even at the time they are experiencing the shocks. Foremost is the feeling that one does not want to suffer one's own death in such a way.

For most patients, the shocks become extremely painful as they increase in number. Patients report that they have never before suffered so much physical pain as they did during these shocks. Some also describe sensations such as electric bolts or a dazzling light shooting through their head.

During our collaboration with those affected we gradually realised that the experience of the traumatic situation is multi-layered.

First, there is the intrapsychic reaction that has been described: the inexplicability of several shocks in immediate succession, the fear of death that instantaneously takes hold, one's own helplessness and the total loss of control over the situation, all of which lead to an absolute uncertainty about the immediate future.

The second element is the reaction of those immediately present including those summoned for assistance.

Meanwhile, the third element mostly involves the pre-conscious or unconscious dimension of the traumatic experience, which involves the individual's biographical context.

5.2.6.2 The nature of traumatic symptoms

Post-traumatic disorders arise both immediately and also with a certain period of latency. Many people suffer from severe panic attacks and catastrophic helplessness from the moment the multiple shocks occur, whilst others only realise after a few days (or a few weeks) what exactly they have experienced and are unable to find peace of mind from then on. Night and day, for days, weeks, months and years, they think that with each change in their physical condition new shocks could recur.

Unlike other post-traumatic disorders, those involving ICD shocks are not only triggered by situational factors, but also by physical factors. Time and again patients attribute

a certain situation as being responsible for their having received multiple shocks, for example, driving a car, the electric motors of underground trains, a heated argument or strong aggression. But, almost always, certain physical conditions or changes in feeling, specifically any changes felt immediately before the multiple shocks occurred, are now seen as particularly threatening. What is interesting here is that experiences can be very different and individual. However, it can be generalised that these physical triggers are responsible for very high levels of anxiety and panic.

The most common trigger symptoms are: premature beats, bigeminy, strong inner restlessness, a sensation of severe rhythm disturbances, nausea in the stomach and/or intestinal area, pulling in the legs, and a stabbing pain in the chest, back, etc. Similar to people who have survived a bad car accident for whom even the flashing brake lights of cars ahead can trigger a severe autonomic reaction and a panic attack, so it is the same case with these patients in terms of the above mentioned physical reactions. Patients may pause in the middle of an activity or whilst talking and withdraw themselves or lie down, because they fear that the sensations their body is experiencing are an immediate cue for the next shock episode.

5.2.6.3 The context of the shock episode and the assistance offered

From our experience of numerous therapies, it was found that the electric shocks delivered by the defibrillator were only one side of the traumatic event. However, it is clear that many patients experienced massive anxiety during these shock episodes.

At the same time, however, it became apparent that the nature of the situative and social environment of the shock episode (both prior to and after the event) could also entail further traumatisation. Thus, many patients experienced the helplessness of the helpers summoned very dramatically and as part of the traumatic constellation.

Some patients also experienced that the professionals summoned reacted in a completely unprofessional way or adhered to certain rigid routines that were detrimental to their welfare.

Three clinical examples

Example 1: *A female patient reports, in floods of tears and with a combination of great despair and intense anger that she was lying in an ambulance, receiving a shock from her defibrillator about every three to four minutes. At a certain intersection, the driver of the ambulance did not take the shortest route to the hospital, but turned left. She asked the assistant who was in the back of the ambulance seated beside her and helplessly observing the multiple shocks episode, why they were not driving directly to the hospital but taking a detour. It was explained to her that they first had to go to another location to pick up the emergency doctor before driving to the hospital. This detour*

meant that the patient had to be driven around the neighbourhood unnecessarily for a total of 20 km. The emergency doctor who was picked up could do nothing to stop the multiple shocks. The patient experienced all this as a second traumatising (a so-called “man-made disaster”); one which still triggered serious effects months later.

Example 2: A female patient suffered multiple shocks during the course of a walk whilst staying in a very remote rehabilitation hospital. Altogether, she registered nine shocks in close succession. The nurses summoned and the weekend duty doctor were all unable to help her. Overall, she experienced considerable helplessness and did not feel reassured and secure. Finally, given her personality, she took the situation into her own hands. She demanded that the doctor at least hold her hand and administer a sedative. Secondly, she insisted that an ambulance be called to transport her to the nearest cardiology department, as no one at the rehabilitation hospital was familiar with the defibrillator. She then had to be taken, 75 km in total, by ambulance in order to reach the nearest big city. Months later, whilst recounting this incident, she was extremely angry and stunned by the “inhumanity” of the people involved.

Example 3: A man suffered several shocks and the ambulance crew of the emergency response vehicle called was unable to help him. At the same time, the instruction repeated to the members of the crew was: “Please do not touch this man, otherwise you will also receive an electric shock” – unfortunately, quite a common misperception.

This patient came to realise that the professionals had no experience whatsoever of the defibrillator and its implications, and were completely misinformed as to the nature of his physical condition.

Thus, the particular situations of many of the patients treated could be reconstructed and included, in addition to the physical aspects of the electric shocks, as well as the social context of interpersonal experience including disappointment, not feeling safe, not feeling supported, and the helplessness and confusion of the people providing assistance. For some came on top of the trauma of multiple shocks the trauma of an inadequate treatment. This is extremely important in terms of the psychotherapeutic processing of what has been experienced. In almost all cases, the discovery of this additional stress from the social context led to a significant and lasting relief. Finally, patients could, for once, explore for themselves how they had felt in the situation and why they felt so abandoned.

In all cases, the gentle processing of these “interpersonal” contextual components and the working through of feelings of anger and disappointment led to significant psychological relief. This is because these aspects of the experience had remained marginal and unprocessed in the memory of those concerned.

5.2.6.4 Resistance to the deletion of the traumatic experience

As patients are totally unprepared for the experience of multiple shocks and the following appearance of anxiety, panic and avoidance behaviour and the long lasting constraints it is helpful to explain the mechanism of anxiety disorders. Their experience has to be viewed as completely out of the every day experience and has such significant psychological consequences, that it is an excessive demand which is not manageable without professional help.

It is, therefore, very helpful for patients to acquire knowledge about how humans process fear, the outcome of avoidance behaviour, and also about the learning mechanism itself. It is only in this way that they are able to understand their own behaviour (including avoidance behaviour) and their ever-increasing anxiety. It is also important to understand, that their psychological reaction is a reaction that appears in every person who has this experience.

One very striking example involves a man who, five years previously, had received a great number of defibrillator shocks within a single episode and had not been able to recover psychologically ever since. His life became ever more restricted: he could no longer work, had fewer and fewer friends, hardly left the house, had given up his hobbies, and, finally, could only leave the house accompanied by his partner. He was completely distraught about this state of affairs and also somewhat angry with himself, as he had not managed to free himself from this cycle of anxiety. The man himself was well-educated and had had a very impressive career as a manager. He was used to having a high level of self-efficacy and to achieving whatever he wanted to do. Now he had to experience himself in a totally new way. For him, it was very important to figure out why he had become increasingly distraught over the past five years.

From the perspective of behavioural therapy, it is significant for the cognitive restructuring process that those concerned understand why their condition continually deteriorates and does not improve. It is essential here to understand how irrational beliefs generate a cycle of anxiety and intensification, cognitive interpretation (causal attribution) and the development of avoidance behaviour.

Many patients are surprised and very unsettled by the fact that the emotional memory of the multiple shock episode does not fade away entirely, or only very slightly. They feel great anxiety and panic, even after many months and years, when the corresponding trigger factors (body sensations, particular situations, strong emotions) are present: the memory of the multiple shocks is so vivid and forceful that it feels as if the event happened only a few days ago. There is no erasure of this memory and often not even a lessening of the intensity of the emotional reaction.

It has emerged from our work that it is important and helpful if patients are provided with a reasonable explan-

ation here, as this lowers the feeling of having been abandoned and being the only ones to feel this way and that others manage better. The following words reveal the typical condition of those traumatised: "I experience and feel differently to other people; I find myself in a world of experience that is far removed from daily life and feel lonely and abandoned".

An understandable example, which patients are reminded of, is that of the classic conditioning experiment by Ivan Pavlov that almost everyone knows from biology class. Clearly, an electrical shock administered from within the body is a learning event of extraordinary intensity and almost resistant to deletion. In the process of conditioning, the electric shock becomes not only linked for life with the surroundings (the living room, shower, etc.), but also with the bodily sensations that immediately preceded it. This leads to an almost hypochondriac self-observation, as well as an over-interpretation of the cues pointing to the shock and an over-estimation of their significance. This, in turn, accounts for the emergence of constantly increasing avoidance behaviour. The stability of the learning process is very strong and one can describe it as almost deletion-resistant. All of the patients known to us remember in detail the multiple shocks, the situational context and the preceding physical sensations – even years later.

Unfortunately, this conditioning is resistant to deletion: for a hundred replays of the situation (e.g. with premature beats, when shaving, showering, etc.) do not lead to the anxiety being reduced. A memory of the event and the situational context persist even after therapeutic trauma treatment; only a lowering of the emotional distress and memory is attained, i.e. the anxiety and panic no longer arise (or at least not so severely).

For sufferers and their families it is important to know of these associations, as it is through this that they are drawn out of their feelings of isolation.

Often, after multiple shocks, people experience that they are unable to convey what they have undergone. One of the most common sentences used is: "If one has never experienced something like this, one cannot even imagine it". The uncommon nature of the event, its suddenness and inexplicability, linked with feelings of helplessness and hopelessness, prompt a feeling of existential threat and loneliness in the fear of death. In the ensuing period, sufferers seek explanations but, at the same time, are wary about the ones offered by their cardiologists. They hardly dare suspect a medical error, doubt the device or fear that their heart is evidently so damaged that not even 20 or 40 shocks could help towards synchronising the heart rhythm. Therefore, it is only natural to conclude that this can happen again at any time and that death is imminent.

Max Frisch brings this point out beautifully in "Mein Name sei Gantenbein – Let my name be Gantenbein" (a novel that revolves around the theme of the psychological processing of a severely stressful experience; originally published under the title "A Wilderness of Mirrors"): "A man has had an experience; now he looks for a story for

it. One cannot live with an experience that doesn't have a story, and sometimes I wonder – what if someone else has the story of my experience..." (Mein Name sei Gantenbein, Suhrkamp Taschenbuch 1975, Page 11).

The experience of multiple ICD shocks leads those affected to begin an intensive search. They try to fathom what could be the cause of what happened. For the psychic apparatus, it appears to be absolutely unbearable if one is delivered into a situation that is totally random and without any underlying reasoning; a situation that has no precursors and no causal links. Thus, one begins with an analysis of the previous minutes, hours and days; one looks for prior conflicts, emotions and moods or even situational contexts. This search is influenced by unconscious motives and past, long-repressed experiences. The idea behind this search for a conclusive cause has a deep significance, as it were, a previously established focal point: When I find a reason for the multiple shocks, I can then prevent a repeat of the traumatic shock situation experienced by a corresponding change in behaviour, a change in lifestyle or by avoiding specific situations (e.g. stress).

6 Institutional setting and dosage

The treatment programme took place within a very special institutional context. The Department of Psychocardiology belongs to the Kerckhoff Clinic in Bad Nauheim, Germany (one of the greatest heart and thorax centres in Germany). Within the Kerckhoff Clinic there is a large department of cardiology (connected with the University of Giessen) with electrophysiology and ICD services, a unit for heart surgery, a clinic for angiology, as well as a cardiac rehabilitation clinic. Thus, there is the possibility for round-the-clock comprehensive diagnosis and therapy, and immediate emergency care. The interdisciplinary cooperation is very good and the integration of the Department of Psychocardiology is excellent.

Our experience suggests that an inpatient setting has many benefits. The atmosphere within a hospital, conveying a feeling of security and thus lowering anxiety, would favour inpatient therapy. Sometimes a hospital setting, by liberating patients from their home environment and integrating them into a social milieu outside their everyday experience, facilitate self-observation and introspection. Because people with an ICD are often physically very ill and become quite insecure after multiple shocks, it would appear crucial that inpatient treatment takes place somewhere near a cardiology department (if such comfortable institutional factors that we had, are not given). Patients need to be reassured that cardiac help and treatment is close at hand in order to encourage them to undergo physical activity. Anxiety and tendencies to avoidance behaviour leads to a very sedentary lifestyle and the necessary training to significantly increase the heart rate, such as ergometer training or stair climbing is very difficult for our patients, because they are afraid,

that an increase of heart rate is followed by tachycardia and new shocks from the ICD.

Additionally, it is often difficult for psychotherapists providing treatment to deal with difficult questions related to cardiology (e.g. the side-effects of drugs, changes in medication, new diagnostics or a reprogramming of the ICD) without support from experienced colleagues.

Dosage

In our experience the dosage of stationary therapy was high: 4 or 5 times a week the patients had a psychotherapy session of 75 minutes; 3 times a day they had relaxation training and additional elements of cardiac rehabilitation (i.e. ergometer training, gym, breathing therapy). Altogether, this implies around six hours of therapy per day. The dosages vary from 8 to 20 days and depended on the duration of PTSD-symptoms.

Notes

We thank all our patients for their confidence and open mindedness and we thank the team of this journal for their excellent support.

When this paper is published we treated more than 70 patients and we are very glad, that our experience and patience is rewarded by the good condition of nearly all of the treated patients. We hope that many psychotherapists and clinics worldwide will offer help to those unfortunate patients.

German version

A German version of this article has been published with the title „Behandlungsmanual zur Psychotherapie von akuten und posttraumatischen Belastungsstörungen nach ICD-Mehrfachschocks“ [56].

Authorship

My co-authors, Georg Titscher, Ludmila Peregrinova and Holger Kirsch, have contributed significantly by way of their critical discussions, by accompanying the overall process, and by assisting in the compilation of this manual.

Competing interests

The authors declare that they have no competing interests.

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Please cite as

Jordan J, Titscher G, Peregrinova L, Kirsch H. *Manual for the psychotherapeutic treatment of acute and post-traumatic stress disorders following multiple shocks from implantable cardioverter defibrillator (ICD)*. *GMS Psychosoc Med*. 2013;10:Doc09. DOI: 10.3205/psm000099, URN: urn:nbn:de:0183-psm0000991

This article is freely available from

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Published: 2013-12-18

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