Psychotherapy in Neurorehabilitation

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ABSTRACT

The range of treatments available for neurorehabilitation must include appropriate psychotherapeutic approaches, if only because of the frequent occurrence of psychological co-morbidities, not always diagnosed and appropriately treated. The current situation is characterized by a large variety of available treatments, dearth of treatment studies and proven evidence. This state of affairs emphasizes the diversity and complexity of neurological disease. The presence of collateral psychological problems in particular requires individually tailored treatments. Damage to the CNS requires that particular attention be paid to the closely interwoven functions of the body and mind. What follows is the need for multimodal psychotherapy, grounded in neurology. Taking into account the various treatment approaches and regimens, therapy needs to be directly integrated in a meaningful, coherent way into other measures of neurological rehabilitation. Against this background, the paper gives an overview of clinical needs and therapeutic procedures as well as regarding the requirements and perspectives in the further development of psychotherapy in neurorehabilitation.

Psychotherapy: A Task of Neurorehabilitation

The high prevalence of comorbid mental disorders requires psychiatric-psychotherapeutic and psychosomatic measures that go beyond the original purpose and bio-psychosocial orientation of rehabilitation. In addition, damage to the CNS can directly affect emotional, cognitive and social functions and thus impair a person's expressive behavior and coping mechanisms. Unlike other medical disciplines, neurology is characterized by a close interconnection of somatic and psychological functions – as well as reciprocal influences [1].

Psychological disturbances in neurologically ill patients have an impact on compliance, length of hospital stay, achievable functional and socio-medical outcome as well as the quality of life [2]. Likewise, there is suggestive evidence that disease risk and mortality are adversely affected by the presence of psychological disorders [3]. A targeted treatment of mental disorders, including psychotherapeutic measures, is therefore indicated, if only from a purely neurological perspective.

Due to their specific competence, neurologists play a role that is both central but neglected in the treatment of mental disorders in neurologically ill patients as well as in clinical practice. Differentiated psychotherapeutic treatment designed to take into account individual neurological findings is rare. The extensive lack of systematic scientific studies and related well-founded information is an expression of this situation while maintaining it. Therefore this overview is intended to focus attention on activities to improve this situation as well as outline the clinical foundations that facilitate direct integration of psychotherapeutic measures into neurorehabilitation. The results of a literature search using the terms "neurology", "psychiatric illness", "neurorehabilitation" and "psychotherapy" should serve as an introduction.

Comorbidity of Neurological and Psychiatric Disorders

Data regarding the prevalence of comorbid mental disorders are largely available for the most frequent neurological disorders – with

▶ **Table 1** Prevalence of comorbid psychological disorders among selected neurological illnesses in %.

Neurological illness	Depression	Anxiety	Other	
Seizure disorders	11–80 [4]	10–25 [5]	Schizophrenic psychosis: 2–9.1 [4] Bipolar disorder: 12 [6]	Addiction: 3 [7] (marijuana) ADHD: 12–37 [4]
Parkinsonism	20–50 [8]	25.7–49 [9, 10]	Apathy: 12–45 [8, 10] Hallucinations: 15–40 [11] Impulse control disorders: 6–36 [10, 12]	
MS	4.8–46.9 [13, 14]	8.7–54.1 [14, 15]	Schizophrenic psychosis: 0.8–4.7 [15, 16] Bipolar disorder: 0.5–5.8 [16, 17]	Alcohol: 13.6–14.6 [17, 18] Other substances: 1.5–7.4 [16, 19]
Dementia	32–77 [20, 21]	62 [21]	Apathy: 36–71 [20, 21]	
Brain tumors	2.5–44 [22, 23]	5–12 [24, 25]	Acute stress disorder: 19 [25] Adjustment disorder: 15 [25]	Apathy: 35.2 [26] Schizophrenic psychosis: 22 [23]
Stroke	16.8–47 [27–29]	20–29 [28, 30, 31]	Apathy: 36.3 [32] Fatigue: 25–85 [33] PTSD: 23 [34]	
Subarachnoid hemorrhage	5–50 [35, 36]	27–54 [35]	PTSD: 18–37 [36]	
Traumatic brain injury	27 [37]	37 [38]	Chronic pain: 51.5 [39] Sleep disorders: 25–29 [40] Schizophrenic psychosis: 1.35–9.2 [41]	
Chronic back pain	2.5–13.7 [42–44]	0.2–9.5 [42–44]	PTSD: 0.0–7.4 [44] Somatization: 14.9 [42]	Sleep disorders: 10 [43] Alcohol: 0.0–5.1 [44]
Migraine	16.8–47 [45, 46]	30.1–31.2 [45, 46]	PTSD: 25–40 [45, 47] Bipolar disorder: 5.9–9 [48]	

significant differences depending on the population being studied, the size of the sample, the nature and severity of the neurological disorder and the method of examination used (▶ **Table 1**).

The prevalence of depressive and other psychological disorders in neurology patients treated on an inpatient and on occasion on an outpatient basis is higher than in the general population [15, 49]. The order of magnitude may be questionable, but the need for specific treatment is undeniable [3, 50, 51].

Depression and anxiety are frequent, so to speak appropriate accompanying symptoms of neurological disorders. Situation-dependent phobic and social phobia anxieties revolving around functional impairments are frequently found, as well as addiction and pain. Trauma- or stress-response disorders can occur, depending on the origin of the illness and impairment. Physical manifestations and health problems can take the place of psychological symptoms, especially as amplifications of neurological functional impairment [52–56]. Likewise, purely functional neurological impairments should be anticipated. Primary and secondary pain disorders represent an additional field of inquiry. Etiologically, both organic mental and functional psychological disorders should be expected. Possible side effects of drug treatment must be also be taken into account.

Suicidal ideation and behaviors are frequent [13, 57–59]. More than the etiology of the disease, the type and extent of the impairment and its subjective assessment influence the occurrence of suicidality which can be masked by just neurologically-appearing symptoms, such as fatigue [60].

Functional neurological disorders in particular evidence the close interconnection of neurological and psychological aspects in neurological disorders makes it obvious how diagnostics and therapy require both neurological and psychiatric-psychotherapeutic and psychosomatic competence. The current high scientific and clinical interest in this topic is shown by the fact that a separate volume, “Functional Neurologic Disorders” (139) has recently appeared in the “Handbook of Clinical Neurology” [61].

Psychotherapeutic Procedures in Neurology

Psychotherapy in neurological rehabilitation is characterized by a wide variety of concepts and procedures (▶ **Table 2**), which makes the recommendation of certain procedures more difficult, especially since there are no conclusive comparative studies.

In the case of frequently missing or weak effects, existing therapy studies particularly show the efficacy of cognitive behavioral therapy-oriented interventions [62–65]. Psychodynamically-oriented procedures can however be primarily indicated and useful with respect to personality or conversion disorders, and in the treatment of existential issues [66, 67]. Recent decades have seen the development of targeted therapeutic approaches due to a growing focus on the needs of patients suffering from chronic illness and disability. In narrative procedures, disease and disability are treated in the context of life history [68–70]. Interpersonal

▶ **Table 2** Frequently identified psychotherapeutic procedures.

Cognitive behavior therapy
Psychodynamic therapy
Psychodrama
Interpersonal psychotherapy
Narrative psychotherapy
Client-centered psychotherapy
Mindfulness-based psychotherapy
Biofeedback
Auto- and heterosuggestive techniques
Relaxation techniques
Music therapy
Art therapy
Body-oriented psychotherapy

psychotherapy also supports focusing on the challenges posed by the illness [71]. Body-oriented psychotherapy, music therapy, art and creative therapy are advantageous for physically ill people with communication disorders or whose perception of illness is primarily somatic [72–75]. In addition to auto- and heterosuggestive approaches, a variety of complementary procedures are used [76–78]. Mindfulness-based interventions provide an obvious benefit [79–83]. Neurological functional therapies benefit from incorporation of psychotherapeutic aspects [84, 85]. Neuropsychological treatment integrates psychotherapeutic approaches [86]. In addition, counseling of family members and, where necessary, couples and family therapy interventions are a complement.

However, the variety of approaches and procedures and their overall unsatisfactory evidence do not necessarily represent a shortcoming. Illnesses of the CNS are complex disorders, made even more complicated by the occurrence of psychiatric disorders [87]. It is therefore not to be expected that a single psychotherapeutic approach will cover all essential therapeutic needs. An acknowledged model of psychotherapy after brain damage is based in important aspects on concepts of analytical psychology, but also relies on behavioral therapy and cognitive elements [88]. Integrative treatment models that combine different approaches are obviously advantageous [89].

The Psychotherapeutic Approach

To date, there is still insufficient research and conceptualization regarding the adaptation of psychotherapeutic procedures to neurological functional impairments. Nevertheless, some recurring tasks can be formulated which have to be taken into consideration during treatment.

Where established criteria indicate a definable psychiatric disorder, consequent therapy will primarily be based on relevant guidelines and treatment recommendations. The sooner the psychological disorder is understood as an autonomous disease independent of the neurological event, the better psychotherapy can be added as a prime adjunct which is complementary to neurorehabilitative treatment. Even then psychotherapy will have to be adapted to the complexity of the condition. Compared to working with physically healthy people, an approach offering more structure is needed, as well as an active, involved and emotional support. In particular psychotherapeutic interventions must be oriented to the individual patient's functional limitations, which frequently include limited psychophysical resilience. Regardless of the procedures eventually used, it is important to take into account certain recurring tasks arising from the combination of neurological and psychological disorders.

Treatment Begins With the Diagnosis

Without targeted diagnostic attention, mental disorders remain easily undetected in physically ill patients. Criteriologically, sub-threshold psychiatric disorders should be expected [90]. Numerous overlaps on the symptom level complicate the differentiation of symptoms which can be explained as a direct physical consequence of organic damage. At the same time, lack of a somatic disease origin cannot be relied on as a criterion. For the patient, the coincidence with physically-induced complaints facilitates somatization; for the therapist, the clinically obvious focus on the physical disorder and disability compromises the recognition of the elements of the psychosomatic disorder.

It is true that a single influencing factor such as organic brain damage can dominate the clinical picture. The patient's problems are generally better understood if the therapist presumes a combination of clinical issues, variously presenting as proportions of cognitive deficits and the loss of other instrumental abilities, of brain-related disturbed behavior and interaction. The approach should also be based on understanding the functional psychiatric or psychosomatic components of the disorder, as well as the biography and personality of the patient, the patient's preferred management strategy and other contextual influences. Preparation for psychotherapy should include the neurological and psychological findings, supplemented by a differentiated functional and social-medical assessment, which takes into account the treatment context.

Illness and Life Management

Managing an illness goes beyond improvement and compensation of the consequences of the disease and the psychological processing of disorder-related events. Personal reorientation is indispensable if the patient's relationship to the self and the world are doubtful, and its success may require clarifying unrelated, even long past life experiences and events. Existential questions, guilt and shame, anger and bitterness, fragile self-esteem and vulnerable autonomy present persistent challenges [91]. The understanding the patient has of the illness and his/her future as a patient constitutes an important primary starting point for therapy [92]. As the duration of the illness and disability increases, coping with residual impairments and best possible participation in life activities increasingly becomes the focus of therapy.

Coping behavior itself can be a reason for an intervention. When managing severe impairments, a frequently observed "forced management attitude" with active negation of emotional (psychological) neediness, high need for control and information and high activity

level can offer a great advantage. In the long run, however, this can be sustained only at the price of increased psychophysical exhaustion, and will ultimately lead to manifest psychological problems [93].

Traumatising psychological experiences occuring or reactivated in context of the illness may require targeted interventions. In addition to full-blown post-traumatic stress disorder, seemingly nonspecific complaints should be expected, with pain or somatoform symptoms as the main focus [94, 95].

Changes in the Personal Environment

Even though the patient succeeds at managing the illness and personal issues, stressful changes can occur in the patient's personal environment. Including close relatives makes sense not only regarding joint daily coping with the illness and its consequences, but also takes into account shared psychosocial burdens while opening up possible treatment resources [96]. Other aspects include past conflicts, relationships and partnerships, and, especially among young people, sexuality.

Direct involvement of the patient in the sense of shared decision-making or empowerment is a necessity, especially in the case of chronic physical illness, not only with regard to medical treatment – the clarification of relevant issues regularly extends into psychotherapy. Since chronic illness is accompanied by a medicalization of everyday life, patients and their relatives need to learn how best to deal with issues of care and treatment [97]. Psychotherapeutic need for action is also found regarding socio-medical questions requiring active utilization of adapted occupational therapy measures.

Organic Psychiatric Disorders

When planning and implementing psychotherapeutic measures, reduced psychophysical resilience and other limitations that hinder adequate cooperation must be anticipated, particularly regarding executive impairment, motivational problems, emotional disorders and understanding of the illness, as well as other impairments [98]. However, the presence of organic brain damage does not rule out psychotherapeutic intervention – on the contrary. Mental disorders can sometimes also manifest themselves in the form of functionally altered emotional or cognitive impairments, and in any case affect the course of the disease as well as neuropsychological diagnosis and therapy. A differentiated behavioral analysis or a psychodynamic model also creates the prerequisites for an optimal use of action-oriented methods [88].

The Sick Body

The body plays a significant role in the psychotherapy of neurologically ill patients beyond an attempt to alleviate symptoms and improve management of the disability. Physical disabilities determine a framework for experience and action in which patients or disabled persons will preferentially express their psychological condition as well as their personality and life experiences. This is especially true of chronic pain, which may originate from psychic trauma tied to bodily experiences, but applies variously to all physical symptoms, and even more so with respect to functional neurological disorders. Once understood, the expressive and interactive aspects of the body can properly guide the direction of the psycho- and functional therapy [99, 100]. These aspects must be kept in view for all therapeutic and neurorehabilitative measures and should likewise be targeted in functional therapies. Body psychotherapeutic procedures address them right from the start [101].

Integrated Therapy

To the extent possible, integration of neurological, neuropsychiatric, functional, neuropsychological and psychotherapeutic measures is necessary in the disorder-specific treatment of comorbid psychiatric disorders. Based on individual need, the multimodal psychotherapeutic intervention should combine information, education and exercise, more narrowly defined individual psychotherapy as well as complementary approaches.

Physical illness and functional disabilities allow ample scope for action, causing psychotherapists with little experience in neurology to easily lose the necessary broader perspective. Psychotherapeutic work with neurological patients requires thorough medical knowledge as well as openness to psychosocial issues. Given the complexity of the task, the treatment of comorbid mental disorders necessitates interdisciplinary teamwork. The findings of all disciplines define a complex of conditions containing the possible influencing factors which form the basis for functional impairments and symptoms. Relying on this, hypotheses are generated as to the possible interaction of different elements in the manifestation of the disease – mutually reinforcing or mutually weakening – and as to which diagnostic and therapeutic requirements may result from the individual findings and hypotheses and their aggregation. In the form of a continuous feedback process, the results of the treatment measures based thereon are then included into the narrowing and updating of the complex of conditions and consequently into the resulting diagnostic and therapeutic interventions [102]. An overarching conceptual framework for this work is provided by systems theory comprehension and action models, including the investigator's own role as well as that of his/her phenomenological modeling [103–105].

Summary and Outlook

Psychotherapy in neurorehabilitation is a developing discipline, tasked with managing a wide variety of clinical objectives. Only broadly-based, bio-psychosocial models and treatment approaches can adequately take into account the mostly complex illness cases – both diagnostically and therapeutically. Furthermore, development and application of specific psychotherapeutic interventions which are geared to the needs and abilities of neurologically ill patients are a necessity. Finally there is a need for training and continuing education for all therapists engaged in neurorehabilitation.

The interdisciplinary approach of neurorehabilitation itself creates favorable conditions for the direct integration of psychotherapeutic measures. However, it is necessary to utilize them. Thus the special role of psychotherapy in neurorehabilitation, requiring an integration of different models of comprehension and action,

creates a field for the further development of psychotherapy as a whole.

Conflict of interest

No conflict of interest has been declared by the authors

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