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ACADEMY OF LIFE PROGRAM FOR A PATIENT WITH SEVERE TRAUMATIC BRAIN INJURY TO THE FRONTAL LOBES

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Background

Case presentation:

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SUMMARY

The purpose of the present study was to evaluate the impact of the Academy of Life program on a patient with an extremely severe TBI and behavioral changes, who did not benefit from a long-term program of holistic rehabilitation for TBI patients. The patient, BA, a 42-year old male, suffered a massive cranio-facial injury with significant loss of tissue in the left frontal lobes after a motor vehicle accident. He was operated for a massive hematoma and remained in coma for 3 months. After awakening, he began walking, writing complete, sensible and grammatical sentences, and making rapid progress every day, but he showed serious attention and memory disturbances. Half a year later he also developed severe self-awareness and behavioral changes, characteristic of frontal syndrome. These difficulties made him dependent upon others and unable to function by himself in many situations of everyday life. Only a little progress was made after traditional rehabilitation. A personalized version of the Academy of Life Program was applied, with the active assistance of his family. Over the course of treatment, most of BA's cognitive dysfunctions resolved. After one year of treatment considerable improvement was achieved. He regained self-awareness and frontal syndrome was reduced.

The present case suggests that the prevailing views regarding the inadvisability of rehabilitation of frontal syndrome after TBI should be reconsidered.

Key words: frontal syndrome, cognitive dysfunction, neuropsychological rehabilitation

INTRODUCTION

The holistic approach, with community-based rehabilitation and “Academy of Life” programs for brain injury patients, was introduced to the rehabilitation center at Witkowice, Poland, by Adam Pachalski (1984) and elaborated by Maria Pachalska (1979; 1980). It was examined for evidence (validity, reliability, dimensionality) of outcome measures for persons with TBI participating in a home- and community-based rehabilitation program (Pachalska 1986). As the name implies, this approach aims to include the whole person in the rehabilitative process. Even beyond the boundaries of the person, the holistic approach seeks to include and develop the person’s social and physical environment.

Pachalska (1986) suggests that in this style of rehabilitation, not only are the patient’s weaknesses identified for targeted intervention, but the patient’s strengths are also highlighted for further development in advancing toward the goal of a return to a normal life in the community. Family and friends are included in the process, and social and community agency support systems are secured with the patient to sustain the process of community re-integration.

Because of memory and higher-order cognitive impairments, the patient often is unable to carry over issues to later sessions with a psychologist, even later that same day. Conversely, when situations arise in which cognitive rehabilitation techniques may be reinforced during psychotherapeutic sessions with the psychologist, the team psychologist must be prepared to step into the role of cognitive rehabilitation therapist. Almost daily patient reviews with the entire team are required for team members to effectively step into each other’s roles in a way that is consistent with the overall rehabilitation plan and is informed by the disciplinary expertise of individual team members (Locke et al. 2008).

The Academy of Life

The Academy of Life program has been developed in the Reintegration and Training Center of the Foundation for Persons with Brain Dysfunctions in Cracow, Poland. After a TBI patient has been discharged from the inpatient clinic, a standard program of comprehensive outpatient rehabilitation is offered, using a multidisciplinary, strategic approach, which has been more fully described elsewhere (Pachalska 1986; Pachalska et al. 2000; Pachalska et al. 2002; Talar 2002; Talar et al. 2002; Pachalska 2003a, 2003b). In addition to periodic follow-up examinations and occasional inpatient stays for intensive exercises, those patients who are able and willing to do so are enrolled in a program we call the “Academy of Life.” Early forms of this kind of outpatient group rehabilitation have been in use for some years in the rehabilitation of aphasia patients (Pachalski 1984; Pachalska 1986, 1999), and the program has been updated and adapted periodically for TBI patients, until it was implemented in its current form in January of 2003. Neuropsychotherapy (Prigatano 1994) constitutes an essential element of the Academy. As the name of the program indicates, the Academy of Life is presented more as an educational program than as an avowedly psychothe-

rapeutic one, which for reasons specific to Polish culture makes participation in it more acceptable for patients who would balk at being labeled “mentally ill.” Thus the participants are referred to as “students,” and the setting (typically a classroom located in the same building as the inpatient facility) has a distinctly academic, rather than hospital atmosphere. The “instructors” are neuropsychologists, neurolinguists, speech therapists with a specialization in neurological speech disorders (known as “neurologopedists” in Polish terminology), physiotherapists, student interns from the Rehabilitation Clinic, psychology and speech therapy students from local colleges, and occasional volunteers.

The theoretical basis for the entire program comes in particular from microgenetic theory (Brown 1988, 2000, Brown & Pachalska 2003), which emphasizes the dynamics and direction of change in different dimensions of time, and the heuristic approach (Pachalska & MacQueen 2002, 2002a), as opposed to the attempt to measure mental states in order to derive algorithmically a list of deficits and possible remedies. Microgenetic theory also informs the way we think about perception and action, emphasizing the active dimensions of perception and the passive dimensions of action in the face of circumstances that constantly change. This is particularly important in the case of TBI patients, who are mostly young and active people who were just beginning or developing their adult lives and careers when the accident seemed to have interrupted this process. The emotional reaction to the loss of potential at this stage in life often leads to depression, while in other cases there is good reason to suppose that lingering problems with consciousness may well represent an unwillingness to confront reality (though this supposition, based on clinical practice, is not easy to prove empirically). Suicide attempts in this patient population are not unknown, and in many cases are only thwarted by the patient’s physical limitations. Psychiatric consultation is required in such cases (cf. Pachalska 2003).

Students begin attending the Academy before discharge, and are then encouraged to return for meetings as frequently as possible (at least once a week if they live in the community, no less than twice a month if they live farther away). In fact, the students very much enjoy their participation and seldom need to be encouraged to attend more often; when problems with attendance arise, they are almost always the result of transportation problems involving the patient’s family. Sessions are held daily in the late afternoon, and last from one to two hours, depending on the number and type of activities. Some sessions are highly structured, and all students participate in the same planned activity, while in other sessions the students break up into smaller groups for conversation or special activities. Occasionally special lecturers are invited to address topics the students are especially interested in, and in some cases former students come to help and to share their experiences.

From time to time special interest groups are formed with 5-8 students who would like to pursue a particular activity or interest together. At present, for example, a group of Academy students are learning English under the tutelage of a volunteer, a doctoral student in English who is doing research on phonological

disturbances in TBI patients who knew or were learning English before their accident.

The therapeutic elements that are especially stressed in the Academy's program are as follows:

- *building an accurate cognitive picture of brain injury and its consequences.* A great deal of fear and anxiety results from patient unawareness of what has happened to them and what they can expect in the future. The same is true for the caregivers, who often do not know why the patient is acting in a certain way, whether this is normal or not, or what (if anything) can be done.
- *learning from each other.* TBI patients can get a much better sense of what is normal in their situation, and what is not, by talking to one another about shared problems. They can also learn many practical coping strategies from each other. We have frequently observed patients characteristically slouching in their wheelchairs, who, upon seeing another patient slouched in the wheelchair, unconsciously begin to straighten themselves.
- *learning to function in social situations.* In any catastrophic illness the patient often tends to become extremely egocentric, in a rather literal sense of that term. Everything seems to revolve around MY illness and MY attempts to cope with it. A disturbed sense of personal identity in most cases exacerbates this problem; the person with little or no sense of the boundaries of the self typically vacillates between being utterly passive and usurping the rights of others. The need to function in social transactions with other patients who may be in worse condition than oneself often gives many patients the first impetus to get out of their pathological concentration on themselves. This also begins the process of rebuilding a social identity: what does it mean to belong to a group?
- *building a realistic self-image.* By comparing themselves to other TBI patients, the students participating in the Academy of Life begin to make a realistic inventory of their real problems. Those with a tendency to anosognosia often find the confrontation with other TBI patients very revealing, especially when other students refuse to accept their assertions that they are perfectly healthy and do not require any therapy or help. The laughter and ridicule such statements receive from the other students may seem brutal at times, but it is far more effective than any efforts by family members or therapists to confront the anosognosic patient with his/her actual clinical condition. Conversely, those who are wallowing in self-pity, when confronted with problems worse than their own, often begin to think differently.
- *writing an autobiography.* Many individual sessions are devoted to this activity, and new students are initiated by beginning the task. The autobiography may be "written" in any form available to the student; in addition to writing texts about themselves, some students have preferred to draw pictures, while others record their reflections on tape. When the student is uncertain about some facts, they are encouraged to ask questions of family members or others who may know the answers. From time to time a caregiver is asked to check the biography for its factuality, but they are not allowed to make corrections directly.

The goal is to reconstruct the premorbid and post-morbid identities into a single whole, treating the injury as *yet another episode* in the unfolding personal history.

Art therapy has a particular role to play in all these processes, and is a mainstay of the Academy's program. The goal, of course, is not to make artists of all our patients (though many have discovered artistic talents in themselves of which they had been unaware), but rather to give them a way to express things that can be difficult to verbalize. By the same token, drawings and sketches made by patients are often of extraordinary diagnostic value, giving particular clues to how the patient sees the world. The ability to accurately produce on paper an image that exists in the mind is of course a matter of acquired and innate skills that essentially separate the artist from the non-artist, but even the most inept drawings can give a clue as to the nature of the image that exists in the drawer's mind. All drawings made by patients are collected, labeled, and filed, and frequent reference is made to them in therapeutic consultation.

Generally speaking, the family is encouraged to take an active role in the functioning of the Academy. It is important, however, to train caregivers in one of the most basic and yet most difficult therapeutic principles: "Don't just do something, stand there!" This is especially important for patients with identity problems, since for such persons it is often difficult to distinguish between one's own action and that of others, which in turn reflects the lack of a clear distinction between self and other. When family members instinctively attempt to relieve the TBI patient of responsibility, by the same token they perpetuate this situation. In some cases frustrated therapists attempt to reduce or eliminate the family's involvement, in order to nurture the patient's independence, but this often leads to equally unfortunate results. In our view, training the caregiver(s) in the goals and methods of therapy is the best alternative, especially since after hospital discharge the real burden of therapy on a daily basis is borne by the family anyway.

Of particular importance in this program for patients with problems of identity is the task of writing an autobiography. In a given session the writing assignment (which, depending on the patient's abilities and inclinations may be a "drawing" or "telling" assignment) usually focuses on a particular autobiographical theme, such as "My accident," "My parents and grandparents," "My plans for the future," "My favorite vacation," and so forth. Various methods, both verbal and non-verbal, are used to elicit autobiographical information from the patients, and in many cases to supply facts (significant events, persons, dates, etc.) when these are missing. Photographs of family events and family members have proven to be extremely useful; for example, the patients are asked to arrange portraits of family members from several generations on the table in a family tree. Prompts of various kinds associated with the premorbid profession are also used, such as prescription forms for physicians, paintbrushes for artists, a calculator for an accountant, and so forth. Reserves of professional knowledge are frequently preserved in these patients even when they no longer identify themselves as

members of the former profession. One patient in the program, for example, a gynecologist by profession, often insisted during Academy meetings that he was an automobile mechanic, but when the discussion turned to childbirth and pregnancy he displayed considerable depth of knowledge, and in fact gave helpful and accurate medical advice to several persons.

As patients acquire larger pieces of their life puzzles they are assisted in the difficult process of putting these fragments together into a life story. Naturally, the goal is not for the patient to write a publishable autobiography, but rather to make the effort to arrange the events of their life in a logical sequence as parts of one and the same life, so that the event that has brought them to the Academy of Life takes its place as another event in that same sequence, rather than a rupture, an empty place in time that separates the Now from the Then (Pachalska 2008).

Neuropsychotherapy

Psychotherapy with a patient whose brain has been damaged (i.e. “neuropsychotherapy”) is of course something rather different from traditional psychotherapy with a patient who is otherwise healthy, apart from mental or emotional problems. Communication is possible and necessary on all levels and channels, from grunts and gestures to finished verbal texts. Subconscious content is often much nearer the surface (Brown & Pachalska 2003), not subjected to conscious control in the same way as in a healthy, undamaged brain. Patients see and communicate meaning in a very fluid manner, which can be difficult for the therapist to grasp. Unconscious, subconscious, and conscious contents of thinking and feeling exist in a different configuration, which in practice is very unlike the insight to which classical psychoanalysis aspires.

The goals and elements of neuropsychotherapy include:

- reducing anxiety and depression;
- reconstructing identity and personality;
- behavioral training, with particular emphasis on motivation to strive for improvement and cooperation with caregivers and therapists;
- attitude training, with particular emphasis on becoming independent and learning to live with limitations;
- family training.

Of particular importance in these cases is to create an atmosphere in which the patient can recover the ability to use their own body as a means of expressing affect and emotion, i.e. non-verbal expression. It is a frequent problem in family relations that these patients often show no facial expressions and use the same monotonous tone of voice for all utterances, regardless of their emotive content or potential. On the one hand, family training emphasizes the importance of careful listening without undue attention to or reliance on gesture, facial expression, or tone of voice; on the other, the patient is taught to recognize and make use of this register of expression. In ordinary human communication, apparent conflicts of intention between what is said and how it is said are all but automatically resolved in favor of the “how,” which we assume to be a better clue to the real, underlying

intentions of the communicative act. When dealing with a TBI patient, however, it is often necessary to “unlearn” this general principle.

Systematized memory notebook

A systematized memory notebook to help patients compensate for memory deficits has also been used. As described by Pachalska (2007) and Malec (2008), effective training requires development of a personalized notebook in which sections are selected that are of specific value to the patient. Then the patient is engaged in gradually expanding practice in using successive sections of the notebook.

Development of a systematized memory notebook is of value not only as a compensation tool for memory impairments, but also to provide a means of compensating for attentional lapses and deficits in personal organization. For this reason, this intervention is of value to most people with any degree of cognitive impairment after brain injury. For patients participating in the Academy of Life program, developing a systematized memory notebook often provides a means for organizing their evolving sense of a more integrated self, as well as organizing and supporting their participation in the program. With this in mind, the memory notebook is typically introduced early in the sequence of the Academy of Life program.

Cues and prompts

Cues and prompts are applied in a wide variety of circumstances to compensate for impaired attention and memory as well as to motivate the patient to self-reflection and behavioral control (Pachalska 2007, Malec 2008).

The nature of the cue or prompt is as variable as the situations that patients with brain injury encounter. Prompts are usually given by the therapist, but can also be provided by the caregiver. In some cases, recreating a normal level of interdependency between patients and their significant others may in itself be a reasonable goal. Furthermore, prompts delivered by others can be gradually faded or thinned in frequency as the desired behaviors become incorporated in the patient’s behavioral repertoire (Brown et al. 2005).

Cues refer to signals provided by notes, signs, or other objects placed in the environment; they range from a picture of a stop sign placed on a patient’s notebook as a reminder to “Stop and Think” rather than react impulsively, to an alarm watch that buzzes every half hour as a reminder to consult the schedule and memory notebook, to an automated paging system that reminds the patient through a telephone call of current appointments and scheduled activities (Pachalska 2007).

Pragmatic communication skill training

Most of our patients who require the Academy of Life program have impairments in pragmatic communication and social skills that markedly interfere with their ability to interact with other people and to develop and sustain meaningful

relationships. Pragmatic communication deficits include difficulty in appropriately taking turns in conversations, talking too much, difficulty initiating conversation and talking too little, poor sequencing in the narrative (i.e., beginning stories in the middle, going to the beginning and never getting to the end), absent or inappropriate use of facial and gestural expressions, inappropriate tone of voice, as well as deficits in more sophisticated social skills, such as asking a favor, making an apology, or asking for a date (Pachalska 2007).

There is some evidence (Cicerone et al. 2000, 2005) that interventions designed to train people with brain injury in pragmatic and social skills can be effective, and this is consistent with clinical experience. Such training is best provided in a group setting. Videotape feedback of practice exercises enhances feedback from the group to the individuals involved in the exercise (Pachalska & Pufal 2005).

CASE REPORT

The patient BA, a 42-year old male, after an automobile accident, developed a intracerebral hematoma with compression of the left frontal cornus, and a contralateral subdural hematoma. He was operated, but remained in coma for 3 months.

After awakening from the coma he began walking, writing complete, sensible and grammatical sentences, and making rapid progress every day; however, he showed serious attention and memory disturbances. Half a year later he also developed severe self-awareness and behavioral changes, characteristic of frontal syndrome. These difficulties made him dependent upon others and unable to function by himself in many situations of everyday life. Only a little progress was made after traditional rehabilitation.

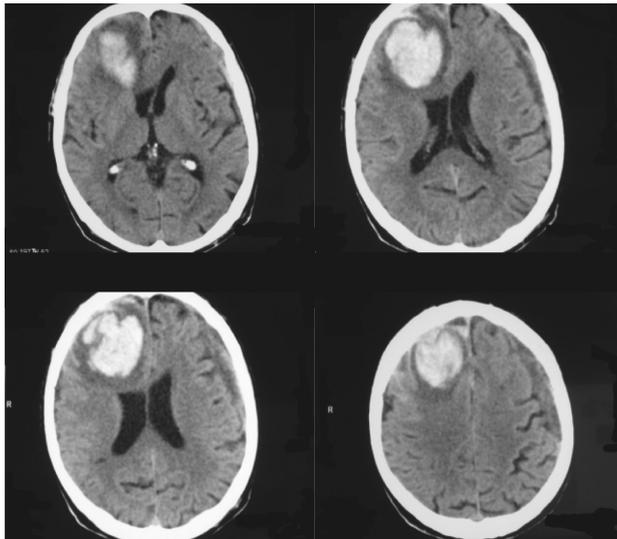


Fig. 1. Intracerebral hematoma with compression of the left frontal cornus, and a contralateral subdural hematoma

Table 1. BA's scores on particular neuropsychological tests assessing cognitive processes

Index	Scale	Exam 1	Exam 2	Exam 3
WAIS-R [1]				
I.Q. Full	100	61.5	80.5	94.5
I.Q. Verbal	100	65.5	86.5	99.5
I.Q. Nonverbal	100	57.5	74.5	89.5
WMS – R [2]				
Immediate logical memory	24	5	13	20
Delayed logical memory	24	3	7	18
Immediate visual recall	41	9	21	37
Delayed visual recall	41	4	17	26
Visual-spacial orientation				
No. of confabulations	40	13,7	3,1	0,0
No. of perseverations	40	21,7	7,2	1,2
General intellectual functions				
MMSE [number of points]	30	15.6	21.5	27.9

[1] WAIS-R: Wechsler Adult Intelligence Scale - Revised

[2] WMS-R: Wechsler Memory Scale - Revised

Evaluation of cognitive functions

Over the course of neurorehabilitation, BA's verbal and non-verbal IQ increased significantly (cf. Table 1). Most of his cognitive dysfunctions also resolved, including immediate and delayed logical and visual recall on the WMS-III (cf. Table 1). His results for maintaining attention on the WMS-III also improved (34/40 points).

On Wilson's Behavioural Memory Test, BA's results also improved in each examination: from 107.5 in the first examination, to 138 in the second and 149 in the third (157 points maximum). By the end of the two-week neurotherapy session, BA was also performing the tasks of the Wisconsin Card Sorting Test at or above age-corrected norms.

Characteristics of frontal syndrome

The Frontal Behavioral Inventory (Kertesz et al. 1997) was used to evaluate the qualitative disturbances occurring in BA's behavior. This questionnaire consists of 24 questions that can be answered by a layman who has regular contact with the patient (usually a close family member), and it has proven to be a sensitive and specific measure of frontal syndrome (Kertesz et al. 2000). Each of the questions simply asks whether or not a particular behavior has been occurring or has changed since the injury, with four possible answers:

- No, never (0 points);
- Yes, but only occasionally or slightly (1 point);
- Yes, rather often (2 points);
- Very much so, all the time (3 points).

If the person answering the questions is uncertain or does not understand the question, the person administering the inventory can amplify or clarify. The questionnaire itself labels each question with the name of the symptom that the given behavior presumably exemplifies, but in our own experience with this test we have found that the labels often confuse the examinee. For example, the first question on the questionnaire reads as follows.

Apathy: Has she/he lost interest in friends or daily activities?

If we read the question exactly as written, the examinee often focuses on the word “apathy,” which they may or may not understand, whereas the simple question “Has she/he lost interest in friends or daily activities?” elicits a more concrete answer, which is what the interpretation of the Inventory really requires.

For purposes of analysis the 24 questions can be grouped into four broader categories:

- impaired social conduct (social inappropriateness, impulsivity, poor judgement and inappropriate jocularity);
- impaired personal conduct (perseverations and obsessive/compulsive behavior, inflexibility, and concreteness);
- mood disorders (irritability, aggression, restlessness);
- control disorders (hyperorality, hypersexuality, utilization syndrome).

In the present study, the authors asked BA’s wife to complete the questionnaire 3 times: once 3 months after the accident (exam I), again one year after the accident (exam II), and again immediately after completion of the Community-Based Rehabilitation program (exam III). On the first exam, BA received from his wife a score of 61 out of 72 possible points; on the second exam, 53 points; and on the third exam, 19 points.

Impaired personal conduct

BA did not exhibit significant perseverations at any time. His wife reported mild symptoms of obsessive/compulsive behavior and inflexibility in the first examination, which had markedly worsened by the time of the second examination. Inflexibility was noted at the level of “1” in the third examination, a judgment with which the authors would concur: in therapy BA was occasionally difficult to manage precisely when he felt that there had been a departure from what he had expected. Concreteness, on the other hand, was rated very high on the first examination, but steadily declined to zero in the final examination (Table 2).

Mood disorders

BA’s pattern of change in this category is rather similar to the results in the category “impaired social conduct”: that is, moderate symptoms in the first exam-

Table 2. BA's results on the Frontal Behavioral Inventory in the category "Impaired social conduct" over three examinations (see text)

No	Feature	Score		
		Exam.1	Exam.2	Exam.3
1	Perseveration	3	2	1
2	Obsesive/ compulsive	3	3	1
3	Inflexibility	3	2	0
4	Concretness	3	3	1

Table 3. BA's results on the Frontal Behavioral Inventory in the category "Mood disorders" over three examinations (see text)

No	Feature	Score		
		Exam.1	Exam.2	Exam.3
1	Hyperorality	3	2	1
2	Hypersexuality	2	3	1
3	Utilization behaviour	3	2	0

Table 4. BA's results on the Frontal Behavioral Inventory in the category "Control disorders" over three examinations (see text)

No	Feature	Score		
		Exam.1	Exam.2	Exam.3
1	Irritability	3	3	2
2	Aggression	3	3	1
3	Restlessness	3	2	0

ination, much worse symptoms in the second examination, and significant improvement in the third (Table 3).

Control disorders

In this category, again, BA went from mild to moderate symptoms of hyperorality and utilization behavior in the first examination, to severe symptoms in the second, dropping to zero in the third. Hypersexuality, on the other hand, did not occur; in fact, BA's lack of libido emerged in therapy during Community-Based Rehabilitation as a serious problem (Table 4).

DISCUSSION AND CONCLUSIONS

As Kim & Colantonio (2010) point out, there is a widely held belief that rehabilitation of frontal syndrome after severe TBI is useless, and neuropsychological intervention should not be initiated. After assessing evidence, however, for the efficacy of rehabilitation in post-acute traumatic brain injury (TBI) using occupational therapy techniques to enhance community integration (CI), these authors came to a different conclusion. A systematic review of 10 major intervention studies on TBI rehabilitation from 1990 to 2007 showed positive CI

outcomes in 7 cases, all of which involved occupational therapy or interventions that occupational therapists can perform.

Kean et al. (2011) argue, on the other hand, that many rehabilitation programs show positive results and should be studied more rigorously. Such promising programs should also be considered when decisions are being made about rehabilitation services for post-acute TBI. Further scientific confirmation that post-acute TBI rehabilitation interventions improve CI will require studies that would include differential intervention strategies based on injury severity, a control group, and longer term follow-up. The role of occupational therapy and group treatment in those programs found to be effective should be further explored. Such factors as severity of disability, self-awareness, chronicity, depression and substance abuse should be considered in making initial recommendations for the intensity and structure of post-acute rehabilitation.

However, the case presented here provides evidence that the prevailing pessimistic views regarding the inadvisability of rehabilitation of frontal syndrome after TBI may be seriously overstated, which is all the more serious a problem if we take under consideration the fact that treatment decisions are largely based on such views. Of course, in an age of expanding need and shrinking resources, valuable time and money cannot be wasted on providing services that offer no realistic hope of any real improvement. But what if funding is being denied for services that can indeed benefit the patient, only because of an a priori conviction, perhaps held contrary to available empirical evidence, that no such services can possibly be efficacious? With no access to rehabilitation, the mental and physical state of the acute TBI patient deteriorates, speciously justifying the claim that such cases are “hopeless.”

The difficulties involved in providing therapy of any kind to a patient with frontal syndrome cannot, of course, be minimized. The nature of the deficit itself makes cooperation problematic, since these patients, like unruly children, cannot be induced to do anything that they do not feel like doing at the moment, or conversely, to refrain from immediately putting into action any impulses their over-stimulated emotional systems may produce. That said, however, the Academy of Life program has shown itself to be effective precisely in these cases, because the patients seem to understand immediately that what is being offered them is something they need. Unlike many other neurological patients, the frontal TBI patient cannot endure boredom. On the other hand, the impairments in behavioral control are not necessarily accompanied by a loss of intelligence. As in many other kinds of rehabilitation, the key to success is to redirect preserved, functional brain resources to compensatory tasks to replace the capacities that have been damaged.

Why, then, we might reasonably ask, is occupational therapy so successful in these patients? The perhaps obvious answer is motivation. The practical nature of the activities has an immediate application and offers the patient immediate gratification, which is particularly essential in the case of these patients, for whom deferred gratification is a concept nearly impossible to grasp. It is well to remember, after all, that in many such cases not only are the posterior areas of

the brain largely undamaged and capable of performing their ordinary tasks, but also the limbic system itself is functioning normally. As stated by Pachalska (2008), if the motivation can be delivered in an appropriate manner, and the patient's intelligence enlisted to recognize success and failure, then the impaired ability to restrain unwanted behavior can be rebuilt in such a way as to circumvent the "broken connections" between the orbital cortex and the limbic system (see Fig. 2).

The claim can hardly be made on the basis of a single case study that the Academy of Life program is always successful, or that this is the only approach that offers any hope of real improvement in the quality of life of acute TBI patients with predominantly frontal injuries. The authors' own clinical experience suggests, however, that the success achieved in the case reported here was not an isolated phenomenon. The task of proving efficacy in any kind of psychological or social intervention is always far more complicated (conceptually, if not practically) than the task of proving the efficacy of a particular drug used in the treatment of a particular disease. There are really no standard outcome measures in neuropsychological rehabilitation, since the parameters involved are both highly complex and very much individual. The patient's actual condition is never entirely a function of the injury itself, but rather of the patient's mental, emotional, and even spiritual vectors, which have been displaced or redirected by the changes in brain function resulting from the injury (Brown & Pachalska 2003).

That is why, in our opinion, the Academy of Life program has been so successful: to a large measure, it allows the patients themselves to determine the priorities and goals, without unduly burdening them with responsibility for making decisions they are not qualified to make. The program is highly practical and heuristic, but not lacking in structure. The underlying assumption, which is consistent with the most recent trends in neuropsychological research, is that the plasticity of the human brain can in fact be controlled and supported in such

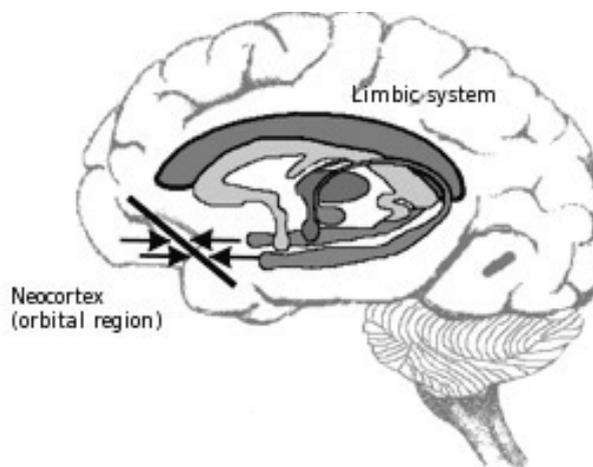


Fig. 2. Blockage of communication between the neocortex and the limbic system in frontal syndrome [from: Pachalska 2008]

a way as to solve problems that once seemed insoluble. Further research is clearly necessary to expand our knowledge base, but the direction of such research seems increasingly clear.

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