Concept for the Treatment of Headache and Migraine

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1. Introduction

Headaches are categorized as “primary” or “secondary,” according to whether or not they are caused by an underlying problem that precedes pain symptoms. Secondary headaches result from underlying diseases affecting the physiological structures of the brain and are relatively rare. Primary headaches, which are much more highly prevalent, are not caused by a specific physiological problem. Diagnostic tests usually show completely normal functioning. Thus, the pain patients feel can be thought of as stemming from disorders of brain function rather than of brain structure.¹ Because many factors affect brain function, the diagnosis and treatment of primary headache is a complex task that needs to be undertaken by an experienced doctor who understands each patient’s individual case history.

The International Headache Society differentiates primary headache types in two ways. First, headaches differ according to the frequency of pain and other symptoms. “Episodic” headache occurs less than 15 days per month. “Chronic” headaches occur more frequently, and any patient who has headache at least 15 days per month is said to have “chronic daily headache,” independently of the specific type of headache experienced. Second, headaches differ by type, the most common of which are tension-type headache and migraine, followed by cluster headache.

Globally, the estimated lifetime prevalence is 66% for all types of headache, 46% for tension-type headache, 14% for migraine, and 3 - 4% for chronic headache (Stovner et al. 2007). In a large-scale epidemiological survey of the German population, 2.6% of respondents (18 - 65 years old) reported chronic headache, whereby 1.1% reported chronic migraine, about half that number reported chronic tension-type headache, and most of the remainder reported experiencing both types (Yoon et al. 2012). More than half of respondents reported experiencing headache at least episodically. Women were more often affected than men, and the highest prevalence was among persons between the ages of 35

¹http://www.hopkinsmedicine.org/neurology_neurosurgery/centers_clinics/headache/conditions/primary_vs_secondary_headaches.html
and 45.

In the US population, the prevalence of chronic migraine was estimated by the American Migraine Prevalence and Prevention Study at nearly 1% (Buse et al. 2012). Prevalence and headache-related disability were higher among females. Indeed, “the strikingly higher prevalence of migraine in females compared with males is one of the hallmarks of migraine” (Buse et al 2013). Migraine prevalence was higher among persons over 40 years old and in households with the lowest annual income. There are no comparably accurate studies of the prevalence of tension-type headache in the United States, but a rate of 2-3% of the population has been assumed (Kavuk et al. 2003).

Among women, headache is the fifth most disabling disorder globally; for men and women together, it ranks tenth (Stovner et al. 2007). For some patients, the disability is extremely high. In the World Health Organization’s Global Burden of Disease study, 22 different diseases and disorders were classified into 7 categories of severity. Severe migraine was grouped with active psychosis, dementia, and quadriplegia into the most severe category 7.

Treating migraine is very costly for healthcare systems. Migraine is the most common neurological ailment, and in European countries it comes in second behind dementia in terms of treatment expense. The annual cost of treating migraine in Germany was estimated at nearly €480 million in 2002 (Neubauer 2002). This sum includes €93 million for pain medication, €84 million for outpatient treatment, €35 million for inpatient treatment, and €267 million for the treatment of pain medication abuse (Neubauer 2002).

Migraine is also a serious problem for workplace health. Indirect costs related to lost work productivity have been estimated at over €6 billion annually: €3.6 billion for sick leave (assuming an average of four absences per patient per year) and €2.7 billion for reduced productivity (Neubauer 2002).

Migraine is often accompanied by psychological problems, and persons with tension-type headache and migraine commonly also report experiencing depression and anxiety (Wallasch & Förderreuther 2009, p. 379). The correlation between migraine and psychological disorders works in both directions: “Migraine patients show an increased risk of developing depressive or anxiety disorders, and patients with depressive or anxiety
disorders are at higher risk of developing migraine” (Wallasch & Förderreuther 2009, p. 379). In a sample of 705 patients at the headache clinic of the Sankt Gertrauden hospital in Berlin, 57% were found to have a co-diagnosed psychiatric disorder classifiable under ICD-10 criteria (Wallasch & Förderreuther 2009, p. 380). The Zurich Cohort Study (1978 to 1999) showed that persons with migraine had a relative risk for major depression of 1.5 and for atypical depression of 1.7. The relative risk estimate for generalized anxiety disorder was 2.0, for specific phobia 2.3 and for panic disorder 2.7 (Vetter 2003).

Migraine patients suffer more than only headache. Nearly one half of all patients also experience nausea, and women experience it more often than men (Lipton et al. 2013). Because persons who more frequently experience nausea are also more severely functionally disabled (Ibid.), treatment of nausea is an essential component of migraine therapy (Medgyessy 2013). In a study of drug-free nausea treatment conducted at the Berolina Clinic (Loehne, Germany), 83% of patients with migraine-related nausea reported improvement through acupressure (Medgyessy & Schmid-Ott 2013).

For persons with chronic migraine and tension-type headache, stationary rehabilitative treatment is indicated when the symptoms have become resistant to outpatient treatment, when physical functioning is impaired, when patients are chronically mentally fixated on pain symptoms, if a psychiatric disorder has been diagnosed, if patients have problems coping with their symptoms, and when symptoms are clearly impairing the ability to engage in gainful employment (Amberger 2004).

**Range of Treatable Diagnoses (International Classification of Diseases ICD-10)**

- G 43 Migraine
- G 43.0 Migraine without aura [common migraine]
- G 43.1 Migraine with aura [classical migraine]
- G 43.2 Status migraenosus
- G 43.3 Complicated migraine
- G 43.8 Other migraine
- G 43.9 Migraine, unspecified
Other headache syndromes
Other specified headache syndromes

Contraindications: Conditions that preclude rehabilitative treatment

- Acute suicidal tendencies
- Active psychosis
- Severe damage to the brain
- Reduced intelligence with severe reduction of cognitive and emotional functioning
- Drug addiction
- Need for acute treatment of primarily somatic symptoms
- Physical disability requiring use of wheelchair (special arrangement possible)
- Physical disability requiring nursing care

The Berolina Clinic’s Evidence-Based Treatment Approach

The causes and effective treatment of different forms of headache are much-researched and our knowledge is constantly being refined. In 2012, the German Neurological Society (2012a, 2012b, 2012c) incorporated the state of the art of international research in its new evidence-based guidelines for the treatment of migraine, chronic tension-type headache, cluster headache, and trigeminal-autonomic headache. Current evidence supports a multimodal therapy approach that combines drug therapy, biofeedback, cognitive behavioral therapy, patient education, and relaxation techniques.

Current guidelines provide for a variety of pharmacological therapies. As these are mainly targeted to treatment of acute symptoms, they are not summarized here. Some drug
therapies are prophylactic. Generally, patients beginning rehabilitative treatment will continue on their established pharmacological regimen. Because pain medication can itself be a cause of headache, our staff is vigilant in detecting medication-caused headaches.

Non-pharmacological therapies are designed to improve patients’ sense of control and efficacy in the management of their symptoms. They have several components: education about symptoms, improvement of self-awareness through biofeedback, modification of pain-related cognitions, and lifestyle changes including social interaction issues, and relaxation techniques. Psychological interventions are recommended for patients who cannot use drug therapy for some reason, for patients who have not responded well to drugs, and for patients under especially severe stress (Deutsche Gesellschaft für Neurologie 2012a, p. 20).

Many studies affirm the efficacy of non-pharmacological interventions for chronic headache (cf. Pistoia, Sacco & Carolei 2013; Andrasik, Buse & Grazzi 2009; Buse & Andrasik 2009). Four forms of therapy, both individually and in combination with other therapies, are especially well studied and recommended for migraine: relaxation techniques such as progressive muscle relaxation, biofeedback training, cognitive-behavioral therapy, and stress management (Deutsche Gesellschaft für Neurologie 2012a, p. 20). The use of either relaxation techniques or biofeedback is estimated to be effective in about 35 - 45% of all migraine cases (Ibid.). Combining relaxation and feedback can increase effectiveness of migraine therapy. Similarly, increases in effectiveness can be achieved when combining drug therapy, relaxation techniques, and cognitive-behavioral therapy. Psychological interventions for headache are more effective also when combined with aerobic exercise (Baillie, Gabriele & Penzien 2014). The benefit incurred by combining therapies applies also to tension-type headache (Andrasik 1996; Deutsche Gesellschaft für Neurologie 2012b, Sun-Edelstein & Mauskop 2012).

Patient education programs provide patients with information about headache triggers, symptoms and other aspects of disease management. These have been proven effective (Kindelan-Calvo et al 2014).

The Berolina Clinic relies on these evidence-based guidelines in setting its own treatment standards. Taken together, the guidelines (Deutsche Neurologische Gesellschaft 2012a,
2012b, 2012c) clearly recommend a multi-modal approach that combines drug therapy, educational programs in disease and stress management, biofeedback, relaxation techniques, and aerobic exercise.

**Treatment Program**
The Berolina Clinic’s treatment program for migraine and headache lasts three weeks and has the following components.

1. Medical supervision by a physician specialized in the treatment of headache
2. Cognitive behavioral therapy in groups and on an individual basis
3. Headache therapy group
4. Relaxation techniques
5. Biofeedback
6. Movement exercises that enhance self-awareness of the body
7. Physical exercise
8. TENS therapy for pain
9. Art therapy
10. Employment counseling
11. Free Time

1. Physician supervision
The initial medical interview is normally conducted by the attending physician on the day of arrival. The physician will have familiarized himself with the patient’s situation through a review of patient records. These records normally arrive ahead of the patient and include a clinic questionnaire with items on patient socio-demographics, symptoms, and treatment history. Patients are asked to fill out the questionnaire a few weeks before starting rehabilitative treatment. Patients are also asked to complete the clinic’s “headache calendar,” which follows a model developed by the German Migraine and Headache Society,² and bring it to the initial medical interview.

The attending physician makes a detailed assessment of the patient’s physical, physical, physical

² http://www.dmkg.de/dmkg/sites/default/files/ks_kal.pdf
psychiatric, social, and employment situation. Current medications are checked. After this is completed, the physician discusses treatment strategies with the patient and together they set rehabilitation goals and create a therapy plan. Therapies include modules in which all patients take part and modules that are prescribed on an as-needed basis.

2. Cognitive behavioral therapy

An initial psychological assessment is conducted by the attending psychotherapist, normally also on the patient’s day of arrival. The same psychotherapist is responsible for making recommendations regarding specific groups or other interventions and leading the patient’s individual and group psychotherapy sessions. The focus of psychological treatment is the behavioral therapy group “Back to My Balance” with six 90-minute, twice-weekly meetings. The group covers the following content.

- **Basic Facts**: Factors that protect and endanger health; causes of acute and chronic pain
- **Coping**: Strategies of avoidance versus strategies of perseverance; communication
- **Stress Management**: Stress; work satisfaction

The Berolina Clinic takes a multi-method approach in its psychotherapy groups, paying attention to the physiological, psychological, and social aspects of illness. The content of group therapy takes into account that people are complex and interact with their environments on many levels, all of which can be affected by headache and migraine in different ways. The central goal of treatment is minimizing the disability caused by pain and maximizing patients’ control over their daily lives.

Patients also receive up to three hours of individual psychotherapy with their attending psychotherapist. Given that migraine and tension-type headache are often triggered or aggravated by personal conflicts or stressful life situations, it can be very helpful to learn to recognize these situations and discuss healthful responses with a trained therapist. Some patients may be encouraged to continue psychotherapy at home.
3. Headache therapy group
In the headache therapy group, patients receive instruction from a senior physician on many different aspects of headache and migraine. Its topics include: types of headache, diagnostic procedures, drug and non-drug therapies for acute and prophylactic treatment, and risks of pain medication abuse and medication-induced headache. The goal of these sessions is to enable patients to become experts of their own disease, to increase their self-efficacy in symptom management, and to increase therapy regimen adherence.

4. Relaxation techniques
All patients learn techniques of relaxation. Berolina Clinic instructors teach autogenic training (a form of self-hypnosis) and progressive muscle relaxation as developed by Edmund Jacobsen. Progressive muscle relaxation, which is easier to learn and understand, is favored by most patients.

5. Biofeedback
Through biofeedback training, patients learn to influence bodily functions that normally occur unconsciously. The technique can also be used to demonstrate the effects of relaxation techniques or to monitor one’s proficiency at using them.

   Biofeedback works through the fixing of sensors that measure body functions (muscle tone, transpiration rate) that normally cannot be changed at will or even sensed. Through amplification and feedback, these functions are made perceivable to the patient, who can then learn to manipulate body functions using computer enhanced visualization tools. Body functions can actually be shifted to “healthy” levels, which in turn support physiological and psychological health.

6. Movement exercises that enhance self-awareness of the body
In Qigong, harmonious movements of the body are used to initiate calm breathing and to focus the mind. This is thought to loosen energetic blockages and to strengthen the body’s mechanisms of self-healing. With practice, one becomes more flexible both physically and mentally with an increased ability to relax deeply.
In the Feldenkrais method, participants refine their self-awareness of functional movement and their understanding of their own habitual movement patterns through gentle, slow, repeated movements. In this way, one’s range and clarity of movement, flexibility, coordination, and efficiency can be improved.

7. Physical exercise
Exercise plays a prominent role in the therapy of headache and migraine at the Berolina Clinic, and patients have a wide choice of groups to choose from. These include gymnastics for the spine, water gymnastics, rhythmic gymnastics, muscle training, and back strengthening courses. In aerobic exercise groups, patients can participate in hiking, Nordic walking, swimming, and stationary bike training. Aerobic exercise increases not only physical endurance but contributes also to a general sense of wellbeing, and it also deepens mental relaxation. Exercise is a proven and effective way to reduce depression and anxiety. The Berolina Clinic offers a wide variety of exercise groups so that every patient has a good chance of finding a form of exercise that is fun and can be continued at home.

To complement the daily exercise regimen, all patients take part in the short seminar “Health Training.” This seminar provides more “theoretical” information on the benefits of exercise, about how to transfer what is learned and practiced in the clinic into healthy exercise habits at home, and about the vicious-circle effects of too-little exercise.

8. TENS therapy for pain
Patients experiencing pain during rehabilitation can receive TENS treatment (Transcutaneous Electrical Nerve Stimulation). Once patients are advised in the use of the TENS unit, they may use the devices in their rooms during their stay at the clinic.

9. Art therapy
Creating art can produce feelings of efficacy and joy, can reawaken long-neglected talents, and can help change one’s way of looking at problem situations. Art therapy encourages these processes and gives patients, who may have problems breaking out of their isolation, a different, relaxed opportunity to interact with other patients.
10. Employment counseling
The Berolina Clinic places a strong emphasis on helping patients maintain gainful employment in their old jobs or in new ones. Our staff of employment counselors discuss with patients their individual employment situation and develop strategies for returning to work, taking into account changes in job tasks that may be necessary to compensate for long-term disabilities. For patients who are covered by German work disability benefits, benefit claims and programs to facilitate return-to-work can be discussed in detail and necessary initial steps can be taken before rehabilitative treatment ends. All patients are advised about the benefits of participating in self-help groups.

11. Free time
The therapy program intentionally allows for free time so that patients can practice organizing healthful activities and forms of relaxation that are suited to their own tastes and needs. These times should be used to reflect on what was learned in the previous hours and days and to practice newly acquired self-therapy skills. Some patients prefer to do this alone, but more commonly patients get together in groups of two or more to plan their free time activities together.

Quality Management
The Berolina Clinic has a system of quality control and management that covers every aspect of what we do. This system ensures that our current high standards in medical treatment, nursing, and patient satisfaction will be maintained continuously in the future. We have used the quality management system “EFQM/IQMP-Reha” since 2002. This system requires a yearly self-evaluation of all clinic activities including special projects and their implementation.

Over the years we have:

- defined the core processes of our work. These processes are subjected to periodic review and adjustment.
- described supporting processes. These are being established for each department
of the clinic and help clarify responsibilities and resource needs.

- introduced a **structured plan of continuing education** for staff. This serves to ensure a steady and fair expansion of the qualification base and competence of staff. It also encourages communication across disciplinary boundaries regarding coordinated responses to emerging needs for new skills. This process was introduced in 2010.

- improved our system of **complaint management**. We take patient satisfaction very seriously. A quick, professional response to complaints and criticism helps us to provide patients with the very best treatment and to make their stay with us pleasant in every respect.

- introduced a **system for eliciting suggestions for positive change**. Clinic employees are encouraged to submit their ideas for improvement to the clinic leadership. The system ensures that the suggestions receive a response. Those making suggestions that are actually implemented receive recognition and a monetary reward.

- implemented mechanisms to reach **agreement on objectives** between the medical and administrative leadership of the clinic. Once goals are set, these mechanisms also help ensure that they will be communicated clearly to all employees.

- introduced **regular discussions between supervisors and employees** (in 2010). These documented and structured discussions complement conventional top-down communication and provide a way of obtaining meaningful feedback from every employee in a situation that is removed from the daily, often hectic work routine.

The clinic publishes a yearly quality report that includes a variety of quantitative performance measures. It contains also a summary of the results of internal quality management processes.

In addition to internal quality management, the Berolina Clinic is part of a comprehensive external auditing system run by the German Federal Pension Scheme and which includes nearly all of Germany’s rehabilitation clinics. Auditors continually sample patients randomly
who have completed a rehabilitation program. The results of the surveys are reported annually to the individual clinics in such a way as to allow a comparison to other clinics with similar patient profiles. In almost every area, the results for the Berolina Clinic are year for year better than for the comparison group. Although not required to do so, we provide public access to these results on our website. We are especially proud of the fact that patient satisfaction with rehabilitative treatment overall and the subjective evaluation of treatment success has increased from what was already a better than average level. We see in this a confirmation of our efforts at quality management.

References


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