Music therapy in the treatment of children with migraine

Project “KiM” – Comparative therapy study on the effectiveness of music therapy treatment of children with migraine headache*

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Abstract:

Migraine in childhood is a serious health problem with a tendency towards chronification. According to the bio-psycho-social model migraine is considered a disorder which is generated by multiple factors and which requires an interdisciplinary treatment concept consisting of
medical and psychotherapeutic intervention. Music therapy as a nonverbal, creative arts therapy is especially apt for the treatment of children. A specific music therapy treatment concept for children with migraine, which is designed to be executed within a multidisciplinary framework, and its theoretical background are presented in this article.

**KEYWORDS:**

Migraine in children – music therapy – multidisciplinary treatment concept

**Introduction**

The music therapy treatment concept presented in this article is currently being applied and evaluated within the framework of an interdisciplinary effectiveness study on prophylactic treatment of pediatric migraine carried out by the German Center for Music Therapy Research, Heidelberg and the Child and Adolescent Psychiatry of the University Heidelberg. Music therapy is being evaluated against drug and placebo treatment. Results of data analysis will be available in summer 2003.

**PEDIATRIC MIGRAINE AND ITS TREATMENT**

Headache is one of the most common somatic disorders in schoolchildren. 80 to 90% of children and adolescents between 6 and 16 report having experienced headache, while in the 1960s and 1970s it was only 45%. The prevalence of recurrent or persisting headache – headache forms which need special treatment – has also risen, while the mean manifestation age has fallen considerably since the 1960s. Already 8% of children starting school suffer from these symptoms. This number doubles by the end of the first year, implying that school might likely be one of the important factors that influence the development of headache. At the age of 17, around 17% of adolescents suffer from recurrent headache (Denecke and Kröner-Herwig 2000).

Pediatric headache that requires specific treatment belongs to the group of migraine headache in many cases. Early diagnosis and sufficient treat-
ment is important, not only to facilitate immediate relief, but also because coping patterns, established in adolescence frequently persist throughout adulthood. While around three quarters of adult headache patients are insufficiently treated, in childhood and adolescence this number is even higher. Reasons herefore are the lowering of the mean manifestation age over the last decades, difficulties in diagnosis and the fact that parents tend to seek treatment for their children relatively late.

There are so far only few studies on the prognosis of pediatric headache. Pediatric migraine persists into adulthood in around 60% of cases (Bille 1981), especially in the case of psychiatric comorbidity. The risk of chronification rises with the number of psychiatric disorders. In a large study, headache persisted in 85% of the children and adolescents with multiple psychiatric disorders, whereas only 60% of children without comorbid psychiatric disorders retained their headache throughout adult lives. (Guidetti et al. 1998). Therefore, it is indispensable to diagnose and treat psychiatric comorbidity in children with headache as early as possible.

Children suffering from headache show more behavioral disorders and are especially prone to internalizing disorders (Just et al. 2000). A higher psychiatric comorbidity is well-known in migraine, predominantly with anxiety and depression, but also with suicide attempts and pharmacodependency. It is likely that there is a bi-directional relation between depression and migraine, i.e. each of the two diseases makes the occurrence of the other more likely. More recent studies highlight a definite correlation between migraine and anxiety (Guidetti et al. 1998). According to Denecke and Kröner-Herwig (2000), emotional stress reactions are a key trigger for migraine attacks. Dispositional hypersensitivity combined with stress situations seems to be a suitable paradigm (diathesis-stress-model) to explain pediatric migraine.
Prophylactic drug treatment for children and adolescents is uncommon due to the occurrence of multiple side-effects. Non-pharmacological treatment (relaxation training, biofeedback, psychological therapy) is equal or superior to prophylactic pharmacological treatment of pediatric migraine (Kröner-Herwig and Ehlert 1992). Studies have shown the effectiveness of progressive muscle relaxation according to Jacobson, cognitive-behavioral therapy and thermal biofeedback. Psychological interventions show a bigger effect on children and adolescents than on adults. An early modification of coping patterns for stress and pain may help to prevent a chronification of headache. More recent studies present evidence that psychologically based interventions lead to a long-term reduction of headache after a relatively short treatment period (Denecke and Kröner-Herwig 2000).

**The Heidelberg Music Therapy Manual for Pediatric Migraine**

The Heidelberg Music Therapy Manual for Pediatric Migraine is an artistic psychotherapeutic intervention based on the bio-psycho-social paradigm (Engel 1977). Theoretical assumptions of the Heidelberg Music Therapy Manual for Adult Pain Patients, the effectiveness of which was proven in a recent study (Hillecke et al. 2002), were taken into consideration and adapted to the requirements of child therapy.

We consider a combination of common factors of psychotherapy and specific music therapy factors to be the basic work mechanisms of our concept. Common factors (like extra-therapeutic change, relationship factors, expectancy) are often discussed in modern psychotherapy research and seem to have more influence on therapeutic success than specific techniques of different therapeutic schools (see Lambert 1992).
We integrate this concept by paying special attention to the development of therapeutic alliance and setting factors.

The specific music therapy factors are partly based on the concept of “emotional inflexibility” and “inhibited expressiveness” by Traue (1998). Traue has shown in studies that adult headache patients’ reaction to anger-inducing situations differs from that of the control group. They show less anger in facial expression and gestures, but report to feel more anger. Many pain patients focus on pain experience and hereby become inhibited in their actions and reactions. In migraine the unpredictability of recurrent pain interferes with the patients’ regular activities and leads to a feeling of lack of control. Social relations but also the image of self and the body image are usually affected. Quantity and quality of well-being-experiences diminish. Life situations are often associated with pain or the anticipation of pain, i.e. the pain patient lives in a so-called pain-state. The musical flexibilization is a specific music therapeutic work factor which has been deduced from this concept of “emotional inflexibility” and “inhibited expressiveness”. It can be achieved through the application of different techniques (e.g. variation of musical parameters in free improvisation). Other specific music therapeutic work factors important for this concept are the communicative effects of music (development of a relationship by shared interactional experiences), emotional and creative activation through music, the symbolic character of music, the distracting and relaxing effects of music (e.g. reduction of tonicity), motor-exercising effect of music (e.g. training of body awareness), music as a facilitator of imagery, music as reinforcement.

The manual is conceptualized for children between the age of 8-12. We considered age-specific pain concepts and coping mechanisms (see Resch 1999) of children from this age-group. These children are, according to Piaget, still mainly in the concrete-operational phase. Only the 11-
12 year old children are on the brink to the formal-operational phase. In the concrete-operational phase thinking is still linked primarily to actual events and explanation for reasons of pain are still deduced primarily from observable situations. But there is also already a certain capability for reversible thinking and integration of psychological factors as headache agents. Therefore our concept focuses on behavior-oriented coping strategies and on the use of imagination and relaxation exercises which are specifically created for this age-group. Individual therapy allows us to take the individual differences in developmental stages into account.

The therapy manual also integrates family therapeutic approaches to pediatric pain therapy (e.g. Turk et al. 1987). Migraine often occurs in so-called “pain families”, i.e. in families where other chronic pain syndromes appear frequently. Therefore it is probable that model learning plays an important role in pathogenesis. Moreover studies have found empirical evidence for operant learning processes in pediatric headache (Turk et al. 1987). Also, chronic illness can have a negative effect on family life (e.g. in the form of over-protectiveness or social retreat). There is a consensus among family-system theorists that certain characteristics in familial interaction have an important impact on occurrence and persistence of psychosomatic syndromes: enmeshment, rigidity and conflict-avoidance (Minuchin et al. 1978). These models have also been conferred to chronic pain syndromes in children.
After thorough physical and psychiatric diagnostics and pain assessment carried out by physicians of the Child and Adolescent Psychiatry of the University Heidelberg, the children and parents visit the Outpatient Clinic of the Music Therapy Department of the University of Applied Sciences Heidelberg for a family interview and music therapy assessment.

The music therapy treatment lasts for 12 weekly sessions in an individual setting. The therapy rooms are especially equipped and laid-out for child therapy, fixtures featuring the usual music therapy instruments – melody instruments (vibraphone, piano, guitar etc.) and percussion instruments (conga, djembe, gong, monochord, bass drum, tambourine etc.).

In addition to music therapy we offer family coaching once a month. The children are also provided with standard medical care every four weeks (general health counseling and acute medication if necessary). All ther-
apy sessions are monitored and video-taped. Interdisciplinary supervision meetings take place every week and once a month interdisciplinary case presentations are held.

**FAMILY INTERVIEW**

The family interview focuses on the following aspects: the treatment context is presented and explained, individual therapy goals of the parents/child are asked for, general therapy goals of music therapy treatment are explained, pain biography, pain concept and function of pain in the family are explored.

**MUSIC THERAPY ASSESSMENT**

The following parameter are being assessed in the first contact with the child: musical socialization and preference, musical response, variability in musical expressiveness.

**FAMILY COACHING**

The family coaching focuses on the following aspects: appreciation of present coping strategies, identification of possible learning factors for pain in the family (positive and negative reinforcement of pain behavior by parents, model learning), the families’ way to dealing with emotions, conflicts and achievement, intimacy-distance-regulation within the family. Additionally this coaching aims at a continuous evaluation of therapy goals as well as a transfer of therapy achievements into the every-day family life.

**MUSIC THERAPEUTIC TREATMENT GOALS AND TECHNIQUES**

For the music therapy treatment a manual was conceptualized according to the theoretical foundation described above and on the basis of clinical experience.

For the conceptualization of the manual the phase model for psychotherapy outcome, which has been empirically well founded by Lueger (1995), has been taken into consideration. According to this model there is a chronological order in psychological change. In the first phase of
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therapy the patient improves mainly on the dimension “subjective well-being” (remoralization), then on “symptoms” (remediation) and towards the end of therapy on “general functioning” (rehabilitation). In our manual these dimensions (remoralization, remediation, rehabilitation) are focused successively and worked on with specific therapeutic techniques.

Each therapy session is framed by rituals, i.e. in the first session “hello”- and “good-bye”-songs or rituals are created with the child and then repeated every session. The imagery and relaxation exercises established in the first session are also repeated every session. Prophylactic interventions such as learning how to deal with stress- and conflict situations, but also relaxation training for use in acute situations (at first signs of a beginning migraine attack) are part of this manual.

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<th>Goals according to the phase model by Lueger (1995)</th>
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<th>Specific factors of music therapy</th>
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<td>Activation of “remembered well-being”</td>
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CASE STUDY

To illustrate special techniques of the manual we present a practical example of our work with Daniel (9 years) in the following.

First impression:

At first sight Daniel presents an inhibited and prudent impression. At the same time he behaves compliantly and in a socially accepted way. In the music therapy room he becomes more relaxed and shows age-adequate behavior (rocking on the chair, wandering in the room). The boy shows no psychomotoric or mental challenges.

Family interview

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<th>Phase II: Improvement of symptoms (5 sessions)</th>
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<td>work on inhibited expressiveness</td>
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<th>Phase III: Improvement of general functioning (3 sessions)</th>
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<td>Generalization</td>
<td>Stabilization of therapeutic accomplishments and preparation of end of therapy</td>
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Daniel reports fighting a lot with his brother (+3 years), the mother usually intervenes in order to make the boys come to terms. Daniel would like the whole family to engage in leisure time activities more frequently.

Music therapy assessment

Musical behavior: no flexible reaction to variation of rhythm, tempo and dynamics; when duo playing at the bass drum the boy shows a somewhat strained grimacing and lifting of shoulders.

Music therapy treatment

Phase 1: The therapist introduces a ritualized “hello”- and “good-bye”-song (“Hello, Daniel, how nice that you are here” / “The session is over, Daniel goes home for today…”). After Daniel is initially hesitant in participation, this structure seems to provide him with the security he needs for relationship building and gradual approximation to the instruments / his own voice. In each session the child is offered musically guided imagery and relaxation. For this, Daniel lies down on two beanbags and the therapist plays calming and open chords on his favorite instrument - the vibraphone. Daniel experiences his personal “well-being daydream”, in which he imagines undertaking a journey through the jungle on the back of a big elephant, his friend and guardian. Initially it is difficult for him to relax for more than 30 seconds, but with each session he is able to let go a little better. In this phase of therapy, musical contact plays or duo plays are of special importance. These are improvisations in which the therapist and the child share one instrument (gong, bass drum, log drum) sometimes using voices as accompaniment. Daniel hereby learns to breathe more deeply and his posture improves considerably.

Phase 2: During the imagery and relaxation exercises Daniel is now able to relax so deeply, that his body jerks spasmodically. He seems more
cheerful and to have gained confidence. This shows in activities like his counting in the “hello”-song. In this phase, symptom improvisation is used to symbolically externalize Daniel’s headache. Daniel chooses the bass drum as the acoustic representation of his symptom. The headache is played by the therapist, while Daniel plays the piano, fighting the headache. Daniel “wins” and seems to profit from the possibility of converting the painful physical symptom into sound, thus relating to it and making it tangible. He learns that he does not have to passively endure the pain but can actively influence it. In a ritual improvisation “freedom from pain” is musically enacted. For this “happiness music”, Daniel chooses the guitar and asks the therapist to play the piano. During the improvisation he starts to whistle, which he often does when feeling good. Daniel becomes more flexible in his body language and in his reaction to the variation of musical parameters. For the upcoming school holidays he takes a small drum home to help him in case he has another migraine attack.

Phase 3: In a reality improvisation Daniel practices saying “no” and handling arguments. His musical expression is loud and definite. In musical contact Daniel always wants to have the last word. In musical role plays Daniel learns to deal more adequately with fights, conflict situations and aggression. Daniel reports finding it easier to stand up to his older brother now. In reality improvisations, self-confidence boosting experiences are induced. Daniel is encouraged to explore and name things he likes about himself. At the end of Daniel’s treatment, the results of therapy are reflected on and reenacted in a musical self-portrait, in which Daniel can again arrange his strong and not so strong points musically. Daniel has been able to greatly enhance his self- and body-awareness and has gained a good level of sensitivity towards his personal needs. While therapy was ongoing, the frequency of Daniel’s migraine attacks decreased consider-
ably, and in a follow-up interview 6 months after end of therapy his mother reports that Daniel no longer suffers from migraine.

**Literature**


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