Klinikum Staffelstein

Fachklinik fur Orthopadie, Neurologie, Geriatrie und Rheumatologie, stationare und ambulante Rehabilitation in Kooperation mit der Friedrich-Alexander-Universitat Erlangen Nurnberg

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23.09.2002/

KOBALIA, George Anzor 22.12.1989, 5. Maiakovski Street, 384730 Tsalenjicka, Georgia

Treated in the Department of neurological rehabilitation of the Klinikum Staffelstein from 19.9.2002 until 29.3.2003.

Diagnosis: Postvaccination Encephalomyelitis with residual severe Tetraparesis

The history of the patient is described in detail in the medical report from the M, lashvili Children's Central Hospital in Tbilisi and the report from the Christian-Doppler Klinik Salzburg.

Summarized, Georgi Kobalia was vaccinated on March 18th 2002 against hepatitis ? and thereafter developed severe neurological symptoms starting at the 19th of March and culminating in a comatose state with complete Tetraplegia and respiratory insufficiency on 21st of March. Under treatment with Immunoglobulins and Cortison he regained consciousness within a few days but remained artificially respirated and completely tetraplegic with additional bulbar palsy over three months. With signs of a slow remission he was transferred to the Neurological department of the Landeskliniken Salzburg where further treatment and diagnostic examinations were performed. The MRI at this time showed patchy lesions in the brainstem (medulla oblongata) and large lesions of the Medulla cervicalis from CO - C3. On clinicla examination he had a lower bulbar palsy and an almost complete Tetraplegia combined with hyp- and dysasthesia of trunk and extermities. Swallowing was demonstrated as normal by videofluoroscopy. He was treated with by physio- and ergo- and speech therapists , because of the severe spasticity botulinum toxin was injected in the legs. During this stay the control of the head movement improved very well and he could be mobilised in a wheel chair.

On September 19th he was transferred to our rehabilitation hospital for further treatment. On admission he was fully oriented, there were no signs of cognitive deficits. He could understand english language very well. His speech was dysarthric, phonation was not possible because of the tracheak cannula. Pupils and eye movements were normal except some small saccades during slow eye movements. No facial palsy, the tongue was atrophic on the left side with fibrillations and showed a deviation to the left when protruded. The head was tilted slightly to the right side. He could move both hands (right better than left) with very few strength (3-4 MRC), the tone of the arms was increased shoulder abduction was severely paretic on the left side and midgrade paretic on the right

Stretching the fingers was not possible on the left hand. He could bend both legs but not against resistance and could move the toes on the right side better than on the left side. Both legs showed a spasticity with frequent clonus of both calf muscles. All muscles were atrophied, all joints could be moved passively without restriction. The Tendon reflexes were very brisk on legs more than on the arms, Babinski's sign was positive on both sides. Somatosensory deficits were not present, pallasthesia and pin-prick especially were normal on both legs and arms.
Georgi had a tracheal cannula, coughing was very rarely possible, the breathing excursions of the thorax were reduced. He was continent for micturition and stool, blood pressure was 110/70 mmHg, heart frequency was 82, his weight was 31 kg. Skin and joints were without pathological signs.

Diagnostic investigations:

ECG: Sinus rhythm, 92/min, P-pulmonale.

EEG: 10/s alpha EEG, increased Theta activity over both hemispheres, no signs of epileptiform discharges.

Lung function (25.10.02): Vital capacity = 0,420 1, limited exspiratory flow. 11.12.02:
Vital capacity = 0,61.

Thoracic sonography 25.9.02: no signs of pneumonia.

Fluoroscopy of swallowing 5.11.02: Minimal postdeglutitive aspiration.

Computer Tomography of the neck: minimal tracheal stenosis caudally of the (closed) tracheostoma.

Blood examinations: WBC 9.8, RBC 4.92, HB 13.2, Throm. 269 000, LDH, CREA, BUN, Ca, K, Na, CRP in the normal range. AP elevated with 96 U/l, INR 1,03. O2 Saturation 98%.

Therapies:

Physiotherapy: Georgi was treated daily with stretching exercises, with active and passive ROM exercises, later with standing and walking exercises on the ground and in the water. Several techniques (Bobath, PNF, functional movements) were applied.
At discharge Georgi could stand alone for a few seconds, he was able to turn from one side to the other when laying down on a hard ground, he could hold his head (tilted to the right) for more than an hour and and was able to drive a wheel chair very slowly for several meters on a flat floor. He was able to drive an electrical wheel chair very safely. But he could not make transfers from bed to wheelchair without help, and was not able to walk for one or two Stepps alone. His trunk became mors stbel, so that he can sit on a normal chair or freely for half an hour.
He received a wheel chair from Salzburg which will fit for the next 1-2 years. The strength of both legs increased slowly during the 6 months of treatment, further increase is probable during the next time.

Ergotherapy: The aim of the exercises was a better function of both arms and hands, cooperation in ADL and a better sitting ability. High frequent therapy was performed. In the first weeks a good function of the right arm and hand could be achieved, later the function of ther left arm was facilitated and the strength increased. At discharge Georgi could eat alone with a spoon, he could sit freely for more than 10 Minutes and he was able to manipulate things with his left hand. We could not reach an abduction of both arms to the horizontal, the position of the during sitting was tilted to the right after few minutes. He could help ADL, but needed further help for dressing, washing, transfer to toilet and Bathing. Further functional gains are to expect in the next months if exercises are continued.

Speech therapy: The aim of the speech therapy was to strengthen the voice and to activate the diaphragm. During the long stay continous progress was made, the voice became louder, the movements of the diaphragm were intensified, the duration of phonation was prolonged. Self exercises for diaphragm movements were given to the patient and his mother.

Swallowing therapy: Georgi could swallow physiologically, but was easily exhausted, he did not eat enough. His coughing was insufficient. Exercises for tongue motility and the oral phase were successful, but he continued to eat very small portions.

Psychological therapy: The rehabilitation also involved behavioural and solution focussed psychotherapy. The goal of the psychological therapy was to support Georgi emotionally, as well as helping him to establish strategies to cope with the illness, based on his resources. At the beginning he reacted a little bit shy, but in the process of the therapy a good therapeutic al relationship developed. One important focus of the therapy was to reinforce the resources of Georgi, as he seemed to be very intelligent, sensible in the social context, with a sense of humour and he did well with the computer, which enabled him to gain new abilities. It was part of the therapy to support Georgi to use the possibilities he has to cope with the situation and with the pain. It also involved methods of imagination and diversion. Furthermore it was part of the therapy to reflect the needs of Georgi and to reinforce him to express his needs, also by playing games. On the one hand it is, from psychological point of view, necessary for Georgi to ask for support, which he got from his mother, but on the other hand it is also important to do as much as possible on his own. Especially for a boy of his age it is crucial to get independent, as far as it is possible. Another theme in the process of the therapy was the reflection of the physical progress of Georgi, as to recognize and appreciate his own efforts and improvements. At the end of the therapy perspectives for the forthcoming future were discussed.

Besides the above mentioned therapies several additional treatments were applied, as fango, Massage, music therapy, EMG-triggered muscle stimulation, passive bycicling (antispastic effect), writing therapy, and some school lessons.

Course of rehabilitation:

Our aims of rehabilitation were the increase of mobility, more independence in ADL, understandable and loud speech, standing and sitting freely, normal swallowing, Decannulation, psychological stabilization, Improvement of handfunction, Reduction of Dysasthesias.
The mother of Georgi was present in the clinic during the whole rehabilitation except for two weeks. She supported the therapies and continued many exercises alone.
There were several medical problems: The removal of the tracheal cannula was difficult because of the very low vital capacity. We changed to an extremely thin cannula for some weeks and trained the breathing musculature intensively. When Georgi's vital capacity was increased to 600 ml we removed the cannula without any problems with O2 saturation. The Stoma was closed after 3 days. All forthcoming physicians should have in mind that Georgi still has almost no reserves of lung capacity. Intermittently (for example when he eats icecream) he gets bronchospasm which is sometimes severe that cortison has to be used. Georgis mother knows the symptoms and can cope with the bronchospasm. Spasticity of the legs was fluctuating but sometimes very severe. Trials with Tizanidin and Baclofen led to tiredness, Memantine was almost not effective. Georgi remains with severe leg spasticity and frequent spontaneous clonus of the foot, his mother wanted to make a trial with acupuncture methods when back in Georgia.
Concerning the rehabilitation strategy, we organized an electrical wheelchair to give Georgi the possibility to be self-mobile and to get motivation and social contacts. Parallel we tried to increase strength and function in the legs, trunks and arms and to achieve basic capabilities like eating, drinking and grasping without help. After removal of the cannula we trained the voice and to hold the head in a straight position. To prepare the insight for the severe illness the psychologist had many conversations with Georgi.
At discharge most of the rehabilitation goals were reached. Georgi is able to use his right hand for eating, he can speak understandable, the cannula is removed, standing is possible for a few seconds alone and sitting is possible on a normal chair for more than an hour. The left hand starts to perform

function, he can drive the wheel chair for some meters. Despite this progress there is still sever Tetraparesis with spasticity in the legs. Georgi's mood is good and his intellectual development is high.

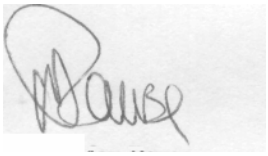
After one year in hospitals our advice to Georgi and his mother was to return to the family to Georgia, reintegrate in social life, go to school again and continue regular therapy. We estimate that further slow progress in abilities will be achievable and that in a few month a further intensive therapeutic cycle in a well equipped rehabilitation center (preferably in a center for paraplegic and tetraplegic children with) will be indicated.

Medication:

Memantine (Axura) 10 mg 1-1-0 Tizanidine
(Sirdalut) 2 mg 0-0-1

Recommendations:

Continuation of therapeutic exercises for the hands and the legs (physiotherapy and ergotherapy) Trials to reduce spasticity in the legs Social reintegration (visiting the school)



Dr. Max Pause
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KOBALIA, Georgi