

From Hanging to Motor Rehabilitation

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Abstract

At the end of the nineteenth century, doctors, faced with the impossibility of treating certain diseases of the nervous system, offered the patient all sorts of treatments, even if they were symptomatic. In the absence of a truly effective pharmacopoeia, they have resorted to popular methods sometimes applied since antiquity by investing in the therapeutic use of physical agents; hydrotherapy, spa treatments, electrotherapy, massage and gymnastics. Doctors empirically test all the techniques especially for the treatment of hysteria, but also the most charlatanesque even the most extravagant under cover of science and the medical monopoly conquered in 1892. There is then an undeniable dynamic of experimentation and innovation to treat nerve diseases that present motor, sensory and sensory disturbances. These methods do not seem sufficient to bring significant improvements to these disturbances, or even to cure them. Doctors are disarmed in front of carriers of certain syndromes, such as chorea, locomotor ataxia, chronic myelitis, Parkinson's disease, Tabes, characterized by incoordinate movements, tremors associated with disorders of the sensitivity which hinder locomotion and all social activities. Patients with dorsalis tabes, the late nervous form of syphilis whose pathogen is not yet known, handicaps everyday life by uncontrolled gestures. Syphilis alone in 1860 killed nearly 120,000 people in France and would be as common as the cold (Flaubert G).

Keywords: *Motor Rehabilitation; Parkinson's Disease; Chronic Myelitis*

A new treatment for tabetic ataxia

In 1883 Dr. O.O. Mochutkovsky (1845-1903) doctor in Odessa treated a patient suffering from a vertebral deviation, by the application of a device of Sayre [1,2] used to apply orthopedic corsets, at the same time that he reached tabetic ataxia. After a few days, the patient indicates that the very sharp shooting pains, sitting in the lower limbs, have almost disappeared by the time he started wearing the corset. The practitioner then asks the question of what was the agent of this singular improvement in tabetic symptoms: the corset or the suspension? To clarify the question, he resolves to treat a certain number of ataxics, some by the application of the corset, the others by the only suspension. He finds that the corset is useless and abandons him. Since that date, Mochutkovsky has treated a large number of tabetics and speaks in favor of the effectiveness of this therapeutic process in these patients in particular, "the almost complete disappearance of atrocious pains and phenomena of motor incoordination...". It assumes that the weight of the body causes an elongation of the spinal canal and its contents, and that the action favorably influences the symptomatic set of tabes. The patient's neck is fitted with a harness that rests on the chin and occiput, then, with the aid of a hoist, the patient is hoisted whose weight provides traction. The session lasts from one to

four minutes, which is repeated every day or every other day. Most patients are tabetic, but also treats subjects with impotence, various progressive nerve diseases (Friedreich's disease, or Parkinson's disease).

The salpetriere clinic of nerve disease clinic

Fulgence Raymond, Associate Professor at the Faculty of Medicine of Paris, doctor of the Saint-Antoine Hospital is responsible, at the request of the French Government, in 1888 to report on the administrative functioning and the scientific activities of the universities in Russia within the framework of diseases of the nervous system; a true ambassador, he is accompanied and guided by J. Onanoff (1860-1892) assistant of Charcot, Russian of origin. During his mission F. Raymond discovers this new mechanical treatment of tabetic ataxia [3,4].

Back in Paris, he reports to JM Charcot the method, which is tested in the service of the Salpetriere, from January 1889 [5,6]. Charcot gives his first results and entrusts to his head of clinic, Gilles de la Tourette (1857-1904), a devoted and valued student of the Master, to continue the investigation of the method that is applied to other diseases of the nervous system. Three months later, in March 1889, Charcot reports the results on a new series of 114 patients treated with this suspension, which confirm those of the Russian doctor: 38 improvements but 35 to 40% of patients do not receive any benefit. The method quickly spreads in Parisian hospitals including Cochin, in the provinces, in Europe, in America in about thirty services [7-9].

The benefits of treatment would be related to the lengthening of the marrow, to the extension of the roots of the nerves which would cause an improvement of the blood circulation in the meningeal envelopes in the vertebral canal and a fight against the fibrosis. The principle of elongation is based on the work of G. M. Debove and Thomas G. Morton who advocate the elongation of the nerves in the treatment of pain fulgurantes [10].

Charcot states that "the results obtained to date are striking enough to be advocated and seriously recommended for the attention of physicians". The method "Mochutkovsky" is approved by the head of the French neurological school. Temporarily placed on the front line despite doubtful results, it will join other therapeutic and physical therapies: bone mercury or friction, fire points, injections of nerve substances, electrotherapy, hydrotherapy. Spa treatments are also encouraged, particularly at La Malou-les-Bains, a treatment center specializing in the treatment of nerve diseases, especially ataxic patients.

Their presence is at the origin of the many stays of G. Duchenne de Boulogne (1806-1875) as part of his electrical experiments for the diagnosis of muscular and nervous diseases.

Alphonse Daudet reached tabs on the advice of Charcot will make stays there described in a small booklet "The Doulou" published after his death.

The hanging surprises the public and in the number 2024 of March 23rd, 1889, Illustration (universal newspaper) represents to its readers the session of suspension, with humorous comments". To be hoisted up and runs to the rope of the salute.. the patient regains his lost energy".

The widespread diffusion of the method leads to a wide debate in France, Germany, Austria, Russia, Great Britain, America where many doctors are in favor of the suspension. If the suspension is not a curative medication, it has, according to its promoters, influences on some manifestations of tabes; pain, genitourinary disorders and motor incoordination.

But, the technique remains brutal and scares the patients which justifies a modification of the devices. Thus, A. Bogroff in 1892 [11] summarizes the observations of 26 experimenters of the process and proposes adaptations of the material in which traction is substituted for hanging; the patient is then lying on an inclined plane and the traction is distributed through the olecranon shoulders and gutters.



Figure 1: *The new treatment of ataxia at Salpêtrière. The Illustration of March 23, 1889.*

Cadaveric studies on humans and animals are behind these changes. Dupuy-Fromy from Bordeaux offers graduated cervical traction in a sitting position, the same applies to Sprimont from Saint-Petersburg as well as from Bechterew. Bonuzzi on his side offers a forced flexion of limbs on the trunk. From 1890 to 1897 different doctors present their results, some are failures others persist in the technique notably Ostankoff which presents important statistics on 2,212 suspensions as well as Motchoutkowski with 993 suspensions with very uncertain results.

The suspension does not produce elongation of the marrow!!!

If the process becomes subject of theses and spreads in France, it is practiced outside hospitals in gymnasiums and hydrotherapy institutes given the simplicity of the procedure, despite the unfavorable opinion of doctors "there was soon plus a hydrotherapy facility, even

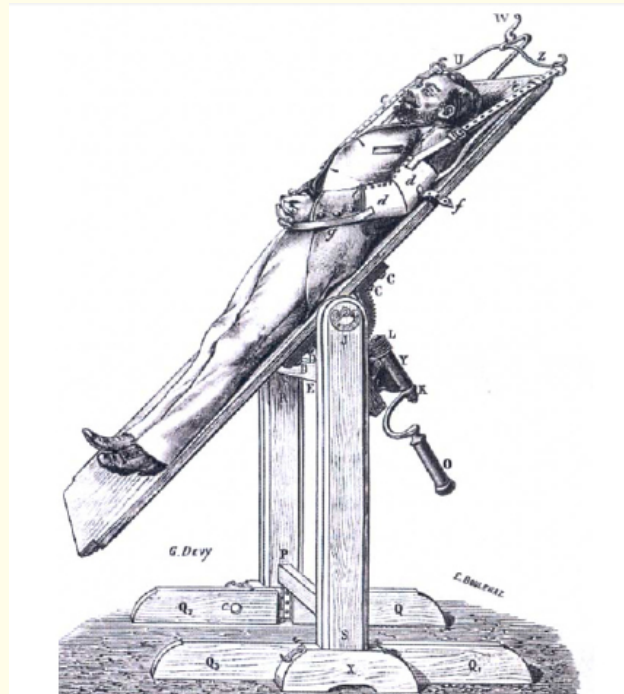


Figure 2: Motchutkovsky/Bogroff Method.

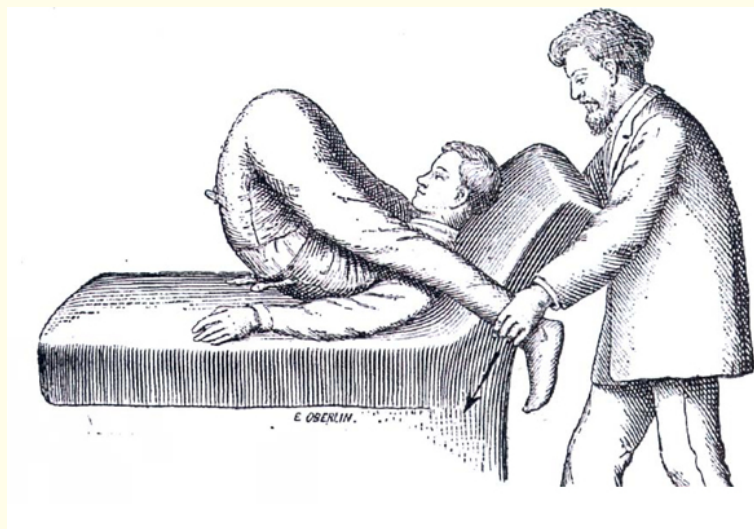


Figure 3: Bonuzzi Method.

a gym, where it was not applied. " The promoters find that the practice is "most often left in the hands of bath boys, people completely ignorant of the things of medicine" or even by servants. Some patients suspend themselves every day some for 3 years, more than 1,000 times. Allaxes are subjected to suspension at all times, so that complications, serious accidents, even death, which cause an unfortunate disrepute to the process and encourage the promoters to exercise caution. Accidents reported are, according to their promoters, linked to the presence of "clumsy and incompetent laypersons". But the improvement of the symptoms remains modest of the order of 25%, and that is the reason why the doctors wonder about its effectiveness, the indications and its effects sometimes very contradictory.

In 1897, Gilles de la Tourette, who became a hospital doctor and associate professor and Chipault (surgeon), demonstrated, in support of anatomical studies on cadaveric parts, that the process of suspension by the head produced only one insignificant lengthening of the spinal cord, only the forced flexion of the spine produces one of the order of one centimeter. In 1897, Professor J. Grasset [12] of Montpellier presented a report on the different treatments of tabes at the 12th International Congress of Medicine in Moscow, where indications of mechanical treatment by the suspension remain limited. Professor E. Leyden of Berlin believes more in suggestive action than in salutary action on the disease, not to mention the condemnation of the method by the American Neurological Society. Despite the central posture of Charcot, the lack of scientific legitimation does not allow to impose a stream of ideas.

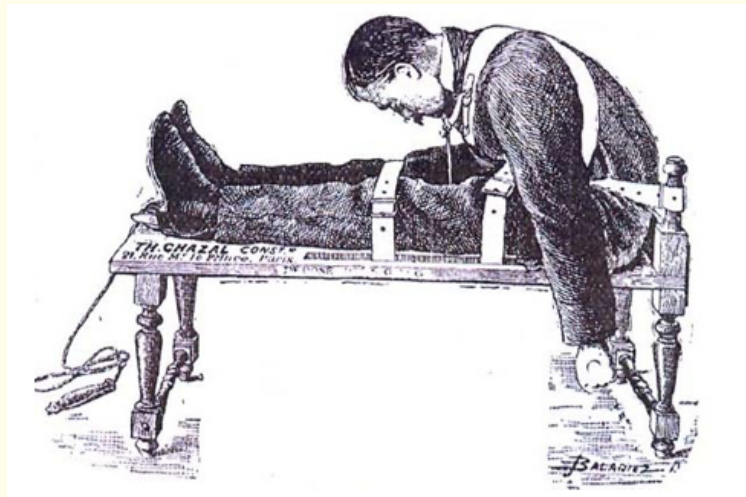


Figure 4: The Gilles de la Tourette method.

The therapeutic clinic of the Cochin hospital

At the Cochin hospital in Paris, Dujardin-Beaumetz (1833-1895) [13-15], a doctor at the hospital and a member of the Academy of Medicine, is the proven promoter of modern therapeutics; hygienist, activist, he actively participates in the development of hygiene measures in the communes. His teaching attracts as at the Salpêtrière "a crowd in its amphitheater". Pasteur, he is the author of numerous books and papers on pharmacology and therapeutics. He is particularly interested in new medications, prophylactic, nutritional and therapeutic hygiene "that is to say, the study of all the agents that therapeutics can draw from hygiene for the cure of diseases". Interested in nervous diseases including hysteria, hypnotism, suggestion, his medical thesis in 1862 on locomotor ataxia, and in 1878 on acute myelitis; It has a therapeutic and pharmacology laboratory in Cochin and also hosts many French and foreign doctors. Dujardin-Beaumetz, having been informed of the new method of treatment of ataxia by suspension, is experimenting in 1889 with the method at the same time as at Sal-

petriere: 25 patients are subjected to this system of hanging. He gets "good results" including 4 improvements in walking. The results are based on a study that uses the Marey and Demény method, which highlights for certain patients an objective improvement in walking. This approach highlights its scientific approach to highlighting the results. obtained. He goes as far as to bring improvements to the process by advising to resort to the process Pichery inventor of the gymnastics of the opponent, a less brutal method than hanging and to which the patient can participate in the correction of disturbed motor skills.

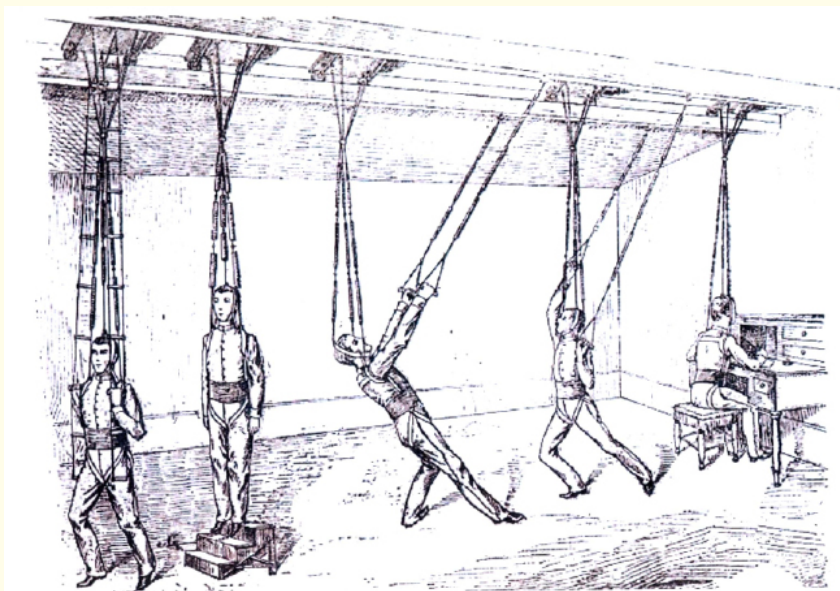


Figure 5: The gymnastics of the opponent after Pichery.

Competition and competition in medical innovation

The two schools will momentarily find themselves in competition even in antagonism: the prestigious school of Salpêtrière, cradle of the new science, and that of the therapeutic clinic of Cochin whose doctor does not hold the chair of therapeutic discipline in withdrawal. This chair, which should normally be used to develop research on the treatment of diseases, is in fact given as a waiting room. This long neglected discipline is considered a secondary science by all-powerful clinical teachers. If the service of Cochin does not belong to the university, its leader by its social posture and its organization imposes it as the referent of the discipline.

Dujardin-Beaumetz wants to break with the specialized clinic that does not provide a therapeutic solution, because we must provide practical answers to patients who cannot judge medical science but appreciate the care provided. At the same time, he encourages a new procedure that a Swiss practitioner proposes for the treatment of ataxics. It is no longer a mechanical treatment where the patient is passive but participates in his treatment; he becomes the actor of the correction of his incoordination. The treatment consists in relearning the gestures of the everyday life and the automatic movements, it is a real cerebral gymnastics, reasoned to see compensating. This process is then applied in his department under the responsibility of R. Hirschberg (1862-1920) also of Odessa origin, without official hospital status, which will support his thesis the same year [16,17].

A new therapeutic method

"We must abandon the idea of attacking the disease and apply to treat the patient..."

For the first time a doctor of hospitals seeks to increase the number of curative means next to the pharmacopoeia and to propose in his lessons treatments for all diseases. Faced with the difficulty of treating locomotor ataxia or even resorting to any therapeutic intervention that might be harmful, some medical practitioners note the failures to heal in the anatomical sense of the term this disease. A new method is recommended by a Swiss doctor, Dr. H.S. Frenkel (1860-1932) who seeks to improve the treatment of motor incoordination of limbs in ataxic syndrome by a kind of compensatory specialized gymnastics [18,19].

Practical answers that treat the patient...

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In 1887 H.S. Frenkel of Heiden, examining a patient with tabes, observes his inability to perform coordinated movements. A few months later, during a new examination, the patient shows a clear improvement in his incoordination. At the request of the practitioner of this favorable evolution, the patient informs him that he had practiced to repeat the gestures. Starting from an observation observed in tabetics who realized that they could correct their ataxia and improved themselves, Frenkel develops a theory taking into account the motor memory of the movement that participates in the coordination and which is not an innate function but acquired through education as the newborn and the child during the first acts of motor. This event inspires Frenkel, ataxia could be reduced by practice or at least limit incoordination. It's about looking for detours to lessen the effects. A house is rented which he equips rooms with exercise devices to improve coordination.

He draws footprints on the floor with chalk so that patients follow them and use parallel bars to ensure balance. Frenkel offers to relearn again to the patient to get up, to sit, to walk, all by breaking down the movements using a series of simple exercises and with the use of some small equipment and devices.

R. Hirschberg, goes from 1891 to 1892, applies it and tests it at the hospital Cochin. In 1893, in the General Bulletin of Medical and Surgical Therapeutics, he formulates the principles of the so-called reasoned gymnastics method, which means that the patient must understand the meaning of movement; he prefers this name to that of compensatory treatment chosen by foreign doctors. There are two indications: to raise the physical and psychic resistance of the patient and his morale, then to try to compensate, as far as possible, the motor disorders caused by sclerosis.

Hirschberg gives the first bases of this new medical procedure that seeks to improve the quality of life of patients with evolving disabilities. The accomplishment of a repetitive and familiar movement then becomes automatic as for the learning of the violin, the bike, the dance or the piano. He is then asked to the patient, with great attention and with the help of the sight, to relearn gestures of the everyday life, to get up, to walk, to sit, to seize objects... The recourse to the relearning of the gestures of the Everyday life is a new form of gymnastics under the authority of a practitioner who guides the movement to perform.

The scholarly medical world welcomes the new method

Frenkel is welcomed by F. Raymond at the Salpêtrière who entrusts him with personal illnesses. In 1896, having observed improvements, Raymond devotes clinical lessons to the genesis, the purpose of the method and the legitimate. He reports the first results on four tabetics of the Frenkel method from 1893 to 1896 and those entrusted to his former head of the clinic. Raymond shows 75% improvement and tries to explain the scientific basis of the method and the reason for the regression of the disorders, in particular incoordination. This new method, which the specialist doctor claims paternity and direction of treatment to strengthen the medicalization of the process,

cannot keep the term gymnastics. Raymond proposes as definition that of "reeducation of the movements then of motor rehabilitation" of which it gives the definition "reasonable gymnastics intended to restore the normal relations between the conscious perception and the will".

Professor Raymond at the demise of Dujardin-Beaumetz in 1895 entrusts to Hirschberg doctor "masseur and rééducateur", the first service massage and rehabilitation of the Salpêtrière, Dr. Kouindji succeeds him in 1905 and continues the action of his predecessor. Communications on rehabilitation during the many congresses (physiotherapy congress) of medicine of the beginning of the century will give an academic legitimacy to the method. M. Faure and G. Constensoux, former interns of the Paris hospitals and of the clinic of nervous diseases, directors of hydrotherapy establishments at La Malou, then make the first statistics of the results of the method in 1903 [20,21]. The principal promoters and initiators are found together in the Society of Physiotherapy founded in 1900, society they preside [22-35].

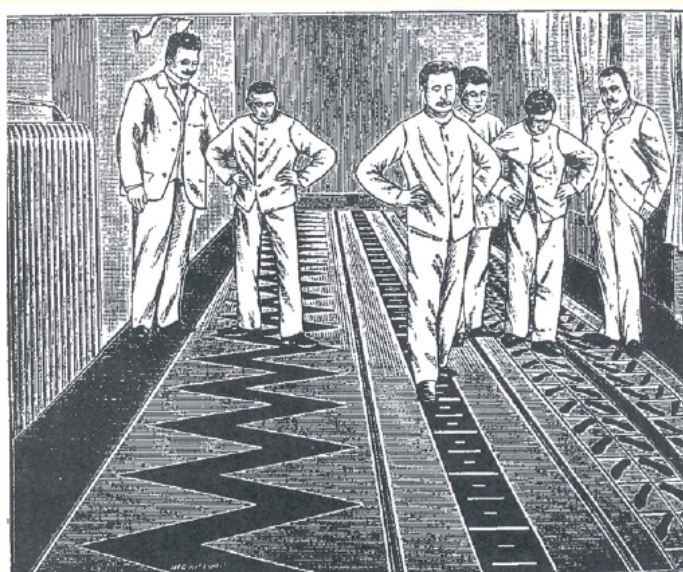


Figure 6: Rehabilitation of walking after Frenkel.

Conclusion

This is the first description of a process that is not therapeutic as such where one must abandon any idea of influencing the pathological process. It is about learning to compensate, to adapt and to adapt to motor disorders. The search for confidence in the subject who must adhere to treatment and overcome his apprehensions, combined with a program of exercises specific to his disability, evokes the anchoring of the concept of contemporary functional rehabilitation. It is the appearance of a new concept that demands that we devote the necessary time and patience. This process is at the origin of a medical specialty validated in 1965 and the justification of the presence of medical auxiliaries.

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