

Dietary Treatment for Migraines and Pulmonary Tuberculosis *

By M. Gerson **

I

The striking fact that migraine sufferers who develop tuberculosis demonstrate a unique change of course from their original ailments needs to be mentioned. As is well known, an allergic metabolic disturbance is present with migraines as well as other episodic disorders (probably caused by a hypersensitivity to table salt and products of protein digestion), which induce vascular disorders and thus trigger the known phenomena. Among other things, it has been observed that the beginning of a carcinogenic growth can suppress the tendency toward migraine attacks. Similarly, it has been determined that the last two-thirds of a pregnancy can have the same effect; furthermore it has been clinically observed that a number of feverish diseases, such as angina, malaria, the flu, typhus, scarlet fever, the measles – possibly caused to some extent by fever acidosis that became known through Nannyn and Minkowski – lessen the severity of episodic disorders or altogether stop the attacks for a few months, sometimes only after an initial worsening. This occurs not only with migraines, but also with a number of other episodic disorders such as eczema, urticaria, asthma, Quincke's edema, as well as epilepsy and angina pectoris.

Based upon a large amount of material, I was able to determine that the various tuberculous diseases change the clinical manifestations of a pre-existing migraine condition. This fact can give clarity to the influence of diet on tuberculosis.

For the forms of skin tuberculosis, in particular for lupus, which generally can be seen as the easiest form of tuberculosis to cure through a salt-free diet, the impact of the pre-existing migraine almost always passes so that during the course of dietary treatment, migraines and skin tuberculosis show progress at approximately the same time. At the time the patient's skin tuberculosis¹ is cured, the patient has also become free of migraine.²

The progression is different for bone tuberculosis. If feverish and more exudative (discharge-producing) processes such as ulcerations, abscesses, fistulas, or sequestra exist, then the tendency toward migraine attacks has, for the most part, already disappeared before the dietary treatment, and remains gone until the *tuberculous process* has changed favorably through diet. Only after those periods of time one saw an initial return of the attacks and after that an almost parallel recovery process for both ailments. The behavior of the migraines with the severe forms of pulmonary tuberculosis, again, differs. For all feverish, active forms of pulmonary tuberculosis (for the latter also without fever), the migraine attacks, in their characteristic form, are almost always suppressed, only to reappear intermittently in a most severe form after an initial improvement a few months after the introduction of the dietary treatment. If other

* Since the largest amount of time had to be used for an x-ray demonstration, the first section of the original topic of the lecture ("On Nutritional Therapy for Episodic Disorders and Pulmonary Tuberculosis") could only be lightly touched upon.

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¹ For literature, see Rommer, Volk, Dorffel, among others.

² In order to remain free from attacks, more than half of the patients had to continue observing a diet, even if it was less strict.

pulmonary tuberculosis progressions come to a standstill, then the dietary treatment has to be continued for a longer period of time, even if in a milder form (due to an existing sensitivity to protein and NaCl), before the migraine episodes become weaker and more infrequent. From this observation, the following conclusions must be drawn: if a body already "constitutionally" tends to be allergic because of its migraine condition, then, due to the addition of the tuberculosis, a new and different allergy develops. Thus two separate forms of allergy meet: one, the existing constitutional type, the other arising because of the tuberculosis. Strikingly, in such cases a hypersensitivity almost always remains, requiring a permanent dietary therapy in order to control the migraine. This unique behavior is even more striking here, since the Gerson Diet (G.-D.) was indeed originally found to be purely a "therapy for migraines"; it appears to be a paradox that the attacks occur just when this migraine therapy, which otherwise warrants such assured successes, had been in effect over a longer time period.

II

As a cause of the various courses of pulmonary tuberculosis, Banke first recognized a legitimate connection between the different allergic and pathomorphologic processes. The authors Römer, Rösze Redecker, and Pagel, among others, also utilized these thought processes as an explanation for different pathological findings for the inflammatory symptoms and in particular as an explanation for the variations in the progression of the episodes for tuberculous organ diseases.

Pagel believed that the tuberculous infectious process and especially the occurrence of the weakening in severity, with its various effects, generally depends upon the specific allergy that already exists; yet this process could also be stimulated "non-specifically".

Rösze, on the other hand, explained every inflammation as an allergic process, and the elimination of the tissue changes that result as a parenteral digestion. These materials include "germs, necrotic tissue, thromboses, exudates, extravasates and other items foreign to normal tissue, and that require digestion. With this, he distinguishes between cell and liquid (fermenting) digestive aids. Apart from that, he rightly includes the antigen antibody reaction as part of this complex.

Similarly to the normal digestion of proteins during tissue cleansing, when caused by a local inflammation, products of protein digestion form. With this explanation, Rösze compares the infection with nutritional metabolism. This is one variety of protein metabolism violently forced upon the body. It takes place not on the way through the gastrointestinal tract, but rather outside of it. Here, the *whole* body is forced to be involved in an unusual manner. The infected part is differentiated from the healthy part, the absorption and digestion of the waste products is initiated and carried out, restitution or scarring could follow. This applies to every acute and chronic infection, to every ulcer, to every type of infiltration. If the body now has the strength, for example with tuberculosis, to eliminate bacteria and cell debris that lies in a diseased area in the center of tissue, one could imagine that these would be broken down and dissolved in a similar parenteral manner, as is for the protein bodies (which later cause the attacks) that arrive in the vascular system and are broken down enterally during a migraine.

The "abnormal" process of absorbing small amounts of the protein-containing byproducts of an infection could possibly be understood in terms of a "desensitization", approximately equivalent to prophylactic injections having been done in therapy of the smallest amounts of protein – both are parenteral. In this way, a general reorganization is created, which probably also makes the vascular-

damaging substances that cause migraine attacks nonfunctional.³ In his conclusions drawn from the morphological blood tests in pulmonary tuberculosis, Sleudtner arrived at similar ideas and said: "The entire normal digestive, growth, and removal process of an organism is forced to readjust itself due to a new and unfamiliar stimulus." This readjustment is of course only temporary and probably only lasts as long as the stimulus is effective toward the tuberculous infection.

Therefore, a number of clinical observations suggest that we have to imagine the concurrence of a migraine condition with subsequent tuberculosis as appearing out of an ineffectiveness of the otherwise episodically-occurring moments of damage. In addition to this, a great value must be attributed to the explanation, since we actually do not know what the destructive substances of a migraine are, but rather assume them based upon how the course of effectiveness of the G.-D. and other clinical observations. It has already been mentioned above, that feverish illnesses have a temporary positive influence upon the previously referenced episodic disorders. Tuberculin injections⁴ or Ponndorf vaccinations effect migraines and asthma, for example, in a similar way. Both help only temporarily most of the time, just like the stimulus of the actual tuberculous infection (with the exception of lupus). Finally, the mild and the for the most part insufficient stimulating effect upon migraines of climate, sun lamps, x-rays, hormones, and other non-specific therapies is worth noting. As is known in clinical literature and as I have also observed myself, all of these can temporarily suppress migraines, just as in actual tuberculosis, so that we have to assume a parallel-running mechanism of action when looking at the clinical manifestation. – Elimination of breakdown products here, healing of an infection there – in the end, this implicates the absence of the appearance of migraine symptoms up until the improvement of the tuberculosis symptoms.

It was further observed, that the last two-thirds of a pregnancy and also sometimes the lactation period can sometimes stop the emergence of migraines. It is probably the case here that the slow but increasing rate of metabolism of the fetus would be effective as a stimulus and the placenta as a hormonal organ, according to Halban and Seitz. It can also be concluded here that the "reorganization" during pregnancy has the same effect on migraines^{4a} as does a tuberculous infection of the lungs or bones.

In short, tuberculosis in its active form (with the exception of lupus and non-exudative bone tuberculosis) temporarily shuts down the clinical manifestations of a migraine condition, asthma, and other episodic disorders.

III

But what suddenly triggers migraines again after a salt-free diet and clinical improvement, in other words after a presumed regression of the active processes? – especially with a therapy that delivers such assured results particularly for migraines! Following the preceding assumption, one could

³ As to why tuberculous migraine patients (without dietary treatment) are not only sensitive to protein but also to table salt, an explanation is still missing as far as I'm concerned - Muto(?) found that a noticeably strong connection exists between the effect of table salt and tuberculous allergy, and that table salt represents a similarly poisonous effect to the indexed tuberculous organisms as tuberculin (cited from Jung, Schweizer med. Wochenschr., 1911, No. 2)

⁴ Storm van Leeuwen declared the tuberculin treatment for asthma as a non-specific method in 1921 and since then has always held on to this method.

^{4a} Similar processes are observed by B. Zendek at Basedow, for example.

hypothetically say: the increased absorption of toxins and breakdown products from the area of the infection, which indeed do account for clinical improvement, had already, with the initially mentioned reorganization and desensitization, stimulated the inner glands toward increased hormone production, which even on its own can lead to improvement. (If this subsides, the initial condition, with disturbances leading to migraines, reoccurs.) Two cases of migraines that I personally observed and similar cases from the literature speak for such correlations. For both of the women mentioned, the Ponndorf vaccinations initially led to a latency of the migraines for 5 and 8 months, later the introduction of hormones – for one woman ovarian pills, and for the other a preparation from the anterior pituitary (Tenuigen-forte) – led to the same success, without having to change anything of their usual diet. Such cases in which a regulation in the hormonal balance alone leads to success, do occur in less severe forms of migraines, but are comparatively infrequent.

The meaningful clinical observation is that for migraines, the correct hormone restoration, tuberculous infections (also artificially implanted ones) as well as pregnancy, feverish illnesses, and a salt-free diet can have an equivalent success. What they have in common is that they exert a more or less considerable stimulus,⁵ precipitating the "reorganization". One has to imagine that a salt-free diet also works like a mild stimulus therapy,⁶ for tuberculosis similar to a tuberculin therapy,^{6a} for other infections and wound diseases like vaccine therapy, and finally non-specific protein therapy with milk, omnadin, etc. What remains in common with these is the re-organizational effect through parenteral protein digestion. Nutritional therapy initiates these reorganizations by triggering diuresis and bile flow with the subsequent absorption of the infectious or disease byproducts.

IV

In the course of discussion about problems of infection, von Noorden did not adequately take into account the protein components in regards to the effectiveness of the salt-free diet. He placed the emphasis upon the "anti-inflammatory power of calcium" during table salt deprivation. Yet we do not know how this effect is achieved, and if perhaps, for this reason, a number of other metabolic components should not be taken into consideration. My studies of blood sugar in severe pulmonary tuberculosis show that both after food intake and after stress tests an elevation to above-normal level and a delayed return to normal followed. *Yet for the cases in which the logical infectious components have become "overpowering" and the metabolic processes have already been significantly changed, I do uphold a strict observance of a salt-free and low-protein therapy, which is easy on the system, as urgently necessary in order to stress the growth and breakdown as little as possible.* Hence at the beginning of the therapy, a mild, diuretic, and light diet that stimulates bile flow is introduced for the severe and acute forms of pulmonary tuberculosis.

Regarding dietary protein, "animal proteins" have a damaging effect at the beginning especially for the severe, feverish pulmonary tuberculosis, according to my clinical observations, similar to a "nutritional allergy" (Funk). This is why at the beginning, such patients only receive egg yolks in gradually increased amounts, then liver (also sweetbreads [thymus] and brains), increased to about 100g

⁵ Initial increase of the sedimentation rate, NaCl excretion, changes in the blood analysis. The S.G. has to be done at first every 3(?) days, because occasionally the initial increase is already over after 8-10 days.

⁶ According to Schlesinger

^{6a} Actually the absorbed protein + tuberculin

four times per week and later, after noted improvement, quark, milk, a little bit of egg white, and lastly fish and meat.

By contrast, Herrmannsdorffer assumed a different notion in the modification of the original G.-D. for pulmonary tuberculosis in regards to animal protein; he believed that acidosis was necessary for the elimination of an infection (according to Luithlen, Schade, and others), and made an effort to establish an equivalent and more acidifying diet. For this, the proteins provide a favorable environment so that in the modification, he raised the meat rations and protein from eggs and kept the milk at its initial amount of 1 to 1½ liters. I did the opposite; the various portions of protein foods were *decreased* until the succeeding administration method was gradually developed.⁷ Today I believe it is possible that the majority of the verification test failures are due to these and other modifications (and for tuberculoses that are still capable of improvement). The concept of the damage to the disease's progression by special types of animal proteins, in its great importance, is not yet generally known - and that the belief in the amount of protein required by traditional dietary recommendations and the old tuberculosis diet practices, with their tables and calculations of 120 to 140 to 180g of protein⁸ is held onto tightly, has hindered the administration of the necessary requirements for my pulmonary tuberculosis therapy. Two clinical observations on the extreme importance of allergic reactions during nutritional therapy and their changes are mentioned here. A woman with widespread lupus in the face and neck, which she'd had for over ten years, received a Pirquet vaccination of old tuberculin in fatty tissue. As a result, a slow reaction occurred in the first month of the dietary treatment, in the second month a stronger one, and after three months a reaction with the most extreme local and general appearances: after six hours of headaches, nausea, vomiting, on the following day repeated vomiting, joint swelling, slight dizziness, temperature of 39 to 40°C, subcutaneous discoloration, the fatty tissue and the surrounding area swelled up a lot, became dark red, eventually cyanotic so that we feared a necrosis, the pulse was raised and weak, improvement was shown on the fourth day after blood-letting, enemas and cardiazol.

For a boy of 16 years with kidney tuberculosis and spondylitis, the Pirquet vaccination on his arm evoked a normal reaction in the first month, after three months of nutritional therapy a type of erysipelas swelling of his whole arm with 40°C fever, headaches, joint pain, and acholic diarrhea with a slight subcutaneous discoloration, improvement after two days.

It is important that the liver reacted, too, with a directly occurring, purely functional shutting down of the bile ducts (no mechanical obstruction, no infection).

In a manner of speaking, nutritional therapy has evolved in the past few years, so that severely ill tuberculosis patients receive no animal protein at all upon their arrival for a few days: so no milk, no eggs, no meat and fish, no liver, etc., but rather a purely vegetarian diet. After this, one starts with egg yolks. Those who are mildly sick immediately receive 1 egg yolk, then an addition one daily until 4 or maybe 6 per day has been reached. This amount is maintained for a long time. We mix 4 raw egg yolks into fruit or vegetable juice, 1 or 2 cooked and sliced or crumbled onto butter bread. For the severely ill, one gives them ½ teaspoon egg yolk on an empty stomach for 1 to 2 days in the mornings to start with,

⁷ Recently given by Verf. at the Congress for Internal Medicine, Wiesbaden, 1933.

⁸ See Schröder (presentation at the Tuberculosis Congress of 1930 and the Handbuch der Tuberkulose, 1931)

afternoons ½ egg yolk, and increases the morning and afternoon portion every 2 to 3 days, so that after 2 weeks, 6 egg yolks are given in fractioned doses, of these perhaps 2 cooked ones.

After the patient adjusts to the egg yolks, s/he receives liver, for 2 days straight on an empty stomach in the mornings 5g, afternoons 10 to 15g. Then on an empty stomach 10g, in the afternoons 30g, etc., until one can give 100g after 8 to 10 days. Now s/he receives daily about 6 egg yolks and 4 to 5 times a week 100g of liver each time. If in this time the general condition has improved, meaning that the fever is reduced, sputum lessened, diuresis and table salt excretion good, the left shift in the hemogram reduced, the appetite improved, then one can start with the introduction of quark while sticking to the diet up until now. One proceeds here in approximately the same way as above with the egg yolks and the liver. On the 1st and 2nd day, 1 to 3g in the morning on an empty stomach, in the afternoon 1 teaspoon is given; on the 3rd and 4th day in the mornings ½ teaspoon is given, in the afternoons a rounded teaspoon until on the 12th through 14th day a rounded teaspoon in the mornings and ca. 30g in the afternoons is given. This amount can now be given daily in the morning all at once.⁹ One can thus use approximately the same dosage method for the desensitization of orally-administered animal protein, as with parenteral serum dispensations for the avoidance of anaphylactic disturbances. The objection that the body becomes very oversensitive to protein with this manner¹⁰ is justifiable, but for the time being I do not know of any other way to do this that would be less disruptive of the healing process.

Later, yogurt, kefir and buttermilk are given in a similar manner. Patients remain sensitive to pure milk for a fairly long time. My observations have showed that about 90% of lung patients, especially those mild and moderately-severe cases, are not especially sensitive to egg yolks and liver. Also patients with more severe findings can be given egg yolks and liver from the start, provided that the general condition is still good and the gastrointestinal tract and the kidneys are still in good shape. With an improvement of the symptoms, I give meat and fish once each per week. This diet retains its original fundamentals; I have amended it through a few differentiations and variations in practical implementation.

According to these demonstrations, one can understand, that I consider a diet that tries to get by without a sufficient utilization of raw egg yolks, with their lecithin content, or without sufficient amounts of vegetable and fruit juices, to be unreasonable and inappropriate. These are prerequisites for optimal healing success. It is indeed correct, that through the fact that the diet increases a bit, yet economy at this time prolongs the illness and, in fact, leads to an increase in the cost of treatment, when all is said and done, from an economic point of view.

Of course regulation of the diet cannot be rigid. Thus in several instances, one must administer spinach juice by the spoonful, like medicine.¹¹ Gall and stomach patients who are especially sensitive to juices, have to receive special care and are initially only allowed to have oatmeal gruel with carrot juice. Due to the patient's constitution or because of chronic illness, one must be considerate of sensitivities to certain vegetables (especially spinach) or types of fruit protein (especially apricots, strawberries,

⁹ Urbach came to similar practical usages during his skin therapy, and in part assumed other ideas.

¹⁰ Note to the discussion, v. Noordens.

¹¹ In an emergency, "chlorosis bürgl" can be used as a substitute. Eujecor-Lebertran also contains natural plant chlorophyll (cited. Kausch. Zeitschrift für Tuberkulose, 1931, Volume 60. 4).

peaches); even if these do not occur often, they must be kept in mind. They can temporarily appear at the beginning of the diet.

V

Further development of the diet presents us the (possibly only ideal) task of determining the temporary or persistent hypersensitivities of each *individual* tuberculosis patient.

Since the methods specified for this purpose (assembled by Urbach) are somewhat cumbersome and are in effect still unsure, we will stick to the clinically and empirically known facts that have been rendered, that especially those severely ill with tuberculosis, like most patients with episodic disorders, react poorly to almost all animal proteins (also besides table salt) and draw from this the practical conclusion that they should avoid these substances.

With this, no differentiation between milk, egg, or meat proteins can be made to start with. But one can allow, in effect, the lecithin-rich proteins, such as egg yolks, liver, etc. Only a *general* desensitization appears practically attainable to me and is thus particularly necessary. This is often reachable after half a year for migraine patients through nutritional therapy, and approximately 45% of the patients can return to a normal diet after about two years without any harm being done. In contrast, almost 80% of the asthmatics¹² remain permanently hypersensitive, even more of the epileptics, and almost all of those sick with angina pectoris. The desensitization of the tuberculosis patients is treated extensively by others.

I must reject the zig-zag diet, recommended and practiced in some places by Schröder. After a properly-prescribed G.-D., every sudden change in regards to protein-*rich* nutrition and normal amounts of table salt is quite a difficult intervention.

Along with the clinical picture including a temperature, weight, and sputum curve, which are often atypical with nutritional therapy, the following also are available to us toward the observation of the disease's course:

- a) the sedimentation rate (ESR),
- b) the NaCl curve in conjunction with diuresis and
- c) the series of recordings from blood analyses.

It has been recorded elsewhere that the erythrocyte sedimentation rate with an initial rise is parallel to an initial loss of weight (through dehydration) in the first weeks: this, too, is one of the necessary symptoms of a favorable early response, as is an augmentation of the sputum at first and an initial rise of the ESR. The lack of these three symptoms: temporarily-increased NaCl excretion, initial rise of the ESR and initial weight loss would be taken to be a prognostically unfavorable indication of a reorganization (reactive ability) of the body that is no longer possible. Already with a previously salt-free diet, the initial increase of the ESR is, however, missing (because it is not part of the observed earlier stage of therapy).

¹² About the use of the zig-zag diet for other chronic illnesses, see von Noorden a. a. U. page 99

The temporarily-raised NaCl excretion is a prognostically important moment for the entire therapy. The author believed he could see the considerable partial effect in the beginning of the diet that the body excretes a larger amount of NaCl, and that at the same time calcium, which was abundantly added to the Mineralogen¹³ or Alkalogen mix, had a reaction. Doses of phosphorelated cod liver oil – or Eujecor, which is often better tolerated - should accelerate the appearance of the calcium effect. The "antiphlogistic" effect of calcium is meaningful, as von Noorden in particular continually emphasized. Although exact proof of calcium retention in patients treated with nutritional therapy is missing because of long balance studies, The author believed along with Urbach, who ran very interesting experiments on the regularly-raised table salt content of patients through in vivo extirpated skin, that important displacements in terms of calcium enrichment of the diseased organs happen. In order to suppress the effect of chlorine and to make calcium take effect, bromine is added to the mineral mix due to the known antagonistic impact of bromine toward chlorine. To strengthen this effect, calcium bromide was also given at the rate of 30⁰/300⁰(?) in addition to the mineral mix used in the past four years. Ideally one should use one teaspoon of it in vegetable juice or oatmeal five times a day for three days, then take a break for three days, etc. For those seriously ill, the dosage can be initially increased. Toulouse and Richet have already observed that a salt-free diet increased the effect of bromine for epileptics (see M. m. W. 1930, 23).

It does not really need to be mentioned that certain metabolic anomalies such as obesity and diabetes need to be taken into consideration. On the other hand, ovarian paralysis, watery adisopitas, and hypothyroidisms have to be sustained by the appropriate hormonal medication.

In two cases of lupus hypertrophicans, two administrations of thyraden tablets brought about the immediate onset of diuresis with increased chlorine excretion, and almost at the same time, reaction on the lupus, expected months earlier, started up. It needs to be briefly emphasized, that especially with those severely ill with tuberculosis, a dyspepsia of the stomach and duodenum is often found at the beginning. This needs to be treated with special care; we use moist compresses and temporarily Acidol Pepsin, sometimes a duodenal flushing. For flatulence, animal bone charcoal or, more recently, luizym is given.

In 15 cases, the nutritional effect upon the processes of cavernous recovery is demonstrated by eliminating every other kind of therapy, namely two adolescents with exudative processes, two isolated round holes, one case with predominantly bronchial seeds, and ten (in some cases larger) cirrhotic holes, for which the previous conservative or surgical therapy (pneumothorax and phrenic nerve paralysis) failed or where the pneumothorax could not be placed due to growths. The indication for nutritional therapy is specified based upon this demonstration and many years of experience. All those cases that come into question for this are those for which the surgical approach thus far is considered suitable, and in addition to these, all cases in which the surgical approach can no longer be used or has failed.

VI

In order to correctly understand and figure out the effectiveness of the diet and the reactions it causes in pulmonary tuberculosis, it is essential to take a number of factors into consideration, which on occasion could have an inhibitory effect upon the recovery progress. These are, in particular:

¹³ Analysis see M m W. 1927, 17. and Literature Edition No. 6

- a) the severity and extent of the disease process (especially the degree of intoxication); with transition to cachexia and anemia;
- b) complications often overlooked, such as sinus ulceration, anal fistulae, dental granulomas;
- c) previous treatments, such as operations, x-ray and quartz lamp radiation;
- d) constitutional tendencies, such as hormonal dysergie (ovarian paralysis, hypothyroidism, watery adipositas), extreme asthenia, etc.

The diet's success is, of course, ideally determined with lupus and other forms of skin tuberculosis, bone and joint tuberculosis. The advantageous results obtained here are also recognized for the very first time. For pulmonary tuberculosis, an objective monitoring of the disease's progression is possible in addition to the usual general analysis of the x-ray image.

Regular monthly radiographs have proven to be advisable here, since, as we could observe, a number of my patients reacted easily to the fluoroscopic procedures with temperature spikes and general discomfort. It is difficult to help those sick with older intestinal tuberculous disease and also those with longer, pre-existing toxic nephritis. Only a temporary improvement is achieved with Amyloid as already mentioned. Cases with holes on both sides, cirrhotic processes react very slowly, and sometimes the beginning of a favorable reaction first appears after half a year.

It must be explicitly stated that it is entirely incorrect to believe that the G.-D. is allowed to be seen as a specific therapy for tuberculous disease. The fact that tuberculosis is one of the most scientifically-debated common diseases alone leads to the results of nutritional therapy for pulmonary tuberculosis being pushed into the foreground in publications by the author. With appropriate changes made, the diet is also indicated for a number of other chronic and acute illnesses, especially when the other therapeutic methods fail for them: first and foremost the episodic disorders, whose allergic nature is in fact suggested (migraines, asthma, angina pectoris, epilepsy, hypertension, among others); among other chronic illnesses, especially the nerve and mental illnesses, also chronic rheumatism and even the arthritis deformans itself, where surprising results were obtained, although sometimes only after years of treatment.

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