

HEALTH AND STRESS

The Newsletter of The American Institute of Stress

Number 6

1997

MAGNETOTHERAPY FOR CANCER, HEART DISEASE, PAIN, AND AGING

KEY WORDS: polarizing solution, heart attacks, cancer, electromagnetic therapy, entropy, sodium-potassium pump, energy medicine, Sodi Pallares, Nordenström, Shealy, Liss

The Power Of Polarizing Solution

As indicated in a previous Newsletter, the most remarkable presentation at our 1997 Montreux Congress on Stress was the demonstration of dramatic cures of patients suffering from terminal cancer and heart disease by Dr. Demetrio Sodi Pallares. This world renowned cardiologist has written numerous articles and over a dozen books on various aspects of cardiovascular disease, including 15 devoted solely to interpreting the electrocardiogram. He achieved international fame decades ago, by showing that mortality rates and disability following an acute heart attack could be significantly reduced by the intravenous administration of a concentrated solution of glucose containing potassium, and insulin. This concoction was commonly called "Pallares' Polarizing Solution".

It was routinely administered for the treatment of acute myocardial infarction in medical centers throughout the world. Although most physicians really didn't understand its mechanism of action, there was little doubt that it worked, and that the sooner it was given, the better the results. Patients had quicker and more complete pain relief, less shock and other complications, and recovered more rapidly and completely. The usual explanation was that it provided more "nourishment" to injured heart cells, thus allowing them to utilize any available oxygen more efficiently.



AIS Distinguished Service Award presentation to Dr. C. Norman Shealy for his constant support and contributions to The American Institute of Stress over the past decade.

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*The Newsletter of
The American Institute of Stress*

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Some pseudoscientific physicians began to promote polarizing solution as a panacea for heart disease and other disorders. Additional ingredients that allegedly increased its effectiveness were often added, and some of the more extravagant claims of cures antagonized the scientific community, causing a backlash. The popularity of polarizing solution also declined as newer and more powerful pressor drugs became available for the treatment of shock. However, the original polarizing solution formulated by Dr. Sodi Pallares is now enjoying a resurgence of popularity because of the proven benefits it provides for patients undergoing coronary bypass surgery and other cardiac procedures that require temporarily stopping the heart, and/or hypothermia.

Angina, Coronary Insufficiency, And Myocardial Infarction

All of the above are sometimes used synonymously with the phrase "heart attack", but they are quite different. Patients with coronary artery disease experience angina when the flow of blood is not sufficient to meet the needs of the heart at that moment. This occurs when the heart has to work harder because of physical exertion, or spasm in a

coronary artery reduces oxygen-rich blood flow. Anginal chest pain is transient, and usually relieved by nitroglycerin or other drugs which dilate coronary vessels. It is more apt to occur when patients are anemic and have fewer red cells to carry oxygen, or at high altitudes, where red cells can't pick up as much oxygen as they pass through the lungs because of lower atmospheric concentrations. When the imbalance between the heart's requirement for oxygen and its availability persists, chest pain is apt to be more severe and prolonged, a condition known as coronary insufficiency.

If this problem is not resolved rapidly enough, a myocardial infarction will occur, meaning that some of the affected heart muscle tissue will die. The degree and extent of damage is reflected in the electrocardiogram, and can be visualized with various sophisticated imaging procedures. During episodes of angina and coronary insufficiency, the electrocardiogram and other tests can also demonstrate deficiencies in the delivery of oxygen to heart muscle. However, these abnormal findings are only temporary, and vanish following the attack. Patients can have multiple episodes of angina for years, and still have normal electrocardiograms when they are symptom free, because any damage is completely reversible.

During a myocardial infarction, some heart cells die, and adjacent areas may subsequently suffer various degrees of permanent or sustained damage, depending on the degree of deprived blood flow. However, even healthy heart muscle with normal circulation is affected, since the inflammation, swelling, and waste products resulting from dead and dying tissue can interfere with their nourishment. Microscopic analysis reveals a central core of dead cells, surrounded by a zone of severe damage that could become permanent, which blends into a still larger area of more peripheral tissue that is progressively less affected, but still not functioning optimally.

Much of the injury from an acute myocardial infarction can be prevented or reversed by rapidly supplying adequate nutrition and oxygen to cells that have not yet died. As will be explained, polarizing solution is able to accomplish this for several reasons.

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Cardiomyopathy, Cancer, And Electromagnetic Therapy

Since our 1997 Congress had a focus on the use of magnetotherapy for the treatment of stress related disorders, I was anxious to attract leading investigators in this area, and particularly those whose research could provide clues about mechanisms of action. I discussed this with Dr. Ronald Lawrence, a distinguished neurologist, and President of The North American Academy of Magnetic Therapy. He was enthusiastic about the proposed program, and immediately suggested that I invite Dr. Sodi Pallares of Mexico City to talk about his remarkable results and cures of patients with cancer and heart disease using electromagnetic energy.

I told him that I was familiar with the Sodi Pallares of polarizing solution fame. I had first become acquainted with his research when Hans Selye was studying stress induced myocardial infarction, and we verified the protective effects of potassium. Thirty years ago, I routinely gave the Pollares polarizing solution as soon as possible to all my acute heart attack patients, as did most other cardiologists I knew. I assumed that this was his son or some other relative, particularly since there was no apparent connection between polarizing solution and cancer, much less electromagnetic therapy and heart disease.

Ron reassured me that this was indeed the same Demetrio Sodi Pallares. He was still actively engaged in clinical practice and research to explore the mechanisms of action and clinical potential of his polarizing solution. Over the past few years, he had found that combining this with concomitant electromagnetic therapy, and a low sodium-high potassium diet, resulted in an amazing reversal of the downhill course of patients with far advanced cancers and cardiomyopathies, some of whom had apparently been completely cured.

I was somewhat skeptical, but wrote to Dr. Sodi Pallares to request some information about his current research. In his prompt and gracious response explaining this, he admitted his own surprise and amazement about the stunning success that had been achieved in certain extremely ill patients.

I was particularly intrigued by the observation that his stationery described him as specializing in the treatment of cardiac disorders with metabolic and magnetotherapy ("Cardiologo Especialista En El Tratamiento Metabolico De Las Cardiopatias Y En Magnetoterapia"). His subsequent explanation of this at the Congress was fascinating, but his treatment results were incredible. While numerous examples could be chosen, I have been asked to provide further details on the cancer patient described in a recent Newsletter, and will also show the results in a patient with terminal heart failure.

This 32 year old female had a history of breast cancer treated by mastectomy. She subsequently developed metastasis to the right hip which failed to respond to radiation and chemotherapy. When first seen in February 1996, she complained of severe pain in several parts of her body, and X-rays confirmed spread of the cancer to the right femur, skull, and both hands and wrists.

She was given polarizing solution twice weekly, pulsed magnetic field therapy for 4-5 hours daily, and started on a low sodium-high potassium diet. After ten days, her pain had significantly lessened, and her strength and energy were considerably improved. Four months later, she was completely free of all complaints, and, as noted below, her X-rays had essentially returned to normal. Unfortunately, this cannot be fully appreciated, since the size of these, as well as the other X-rays in this Newsletter are drastically reduced.



Extensive destruction of the head and neck of the femur.



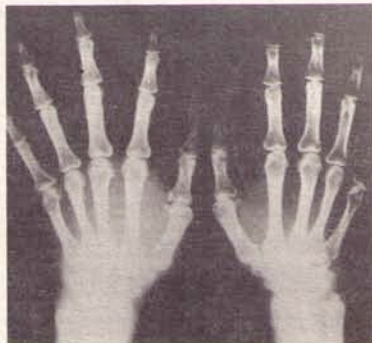
Healing complete after 3 months of treatment.

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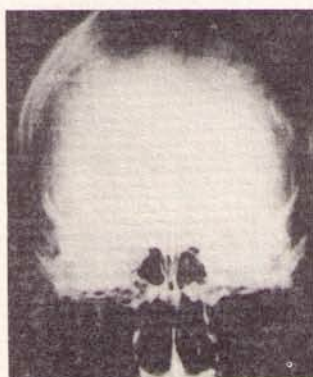
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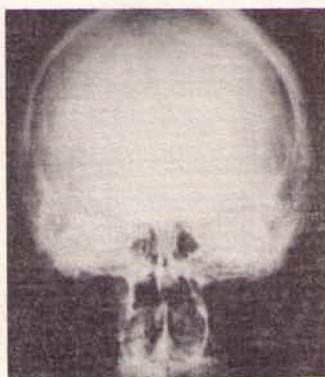
Marked destruction of the bones in the hands and the wrist.



X-rays of hands and wrists are normal after treatment for 3 months.



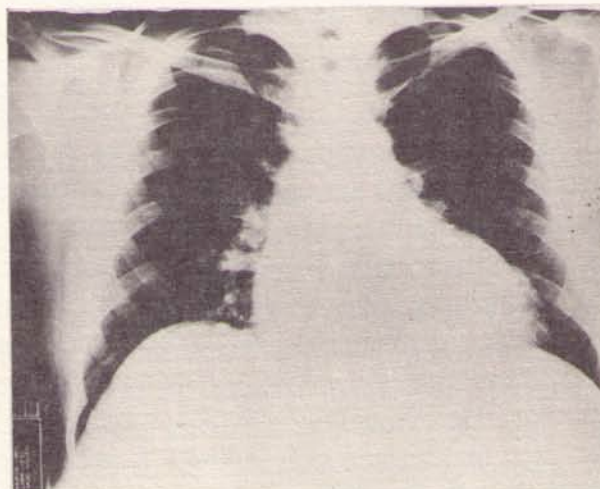
Skull X-ray when first seen. Note severe upper bone destruction.



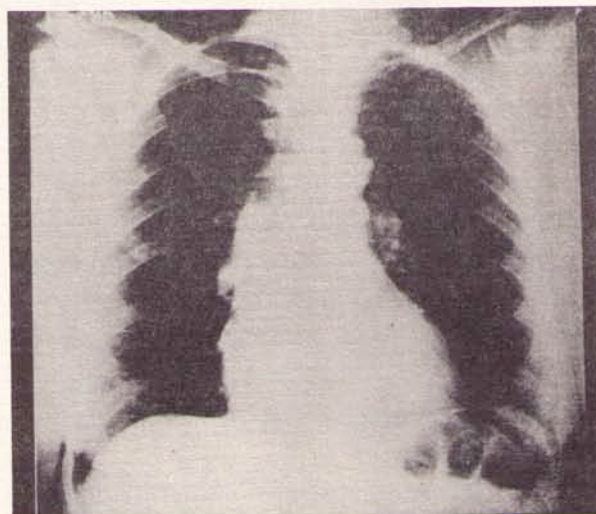
X-ray three months later shows complete restoration of bone.

This patient now leads a completely normal life, has no pain or any other symptoms and continues her daily full time working activities as a biochemist.

A 42 year old man had severe heart failure due to cardiomyopathy that was resistant to treatment. A heart muscle biopsy at a leading cardiovascular center confirmed myocardial necrosis, and he was told that unless he had a heart transplant, he would be dead in a few months. While waiting for a donor, he developed increasing shortness of breath, chest pain, and abdominal distention. When first seen, he was in severe heart failure, his heart was tremendously enlarged, and there were numerous abnormalities in his electrocardiogram. After only two weeks of treatment with polarizing solution, magnetotherapy, and diet, all of his symptoms had disappeared, and there was a remarkable reduction in heart size, as can be seen in the following X-rays.



Chest X-ray when first seen, showing marked enlargement of the heart.



Dramatic reduction in heart size after only two weeks of treatment.

Almost four years later, this patient is in excellent health and lives a completely normal life. He continues to follow the diet, but requires no medications.

The phenomenal success of Dr. Sodi Pallares' treatment approach has now been confirmed by other physicians. It has been also been shown to be effective in a variety of malignancies, including a very deadly form of cancer of the pancreas, in which life expectancy is usually only a few months following its detection.

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The Energy - Entropy Connection

But how can the same treatment cure such two seemingly dissimilar disorders as cancer and cardiovascular disease, that presumably have different causes? What is the common denominator? To understand this, we need to appreciate what distinguishes healthy cells from those that are dead or dying. While many different types of insults and injuries can destroy cells, in the final analysis, they do so by depleting its energy, or by interfering with its ability to utilize energy sources. Dead cells are dead because they have no energy, or life. A cell becomes sick when it doesn't have enough energy to perform its normal functions, or is unable to meet the increased requirements that may be imposed by various stresses. However, it can be rejuvenated if its energy is somehow restored, regardless of the initial cause of the problem.

All of the energy that is essential for life and growth comes from the sun. The most obvious examples are heat and light, which in turn, influence other environmental forces like wind and water, which can subsequently be harnessed to provide heat, light, or electricity. Solar outbursts supply electromagnetic emanations that can also be converted into other forms of energy.

Chlorophyll in plants absorbs light and converts it to chemical energy. During photosynthesis, carbon dioxide and water are converted into organic compounds which are stored, and oxygen, which is released. The oxygen is needed to replenish atmospheric supplies which were converted back into carbon dioxide and water during respiration. The stored organic compounds in foods are our major source of energy.

Living organisms constantly exchange energy with the environment as a result of metabolic activities. Our skin radiates heat, and during respiration and exercise, heat and chemicals that contribute to energy formation are emitted. These reactions and energy transfer processes are regulated by the rules of physics and chemistry. Thus, all forms of life are interconnected, since we all ultimately share a common atmosphere. In addition, every reaction that takes place in a biological unit is strictly governed by the laws of thermodynamics.

What are these laws? As its name implies, thermodynamics refers to heat, and its conversion to chemical, mechanical, or electrical energy. The first law of thermodynamics is that energy is never created or destroyed, it can only be changed, or converted. The second law of thermodynamics is that during the conversion of energy from one form to another, some of it is always degraded, or "lost", in terms of its availability to do work. This process, which is called "entropy", explains why perpetual motion can never be achieved in a closed system. Albert Einstein used the example of a car on a roller coaster to illustrate this.

As the car ascends the first steep rise, it acquires potential energy as it progressively resists the force of gravity, and this becomes maximal at the top of the loop. When it accelerates back towards earth, this stored potential energy is constantly being converted into kinetic energy, the energy of movement. As the car ascends the second upward incline, its kinetic energy is again transformed back into potential energy, and this sequence of events is repeated over and over with each successive loop. If the transfer back and forth between kinetic and potential energy was always absolutely complete, then the car would always attain the same height on the ascending loop, and the same speed during its descent, and we would indeed have perpetual motion.

However, we all know that this does not happen because of friction between the wheels of the car and the rails, which creates heat. Although heat is a form of energy, it can't be used to help the car do its work, and is dissipated back into the environment. If the surface of either the wheel or the rail is irregular, so that smooth, continuous contact cannot be maintained, then there will be a correspondingly greater degree of heat due to more friction. The car will be unable to climb as high, not because the system has lost any of its energy, but simply that some of it has been converted into heat, which is transferred elsewhere (during which some of it is also degraded). Entropy similarly reduces the cell's free energy to perform its work. The treatment described above provides more free energy by means of metabolic and magnetotherapy methods that have a solid scientific basis.

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Sickness Is Simply Lack Of Energy

The treatment approach developed by Sodi Pallares is based on the work of J. W. Gibbs, who formulated the concept of chemical potential as a source of energy. Gibbs devised equations to calculate the amount of heat generated by a chemical reaction in a cell, and to measure the amount of energy immediately available to the cell to perform any work that might be required. This has been referred to as the "free energy of Gibbs", and is sort of like having a constant supply of wild cards in a poker game.

The main source of these free energy wild cards comes from a remarkable molecule called ATP, or adenosine triphosphate. Cells convert nutrients and products of metabolism to energy by manufacturing ATP, whose power resides in its high energy phosphate bonds. The stored energy in ATP is similar to having money in a bank that is always open, since it is available for any purpose, at any time. As each phosphate is broken off, the bond connecting it to the rest of the molecule provides energy that the cell can use for growth, reproduction, muscle contraction, or anything it needs to do. In organisms like the firefly, it may even be converted into light energy.

However, just as some money is lost because of a small transfer fee when currency is exchanged from one type to another, some energy is lost during these transfers due to entropy. We know from thermodynamic laws that energy can't be destroyed, so it really isn't lost. It's simply not available for the cell to use, just as heat entropy can't help the car climb the roller coaster. Like the money "lost" during currency exchange, it eventually winds up somewhere else to be used for another purpose.

The most important reactions involving ATP are those in which the donation of one of its phosphates to another molecule, causes it to be energized. For example, glucose, a major source of energy, doesn't react at body temperature, and can't be utilized until it receives an ATP phosphate to rev things up. The major form of energy in brain and muscle cells comes from a compound called phosphocreatine, but this also requires a phosphate from ATP that can be joined to a molecule of creatine.

Obviously, ATP is a very handy thing for the cell to have available, so anything that can increase it, or make it more efficient by reducing entropy, would be a powerful plus. The formation of ATP in cells is facilitated by the presence of potassium and hindered by sodium, both of which are present in the fluids they are bathed in. In order to keep its concentration of potassium high and sodium low, the cell must constantly pump sodium out and potassium in to maintain a favorable environment for ATP production. When the cell wall is injured, the pump can no longer maintain this differential, since sodium and potassium will pass back and forth freely until their concentrations are the same inside and out.

It was the importance of this sodium-potassium pump in maintaining health that led Sodi Pallares to the development of his polarizing solution. It helps the pump do its work by increasing the potassium concentration in the cell and forcing sodium out. It does this by supplying extra potassium in a concentrated solution of glucose to which insulin is added. The glucose can be used to manufacture ATP, and it also pushes potassium into the cell, but requires insulin to drive this reaction. Patients with diabetes have high concentrations of glucose, but because they don't have enough insulin, it is more difficult for glucose to get into the cell.

As illustrated in the heart attack example, all of the cells in our body require a constant supply of oxygen to survive. Why? What does the oxygen actually do? Oxygen is essential for the creation of ATP. Only oxygen can supply the energy necessary to firmly attach phosphate to smaller molecules until ATP is formed. In a heart attack, the severity of injury depends on the degree and duration of oxygen deprivation, because this is what determines the ability of the cell to manufacture ATP. It is the free energy from ATP that keeps the cell alive and allows it to function normally. If it is possible to increase ATP or supply free energy from some other source, severely injured cells may be preserved long enough to prevent them from perishing. This is precisely what the one-two punch of polarizing solution and pulsed electromagnetic therapy can provide, not only for cancer and cardiac disease, but countless other energy deficiency disorders.

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Polarizing solution reduces further damage and death by driving potassium back into the cells, which helps improve ATP production. The pulsating electromagnetic field also helps push potassium into the cell, but in addition, provides a form of kinetic energy that can be immediately utilized. In a heart attack, it is oxygen deficiency that prevents the manufacture of ATP. The problem in cancer is that rapidly reproducing malignant cells require more ATP for energy, and keep robbing it from their healthy neighbors. The net result is the same. The degree of sickness in a cell is measured by its level of energy. When the cell can no longer obtain energy from ATP, it dies — unless free energy can be obtained from some other source.

It's very much like the roller coaster. The car could keep going on its own power if the height of each successive loop was low enough for it to climb over, but it would eventually slow down and stop due to entropy. Roller coaster cars keep going even when the loops get higher, because they have extra energy that is furnished by electricity. Electrical energy is free for the roller coaster system to immediately use for any purpose. It can make the car go faster to climb over loops, while simultaneously supplying heat and light at different locations if needed.

Electromagnetic energy seems to provide similar benefits for sick cells and biologic systems. However, we know relatively little about how to take maximum advantage of this power. As illustrated in the following report on a recent conference devoted to this, a wide array of devices and instruments are available. They vary in terms of the type and strength of the static or oscillating magnetic field they deliver. There is little doubt that they can provide safe and effective therapy for pain, depression, anxiety, and other stress related complaints. But, determining what works best for a specific disorder is often a matter of trial and error because of lack of knowledge about mechanisms of action.

While the research of Sodi Pallares has done much to fill this void, it is obvious that we have only scratched the surface with respect to understanding the full potential that energy therapies promise. And there will be numerous pitfalls in pursuing this.

Other Magnetotherapy Advances

Magnets have been used in medicine for more than 4000 years. Over the past two centuries, electrical devices have been designed to treat everything from pain, baldness, and impotency, to resuscitating the dead. The scientific study and use of electromagnetic energy began three decades ago, with the introduction of dorsal column spinal cord and transcutaneous electrical nerve stimulation (TENS). These were pioneered by C. Norman Shealy, a neurosurgeon who wanted to find more practical ways to relieve pain. Since then, numerous new applications for electromagnetic energies have been found, ranging from regeneration of bone and rapid healing of soft tissue and muscle injuries, to the control of scoliosis, epilepsy, and circulatory disorders.

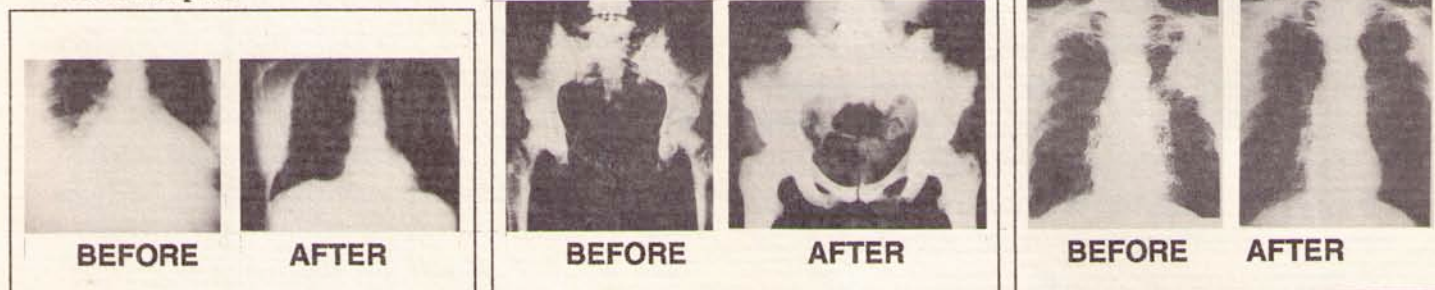
Scientists in one field are often unaware of advances made by others that could be important for their own research. A conference was held last April to address this problem, and to provide state-of-the-art presentations on the current status of electrotherapy. In organizing this, Dr. Shealy, invited 15 speakers to illustrate the progress that has been made, the untapped potential for future use, and most importantly, the scientific standards that must be adhered to in pursuing this. Electrical stimulation to relieve pain dates back 2000 years, when Roman physicians treated headache with the shocks from electric fish. The *Electreat* spark gap stimulator was patented in 1917, and this was the first device Dr. Shealy used. He was so impressed with the results, that he wanted to learn more about how it worked and how it could be improved, and has spent the last 30 years in this quest.

Fortunately, he became aware of improved instrumentation developed by Dr. Saul Liss. Their combined efforts have been responsible for the success of modern TENS therapy as well as its enhancement with cranioelectrical stimulation. The presentations were largely a tribute to the progressive development of superior devices by Liss, and the demonstration of their clinical efficacy by Shealy. Their association has now culminated in the She-Li TENS™ and GigaTENS instrumentation.

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Space does not permit a thorough discussion of the therapeutic triumphs achieved with these advances. They include improvement in rheumatoid arthritis, migraine, diabetic neuropathy, stimulation of natural DHEA production, and the demonstration of effects on various neurotransmitters which may mediate these benefits. Much of this was originally presented at our annual Montreux Congress, and when Dr. Shealy had invited me to chair this meeting, I thought this would be an ideal occasion to acknowledge his contributions and constant support of the Congress over the past decade, as shown on the cover. It also provided an opportunity to introduce most of the audience to the remarkable achievements of Sodi Pallares, Nordenström and others, and to discuss the difficulties in making magnetotherapy available in the U.S. Since a picture is worth a thousand words, consider the following before and after examples:



LEFT: 57 year old with drug resistant heart failure. — Disappearance of pleural effusion and heart size is now normal.

CENTER: 32 year old with severe pelvic metastases from breast cancer. — Disappearance after 25 weeks of therapy.

RIGHT: 52 year old with inoperable lung cancer. — No evidence of any tumor 5 years later (Nordenström R_x).

The patient on the left was treated by a Spanish physician trained by Sodi Pallares. The patient on the right was treated in China based on Nordenström's protocol. Why are these remarkable therapies not available in the U.S.? They are entirely safe, and have none of the side effects or long term hazards associated with conventional chemotherapy and radiation for cancer, or the life long drug treatment required for severe cardiac disease and heart transplant patients. They are also extremely cost-effective. The electromagnetic therapy used by Dr. Sodi Pallares is delivered by a relatively inexpensive and portable mattress pad that patients can easily learn to use, and the polarizing solution costs only a few dollars. Nordenström's electrochemical treatment takes less than an hour, and has been used successfully in thousands of patients in China and India. Yet neither therapy is available here even on an experimental basis. Similar FDA constraints prohibiting the clinical use of their products were mentioned by many at the Conference.

Part of the problem is the lack of control, and the likelihood that a host of worthless imitations will flood the market making similar claims. Patients, as well as health care professionals will have difficulty separating them from authentic approaches, which will suffer as a result. Time is running out for many of these pioneers. Without their efforts, all these patients and many others now enjoying good health, would have been dead long ago. It is essential that their work be carried on and extended by equally reliable researchers. A forthcoming book explaining all of the above and other benefits of magnetotherapy may hopefully help to encourage this in the U.S. Stay tuned.

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 Editor

ISSN # 1089-148X

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