RSD PUZZLE # 105
Lumbar Ganglion Sympathetic Block Versus
Caudal Sacral Canal Fluoroscopy Nerve Block

The original pathology of nerve damage results in formation of pain substance and nitric oxide and other destructive chemicals. Chemicals are transmitted through nerve fibers to the spinal cord. These chemicals become backlogged by entering the spine at the cervical spine and thoracic spine regions causing headaches, neck, back, and jaw pain, dizziness and unsteadiness.

The nerve blocks with small doses of Depo-Medrol provide anti-inflammatory medication in the form of Depo-Medrol (which is large molecule of protein with Prednisone attached to the protein). Molecules of protein are so large they can penetrate the walls and get into the system. As a result, they will sit there for at least 3 months by neutralized during the 3 months. These chemicals neutralize the inflammatory effect of the pain substance (substance P).

There are three forms of nerve blocks:

1. Sympathetic ganglion block (stellate or lumbar sympathetic ganglion block).

2. Lytic blocks which are usually chemical blocks with phenol, alcohol, etc. In the same group there are direct surgical blocks such as sacral canal (caudal), fluoroscopy and "removal of adhesions".

3. The third form of block is epidural and paravertebral blocks with the help of a combination of local anesthetic and anti-inflammatory medications such as Celestone or Depo Medrol.

1. The sympathetic ganglion blocks (stellate and lumbar) are simply diagnostic blocks. It is true that they provide two hours up to 6 days relief of pain, but the only chemical injected is the local anesthetic which wears off very quickly. In this regard, the block has been done just to prove that the pain is sympathetically maintained pain (SMP) but it truly does not have any long lasting therapeutic value. If this type of block is repeated more than a half dozen times, the needle insertion starts causing damage to the sympathetic ganglion cells resulting in eventual death of the majority of the sympathetic ganglion cells. These sympathetic ganglion cells are not just modulating the sympathetic function over the small area of nerve damage, but they also provide sympathetic function to the rest of the extremity. Once they are damaged, then the disease spreads and becomes regional (hence called complex regional pain syndrome).

2. The second form of nerve blocks is ablation, lytic, and neurectomy or sympathectomy type of blocks which are all quite traumatic and destroy perfectly normal nerve fibers. These nerve fibers transmit the abnormal nerve impulse back and forth to the spinal cord from the periphery. Cutting these nerve fibers is going to bypass the painful nerve impulse to the adjacent nerve roots and it is going to result in spread of the CRPS. The chemical nerve blocks are also called lytic blocks because they meltdown every soft tissue in the area that the chemical (phenol, alcohol, etc.) is injected. This meltdown causes extensive scar formation. The relief from this kind of block lasts no more than 1-2 months, but then the pain recurs with vengeance because of the fact that the chemicals do not limit themselves to block the nerves conveying abnormal function, but they block other nerves in the adjacent areas so the pain becomes more severe and spreads because of involvement of the perfectly intact adjacent nerves. Lytic nerve blocks similar to surgical neurectomies and sympathectomies make no sense because of the fact that destroying the nerve fibers is not going to solve the problem and the nervous system simply bypasses the cut off nerve and transmit the abnormal discharge to the spinal cord. All these destructive nerve blocks are harmful. They should not be done on benign complex chronic pain syndromes. The only time they are justified is in cancer patients who have a few months to live and any type of treatment that gives them a few months of pain relief is only humane and should be done. This is in contrast to CRPS patients who are usually young and have 4-5 decades of life expectancy. They can not life and cope with the kind of nerve block damages that generate new sources of pain.

Another form of nerve block is the so-called "release of adhesions". This is done quite frequently by surgeons in patients who have had direct trauma to peripheral nerve or to nerves in the spine. Unfortunately, none of these release of scar formation do any good for the patient because during the release of the scar formation, more damage to the nerves, blood vessels, and adjacent normal tissues is done which causes a new source of pain. Only a few weeks after this so-called release of scar formation and so-called neurolysis, a more extensive and thicker scar is formed which causes severe pain.

One form of this kind of block has become in vogue recently. This is in the form of fluoroscopy and air myelography of the sacral canal and it is also called caudal release of adhesion block. It is peculiar that the majority of these patients have not had any direct injury to the spine or the tail bone, but they undergo the same procedure. The procedure consists of under fluoroscopy and with a fiberglass scope which is inserted into the spinal canal, the doctor looks at the areas that there are some minimal connective tissue looking like scar. Then he tries to cut those and to clean up the specific nerve root that is surrounded with more of these fibers. These fibers are usually quite normal or usually because of inflammation of CRPS. Removal of these fibers just the same as neurolysis mentioned above causes more scar formation and more inflammation with the original disease spreading from the lower extremities up to the tail bone area and the area of neurolysis becomes a new source of pain.

3. The third form of nerve blocks is the injection of local anesthetic with a small dose of anti-inflammatory medication such as Kenalog, Depo Medrol, or Celestone into the spinal canal. This procedure is called epidural nerve block. It is quite safe, and does not cause any serious complications if done in the hands of people who have done this kind of block frequently and who know how to do the block. Also, there is another form of block called paravertebral nerve blocks which is done on the same principle, but they are done in the paravertebral muscles (muscles on each side of the midline of the vertebrae in the back or neck). The same injection is done around the sensory nerves that are transmitting the pain to the spinal cord. They provide excellent relief of pain. Both the epidural and paravertebral nerve blocks last anywhere from 2-3 months and in the meantime, the patient should have proper treatments such as physiotherapy and especially massage so that the patient will not need further blocks in the future.

Except for the third form of blocks, other blocks should be avoided in non-malignant complex chronic back pain, failed neck and failed back, and in CRPS.

Everyone should follow the rule of "above all do no harm".

H. Hooshmand, M.D.

RSD PUZZLE # 106

Complications Of Spinal Cord Stimulator (SCS)

Please view RSD Puzzles #23 and #74 also regarding SCS

We have had extensive experience with treating patients who have already undergone spinal cord stimulator (SCS). The SCS is helpful in some patients who suffer from chronic back pain, neck pain, or failed back syndrome. On the other hand, when it is applied to patients suffering from RSD, it may help reduce the pain for anywhere from 7 days to 6-7 months. On average, it helps reduce the pain a little over 2 months. Afterward, SCS will become a new source of pain by stimulating the neuropathic pain sensory fibers in the spinal canal.

Worst of all, the SCS as a foreign body in the spinal canal that instigates a lot of severe pain and inflammation because of the fact that patients with RSD have a tendency to have an abnormal function of sympathetic system, and invariably they suffer from attacks of inflammation in the form of swelling of the extremities, reddish discoloration of the skin, etc. The SCS invariably causes severe inflammatory pain in the spinal canal region. The inflammatory pain is far worse than the original RSD for which the SCS was tried.

The above experience has been the result of treating over 200 patients who already have had SCS treatment. The situation is so bad that when a patient wants to schedule to come to see us for treatment, we first ask the patient to ask the surgeon to remove the SCS before we can give her any effective treatment.

Please ask your doctor to read this letter. At least it will put him on warning that you have more than 95% chance of developing the above mentioned complications.

Another problem with SCS is that it causes disturbance of plasticity and causes rapid acceleration and deterioration of your RSD to later stages of the disease. Another complication of SCS treatment is the fact that it stimulates the sensory neuropathic pain fibers in the spinal canal facilitating the spread of the disease to other extremities.

H. Hooshmand, M.D.

RSD PUZZLE # 107
Poor Memory And Visual Problems: RSD Has Four Principles

1. Hyperpathic and allodynic pain

2. Muscle contraction in vessel walls and in extremities

3. Inflammation (edema, ulcers, etc...)

4. The 4th principle is constant input of pain in the limbic system (Frontal and Temporal lobes) causing poor memory, irritability, insomnia, and agitation. Antidepressants, especially Trazodone or Desipramine and better control of pain, improve these complications. Another cause of poor memory is tendency for poor cerebral circulation.

Blurred vision, dizziness, and poor balance are common manifestations of RSD. The disease causes constriction of vertebral arteries resulting in poor circulation to the brain stem; this in turn causes poor focusing of eye muscles, and poor balance and dizziness. Proper cervical, paravertebral and epidural blocks correct these symptoms.

H. Hooshmand, M.D.

RSD PUZZLE # 108
Cold, Flu and Infections in RSD

Frequently, RSD patients have noted that in the first 2 years "everyone in the family may get the flu or a cold", but not the RSD patient.

Reverse is true in late stage of RSD: The RSD patient is usually the only one that may experience frequent cold or flu or frequent infections but not other members of the family.

Our study of immunoglobulin and T-cell lymphocyte counts in RSD patients shows an up-regulation of the immune system in early stages, and a weakness and down-regulation of the immune system in late stages of the disease.

To normalize the immune system, the patient should be treated with proper nerve blocks, antidepressants, effective pain medications, exercise, and our 4F diet (fresh fruit, fresh vegetable, fish, fowl, and avoidance of 5C's: candy, cookies, chocolate, cake, and cocktail).

Simultaneous treatment with 2 or 3 powerful morphine agonist pain medicines (such as simultaneous MS Contin plus, Duragesic plus, Lortab) paralyzes the function of immune system [1] and aggravates the condition due to the fact that these drugs suppress the brain formation of endorphins and ACTH. Such over-dose of pain medicines intoxicates the pancreas and liver, resulting in pancreatitis and further disturbance of immune system.

H. Hooshmand, MD

Reference:

1. Maier FS, Watkins LR: Proinflammatory cytokines and specific immune function. Pain 1996; 5:234-6

RSD PUZZLE # 109
Chocolate and RSD

Dear Dr. Hooshmand,

Question: Why are you against eating chocolate?

Answer: Chocolate, except for being an "upper", almost identical to cocaine, has no redeeming value.

It does not release any endorphin, and has nothing to do with endorphin or any pain relief.

Chocolate contains "phenyletholamine", a chemical very close to cocaine. It is also extracted from the same cocoa tree. This chemical strongly stimulates the secretion of adrenaline and nor-adrenaline (nor-epinephrine). These are the chemicals that are released by the sympathetic system.

When you have a nerve block, the sympathetic system's release of epinephrine is reduced by about 10 mg (10 thousandth of a gram). A chocolate bar provides 10 gm of the stimulant chemical (1000 times higher than the block's reduction). So the best way to aggravate RSD is having a piece of chocolate, also it is addicting similar to cocaine.

H. Hooshmand, M.D.

RSD PUZZLE # 110
Chest Pains and RSD

Question:

Dear Dr. Hooshmand,

I have chest pain. They have admitted me to the ICU with suspicion of heart attack, discontinued my clonidine patch, and all the tests turned out to be normal for heart attack. "They are blaming this to be in my head".

Answer:

Two lessons can be learned from your nightmarish ordeal:

1. Sudden discontinuation of clonidine maybe dangerous. I have noticed that recently people in late stage RSD with very low Blood Pressure are treated with clonidine in pump which makes no sense and is dangerous.

2. Chest pain due to RSD is quite common due to the fact that cardiac sympathetic plexus surrounding the heart is a rich sympathetic nerve structure, and its dysfunction can cause severe chest pain.

Unfortunately, this fact goes unnoticed and patients are blamed as being neurotic- especially due to the fact that many RSD patients are young ladies and have no coronary artery disease.

Proper treatment with alpha blockers as well as sodium or calcium channel blockers is very helpful. Also cervical and epidural blocks are quite effective.

H. Hooshmand, M.D.

RSD PUZZLE # 111
Reason For I.V. Mannitol Treatment

Medical Necessity

Many RSD patients suffer from attacks of inflammation in the form of edema in the extremities and bouts of reddish discoloration of the skin over the extremities.

The sympathetic system has three main functions:

1. Control of the vital signs (BP, pulse and respiration)

2. Control of the temperature

3. Regulation of the immune system

The sympathetic dysfunction can result in disturbance of the immune system manifested by attacks of fever, swelling, skin rash and spontaneous bruises. These symptoms cause clinical pictures identical to Carpal Tunnel Syndrome, Tarsal Tunnel Syndrome or Thoracic Outlet Syndrome. Instead of surgery, the patient should be treated with medications such as Mexitil 150 mg bid, ACTH, Epsom Salt, as well as Mannitol. Surgery causes disastrous deterioration of RSD.

The patient needs to be treated with a specific type of medication that counteracts inflammation without any side effects.

Mannitol, an inert sugar, is a selective, strong diuretic which exclusively reduces the intracellular water retention. As such, it does not cause electrolyte imbalance, weakness or fatigue.

The Mannitol is helpful in counteracting the neuroinflammation in postoperative stage, and specifically in patients who cannot tolerate the inflammatory response against hardware inserted surgically.

Necessity For Removal Of Hardware

Because the patient has sympathetic dysfunction (RSD/CRPS), the foreign body of the devices such as screws, spinal cord stimulators, etc, is considered by the immune system as an extraneous agent. The immune system is stimulated (by sympathetic system) to mobilize WBC's and macrophages to attack the foreign body. This in turn leads to edema and osteopenia. Removal of the foreign body and treatment with I.V. Mannitol thru central line, as well as staying active are effective treatments for this condition.

When RSD patients are treated with this medication, the swelling of the extremities is reduced and symptoms suggestive of Carpal Tunnel or Thoracic Outlet Syndrome disappear. The treatment is done as an outpatient. The dosage is 100 grams Mannitol in 500 cc D5W over 45-60 minutes. Usually 1 to 3 treatments are all the patient needs for inflammation of RSD.

H. Hooshmand, M.D.

References on IV Mannitol:

Hooshmand, H., Dove J., Houff, S., and Suter, C.: EFFECTS OF DIURETICS AND STEROIDS IN CSF PRESSURE, A COMPARATIVE STUDY. Arch. Neurol. 21:499-509, 1969 Nov.

Hooshmand, H., Houff, S., and Quin, J.: CEREBROSPINAL FLUID PRESSURE CHANGES WITH CHEMOTHERAPY FOR INTRACEREBRAL HEMORRHAGE. Neurology 22:56-61, 1972 Jan.

RSD PUZZLE # 112
The Mechanism Of Action Of Mannitol

Mannitol has been used as an effective intracellular type of diuretic for more than three decades.

There are mainly two different types of diuretics:

1. The first type exerts its effect in the plasma and acts as an extracellular diuretic by excreting the extra water in the extracellular space through the kidney.

The best example of such a diuretic is Lasix. Also, Hydrochlorothiazide (HCTZ) has been used for quite a few decades on the same diuretic basis. Such diuretics only passively and secondarily influence any intracellular water retention.

The intracellular water retention is quite important, especially in the following conditions:

1. In any condition that causes traumatic or toxic metabolic water retention in the nerve cells, especially the brain, as well as in the peripheral nervous system.

The best example of such as condition is water retention secondary to disturbance of pituitary and adrenal hormones. This is seen in conditions such as Diabetes Insipidus, hyper corticosteroid dysfunction such as Cushing's Disease, hypothyroidism, and a condition Pseudotumor cerebri. In such diseases, the water concentration in the nerve cells is selectively increased. This causes water toxicity, increased intracranial pressure, and even death.

2. Another example of intercellular edema is glaucoma involving the eyes.

The third type of intercellular water retention is the typical inflammatory changes seen in neuropathic pain, such as diabetic neuropathy or RSD. The inflammation in neuropathic pain causes the disturbance of permeability of the cell membrane allowing the water, along with electrolytes such as sodium and calcium, to enter the nerve cells. This cell membrane disturbance causes the death of nerve cells, especially in the grey matter of the spinal cord, in the dorsal root ganglia (DRG), and in the peripheral nerves.

The inflammation becomes manifested in the form of edema of the extremities, severe vascular headaches, spontaneous cell membrane permeability of the arterioles and venules resulting in cutaneous bleeding and skin rash in absence of any kind of trauma.

Such water retention and disturbance of cell membrane function causes edema of the brachial plexus, edema at the ankle or wrist, and these conditions become mistaken for thoracic outlet syndrome, carpal tunnel syndrome, tarsal tunnel syndrome, etc.

Traditionally, such compression neuropathies (entrapment neuropathies) are treated surgically. Unfortunately, the trauma of the surgery adds to the trauma of the neuropathic pain and neuropathic vascular dysfunction. As a result, the inflammation undergoes a vicious circle of more neurovascular damage, more inflammation, trauma of surgery, and secondary more inflammation.

One phenomenon noted after surgery for entrapment neuropathies was the spread of RSD to the opposite extremity. This was mistaken for the development of carpal tunnel syndrome in the opposite extremity. This was in spite of the fact that the nerve conduction times did not show any definite entrapment neuropathy, but a mild reduction of the amplitude of nerve response.

Such erroneous interpretation of the spread of the RSD post-operatively leads to further unnecessary surgery, with dire consequences.

In 1969 and 1972 the research by my colleagues and I (references enclosed) showed the efficacy of Mannitol in counteracting such intracellular edema.

Mannitol is very well tolerated. The only contraindications are in patients who have practically total renal failure and in patients who already have a dead space of intracerebral hemorrhage or necrotic brain tumor, which can cause entrapment of the Mannitol in the dead space.

CLINICAL APPLICATIONS OF MANNITOL IN RSD

In the past three years we have applied the treatment with Mannitol to patients with compression neuropathies, as mentioned above (conditions mimicking carpal tunnel syndrome, tarsal tunnel syndrome, thoracic outlet syndrome and rotator cuff tear), as well as the patients who, due to RSD, suffer from severe edema, neurodermatitis, and trophic ulcers. There were surgical candidates with the compression neuropathies who were divided into two groups. Both groups were given the option of surgery or treatment with IV Mannitol. The entire subject was discussed in detail with the patient and with their referring physician. One group underwent surgery, and the other underwent Mannitol treatment. After comparing 32 patients in each group, it became obvious that Mannitol treatment was quite successful and would eliminate the necessity for surgery.

The surgical group had a more rapid deterioration of their RSD post-operatively. The RSD changed from grade 2 to grade 3 in 2/3 of such patients, and the edema continued to show a tendency for further recurrence.

The other equally comparable group of 32 patients, who underwent Mannitol therapy, did not require surgery, and their condition improved. The pain rating post-operatively dropped from an average of 6-9 prior to treatment with Mannitol, to an average of 2-5 after treatment with Mannitol.

H. Hooshmand, M.D.

References on IV Mannitol:

Hooshmand, H., Dove J., Houff, S., and Suter, C.: EFFECTS OF DIURETICS AND STEROIDS IN CSF PRESSURE, A COMPARATIVE STUDY. Arch. Neurol. 21:499-509, 1969 Nov.

Hooshmand, H., Houff, S., and Quin, J.: CEREBROSPINAL FLUID PRESSURE CHANGES WITH CHEMOTHERAPY FOR INTRACEREBRAL HEMORRHAGE. Neurology 22:56-61, 1972 Jan.

RSD PUZZLE # 113
Nerve Blocks For RSD Spread

Question:

Dear Dr. Hooshmand,

I was wondering if nerve blocks are worthwhile performing to a brand new site of RSD or is the new site of spreading (in this my case husband's hands from feet) already independent or once the new site is there is it mediated pain?

Answer:

1. Spread of RSD refers to spread of all signs of RSD to another part of the body.

2. Referred pain is just that. It is a pain referred to a remote area, but it is not the same as spread: In spread all four features of RSD are spreading (pain, spasm of muscles and cold extremity, inflammation, and insomnia and agitation.)

Referred pain should be treated with paravertebral nerve blocks, epidural blocks or trigger point injection.

In either case, the hand or foot, knee or ankle should not be treated with direct insertion of needle for purposes of any nerve block or trigger point injection. The needle insertion only flares up the regional pain and aggravates the RSD.

H. Hooshmand, M.D.

RSD PUZZLE #114
Hypersensitivity Of An RSD Extremity To Touch

In RSD (CRPS), the pain is in the form of hyperpathic (regional pain out of proportion to stimulus), and allodynia (any stimulus-even simple breeze or touching of the extremity causes intolerable pain). The allodynia is mainly due to stimulation of A-delta sensory nerve fibres which are responsive to touch-versus hyperpathia which is mainly due to stimulation of thermoreceptor c-fibres in the distribution of thermatomes (microcirculation).

The allodynia is much more severe if someone else touches the extremity. This is in contrast to self-stimulation caused by the patient touching the same area. The self-stimulation (proprioception) is much better tolerated by the patient due to the fact that brain considered self stimulation as a lesser stressor than another person touching the extremity. This is because self stimulation is mainly perceived in the parietal lobe versus external stimulation which is felt as a stressor, and as such it is perceived as harmful (noxious) stimulation by the old cortex (limbic system).

The self stimulation is perceived in parietal lobe with no distressful connotation, no panic, no anxiety, and no alarm. The opposite is true when someone else stimulates the painful area.

This physiological phenomenon provides an excellent beneficial treatment opportunity: the less the involved extremity is stimulated, the more severe the allodynic pain to the point that the patient does not allow any washing, bathing, or grooming of the skin and finger or toe nails. This is the beginning of the end. If not corrected with self contact with gentle massage by the other hand, soaking in Epsom salt and warm water, etc., the extremity ends up with edema (swelling), and elephantiasis. Then the patient ends up losing the extremity to amputation.

Simple self-tactile stimulation (proprioception) prevents such a disastrous outcome. In addition, the brain allows the loved ones (mother, husband, etc) to touch the extremity more easily than strangers (doctor or physiotherapist). Massage over the neck, back, or extremity along with use of Emla Cream, Lidocaine Cream, or Zonalon Cream is very helpful.

H. Hooshmand, M.D.

RSD PUZZLE # 115
Mannitol Treatment For CRPS

Dear Doctor,

At the request of your patient, I am sending this report to your office. I am certain you are quite familiar with this patient's illness. The patient has asked me to report to you regarding IV Mannitol treatment.

In the past 8 years, we have noted the beneficial effect of I.V. Mannitol in neuro-inflammation. This is especially true in patients suffering from post herpetic neuralgia, CRPS, and other forms of neuropathic pain. The common denominator in the various neuropathic pain is the involvement of thermoreceptor sensory nerves and the sympathetic system at some stage of the disease. As you are well aware, the sympathetic system has three main functions. 1. Thermal regulation; 2.Control of vital signs; 3. Regulation and modulation of the immune system function. In the neuropathic pain patients, it is not unusual for the dysfunctional immune system to cause neuroinflammation accompanied by intercellular and axonal edema. If such patients are treated with plasma diuretics such as Hydrochlorothiazide or Lasix, these diuretics reduce the plasma volume which can have the potential of causing edema ex-vacuole and aggravate the neuroinflammatory edema.

On the other hand, intracellular dehydrants such as Mannitol and Diamox selectively counteract neuroinflammation and reduce the intracellular edema. On the basis, we in Neurological Associates as well as researchers in Holland have applied IV Mannitol to counteract neurogenic edema. Such neurogenic edema is especially more prominent in patients who have undergone surgery for sympathectomy, infusion pump treatment, and spinal stimulators. At times the neuroinflammation is severe enough to cause a skin rash and neurodermatitis as well.

As long as the patient has normal renal clearance (no protein in the urine), the IV Mannitol treatment is quite safe. As the Mannitol has a tendency to crystallize, the IV should be applied in 1-1 ½ hours. If the IV drip is prolonged up to 4-6 hours, there is the risk of crystallization of the Mannitol. Certainly, a filter should help prevent any such risk as well. The usual dose is 100gm Mannitol in 500cc D5W.

Many thanks,

H. Hooshmand, M.D.

RSD PUZZLE # 116
Harmful Effects Of Amputation

Question:

Dear Dr. Hooshmand,

My 16 year old son has RSD. His pain doctor says he should have his foot amputated, but the surgeons refuse to amputate. What should I do?

Sincerely,

A Desperate Mother

Answer:

You are lucky to have seen decent surgeons who knew better. Your son is young and has excellent potential of walking on both feet with proper treatment. Why would anybody trade a treatment of returning the foot back to normal for amputation?

Your son has a cold extremity which means it should respond very nicely to proper nerve blocks, but not the ones pain specialists usually do such as ganglion nerve blocks.

If he has an amputation, the RSD will spread to all four extremities. His sleep every 24 hours will drop to less than ½ to 1 hour. He will be in severe pain. He will possibly die of suicide or immune system failure and complications of high blood pressure. Amputation drastically shortens the patient's life expectancy.

RSD is usually the result of minor to mild injury to the extremity with a few nerve fibers being dysfunctional. The amputation will change the condition. The amputation stump will have hundreds of nerves being impinged in the scar. Proportionately his pain will be hundreds of times worse.

If you push for amputation and some stupid doctor does it you will have to live with the feeling of guilt for the rest of your life from pushing amputation.

Your son is not even on a single proper drug or form of treatment. Morphine does not even control the kind of pain he has. He needs a stronger and more effective pain medication, anticonvulsant, and antidepressants, not to mention proper and effective nerve blocks.

Do not sacrifice the life of your son to the lunatic amputation procedure. Amputation will cause the "head of Medusa" phenomenon, meaning that when the Greek Goddess Medusa was beheaded because she was so mean, after execution every hair on her head changed to snakes.

With Many Thanks,

H. Hooshmand, M.D.

RSD PUZZLE #117

The Role Of Neuro-Inflammation In Pathophysiology Of Thermal Regulation

The body temperature is modulated by the sympathetic nervous system (SNS) at two levels.

1. Skin provides a rich arteriole venous shield of 200 ml/mm blood flow providing heat preservation (vasoconstriction), or heat emission (vasodilation and hyperthermia).

2. Centrally, the spinal cord and hypothalamus modulate the surface and deep circulation simultaneously and bilaterally. With cold exposure, the spinal cord provides superficial vasoconstriction and deep vasodilation. With heat exposure, the mechanism is reversed.

The sympathetic system has three main functions:

1. Thermal regulation.

2. Control of vital signs (blood pressure, pulse and respiration).

3. Control of the immune system.

All three functions are essential for preservation of milieu interne. The neuro-inflammation is a physiopathologic response of the body against any stressor. Neurodermatitis of emotional stress, edema of the extremity in CRPS, profuse skin ulcers in venipuncture RSD, sterile osteonecrosis involving the facial bone or bones in the extremities, and modulation of the T-cell lymphocytes in late stages of neuropathic pain and CRPS are some of the examples of neuro-inflammation. The sympathetic system shows a uniform response to a stressor be it infectious, traumatic, emotional, or prolonged inactivity.

If the neuro-inflammation is not properly diagnosed and treated, the patient will end up with unnecessary surgeries for carpal tunnel, tarsal tunnel, or thoracic outlet syndrome. The trauma of surgery secondarily initiates a new round of more severe neuro-inflammation, edema, and entrapment.

Neuro-inflammation is the key to understanding the hyper-and hypothermic spots in Infrared thermal imaging (ITI). Peripheral nerve injury causes vasoconstriction distally, and vasodilation in the corresponding paravertebral nerve regions. This hyperthermic vasodilation in the paraspinal regions is due to transmission of substance P (SP) and nitric oxide (NO), and other neurokines from periphery to the spinal cord. Prolonged neurokine transmission and accumulation at paraspinal nerves distribution causes neck pain, low back pain, headache, and vertebral arteries constriction secondary to vertigo, falling attacks,

and blurred vision. Epidural and paravertebral nerve blocks correct this condition. However, any type of trigger point or nerve block injection should be done proximally rather than distally in the area of pathology. Any needle insertion in the distal portion of the extremity will add more trauma and aggravation of the neuropathic pain and vasoconstriction.

H. Hooshmand, M.D.

RSD PUZZLE # 118
CRPS and Suicide

Suicide in RSD (CRPS) is uncommon. It is far less common than the iatrogenic death (treatment causing death).

In the latter group of factors such as a combination of methadone and other narcotic play a major role. The patient suddenly falls asleep and stops breathing.

Another iatrogenic cause is procedures that destroy the immune system, such as amputation combined with inactivity.

The third factor is the overuse of multiple types of narcotics, such as combining morphine in different forms with duragesic patch, etc.... Such overdoses with opioid agonists cause severe depression, very few hours of sleep at night and eventually suicide.

The analgesic of choice for RSD (CRPS) is proper antidepressants, such as Trazodone (Desyrel), Desipramin (Norpramin) and Doxepin (Sinequan).

Changing the treatment protocol as well as professional counseling is the best way to handle the dangerous and fatal complication of suicide.

H. Hooshmand, M.D.

RSD PUZZLE #119
RSD and Osteopenia

Osteopenia, which is different from osteoporosis, is seen quite frequently in RSD.

Osteoporosis means a diffused thinning of the bone with low calcium content. On the other hand, osteopenia refers to lacunes or holes containing blood in the bone due to CRPS (RSD). The commonest causes are surgical procedures, inactivity, and use of cast or brace.

The treatment of choice of osteopenia is mobilization, weight bearing, avoidance of prolonged bed rest, estrogen supplement, and foods that are rich in calcium. The best foods are cabbage, followed by yogurt and cheese (calcium tablets are not as effective).

Biphosphonates, such as Fosamax, also can be used for treatment.

Treatment of choice for osteoporosis is the same as above, but special estrogen supplement in women at any age is extremely helpful.

In serve cases osteopenia result in osteonecrosis which is commonly mistaken for osteomyelitis especially in facial bones and long bone.

Such serious error mistaken osteonecrosis (necrosis and melt-down of the bone) for osteomyelitis results in unnecessary treatment with large doses of antibiotics, and unnecessary surgery, curettage of the bone further aggravating the condition.

The golden rule of conservatism and avoidance of surgery, cast application, or ice treatment applied to this condition causes more complications for CRPS (RSD) than any other treatment.

H. Hooshmand, M.D.

RSD PUZZLE #120
Malpractice and RSD

Why is it so hard to prove malpractice in RSD?

Malpractice is defined as a deviation from standard of practice.

1. To prove deviation from standard of practice the doctor needs to be in the same specialty as the defendant. Hence, a neurologist can not claim an orthopedist deviated from the standard of practice.

2. Unfortunately there is no standard established for treatment of RSD. There is no way one can say there was deviation from standard of practice when there is no standard.

3. Normally, the only cases that malpractice can be proven in treatment of RSD are the cases that the doctor made a major error, such as amputating the wrong leg or sticking an arterial blood vessel while aiming for a nerve block.

4. I believe what the orthopedist did was not good medical practice, but bad medical practice does not necessarily prove deviation from standard of practice.

The large majority of practitioners who treat RSD engage in old fashioned and harmful medical practice. Because they are the majority their standard of practice may not be helpful to the patient, and in many cases harmful, but it is not malpractice.

H. Hooshmand, M.D.

RSD PUZZLE #121
Acupuncture in CRPS (RSD)

Medicine is a combination of art and science. Besides the conventional modern medical knowledge and practice, there are some paramedical skills that can provide relief for the patient suffering from pain, nausea, and other ailments. One such paramedical therapy is the controversial old-fashion "acupuncture." The following is a review of efficacy, or lack thereof treatment with acupuncture.

The conventional medicine is in its elementary and rudimentary stages when compared to the medical art and sciences a few centuries hence. Doctors should study any treatment method, and decide for themselves its usefulness. A few decades ago, the doctors pooh-poohed any benefits from grandma's homemade chicken soup. Now, thanks to big food companies that prepared canned soup, we have learned that the mass production of canned soups requires addition of preservatives and significant amounts of salt, producing food that is not fresh, and is unhealthy. (So, it becomes obvious that homemade chicken soup is far healthier than factory-made soup).

Some of the home remedies, such as the use of epsom salt, until very recently (in the past 4-5 years) were ridiculed by the physicians as a treatment with no scientific basis. Now, it is well known that epsom salt is an excellent calcium channel blocker and a strong osmotic pressure agent purifying the blood as well as acting as a strong anticonvulsant. The obese and hypertensive young females going through a complicated pregnancy and delivery can end up dying from frequent epileptic seizures and increased intracranial pressure. The standard anticonvulsants are not strong enough to save the patient's life. A simple magnesium sulfate (epsom salt) enema saves the life of the mother and child. As a matter of fact, the latest medical articles in the past 3 years have emphasized the importance of replacing the treatment for eclampsia with magnesium sulfate (epsom salt) rather than standard anticonvulsants.

None of the above implies that every type of old fashioned treatment is safe or effective. One example is the art of acupuncture treatment. Acupuncture is a potent and invasive form of treatment. The art of acupuncture has been perfected throughout the centuries by the Chinese physicians. The Chinese physicians are as knowledgeable as physicians from any other country in regard to modern medicine.

The same Chinese physicians apply acupuncture as a form of acute anesthesia to prepare the patient to undergo removal of gall bladder, lung, or appendix without the use of any other anesthetic. The theory behind the acupuncture is that the human body generates and produces energy meridians. These energy meridians are augmented and strengthened by application of the acupuncture needle through the skin. The needle stimulation is applied to certain parts of the body such as extremities, head and face, and even abdominal structures.

As such, acupuncture is quite an invasive procedure and should not be taken lightly. As an invasive procedure, in untrained hands, it can cause bleeding in the internal structures, and it can introduce hepatitis virus, and in at least one case in France it has been reported as venipuncture transmitting HIV infection (AIDS).

ADVANTAGES OF ACUPUNCTURE

One important advantage of the acupuncture is avoidance of anesthetic drugs which may cause potential of serious complications.

Another advantage of the procedure is the fact that acupuncture significantly relieves the referred pain. Referred pain points to the well known physiological fact that the original pain in the injured area has a tendency to be referred to other parts of the body through spread of impulse at the spinal cord level. This phenomenon has been well studied by modern medicine and has been shown to be due to the fact that the pool of sensory nerves in the spinal cord has a tendency to overlap and represent different regions of the body. For example, in a child, appendicitis does not cause pain in the lower abdomen, but it causes pain below the chest wall and in the upper abdominal region. Another example is the fact that neuropathic pain such as CRPS frequently and invariably causes referred pain. Some examples are the development of severe headache, neck pain, dizziness, and vertigo, as a referred pain originating from the injured nerves in the foot or hand, elbow or knee.

When applying acupuncture to the referred pain area, not only can it improve and even block the pain in the distal original area of injury, but it can also improve the circulation to the extremities almost as effectively as a nerve block.

DURATION OF PAIN RELIEF

Acupuncture is an acute invasive procedure and is most effective as relief of acute bouts of pain- be it chronic pain with acute attacks, or acute pain, as with injury to the tissues such as an appendix or gall bladder.

In neuropathic pain patients (such as CRPS), the duration of pain relief from acupuncture is not any longer than maximum 1-2 hours. So, by the time the patient returns home, the beneficial effect is gone, and all is left are multiple traumas of needle insertion. The short duration of pain relief, and the muscle spasms do not last long enough to make it worthwhile.

MASKING EFFECT

Besides infection, bleeding, and brief duration of treatment, acupuncture can provide repetitive, temporary pain relief masking the progressively deteriorating original pathology such as cancer, or nerve impingement. This masking effect may cause delay in diagnosis of cancer, CRPS, and other pathologic conditions that cannot be expected to be cured by simple acupuncture treatments.

CRPS patients are already at a disadvantage by being diagnosed as "myofascial syndrome," "fibromyalgia," "Munchausen Syndrome," "carpal tunnel syndrome," "thoracic outlet syndrome," "tarsal tunnel syndrome," "disc herniation," "Raynaud's Phenomenon," and many other euphemisms. The treatment with acupuncture will further delay the proper diagnosis and treatment.

OTHER RISKS AND DANGERS RELATED TO ACUPUNCTURE

Unfortunately, the treating physicians or non-physician acupuncture specialists are reluctant to report the complications of this invasive procedure, even though the majority of the states require certification for acupuncture specialists that is not enough to count them as specialists willing to report the complications. A lot of times, the complications are blamed as the complications of the original illness for which acupuncture was applied.

Not only does the acupuncture cause delay in the proper diagnosis, but also gives a false sense of security to the acupuncturist and the patient that the acupuncture is going to cure the condition.

To expect the acupuncture to cure the condition is as ridiculous as expecting trigger point injections with local anesthetic or diagnostic sympathetic ganglion blocks to cure CRPS.

Having treated CRPS patients for over 35 years, I have yet to see one CRPS patient that was improved or underwent remission after treatment with acupuncture.

In conclusion, acupuncture is an acute procedure applied for acute pain or nausea, or for temporary anesthesia. It cannot be expected to relieve, correct, or improve the complications of CRPS.

The nature of the pain in CRPS is a complex chronic pain. The treatment should be multi disciplinary, and the pain relief should include treatment with medications such as proper antidepressants, anticonvulsants, proper nerve blocks, physical therapy, massage therapy, and other treatment modalities to correct the circulatory and inflammatory changes due to CRPS. Simple acute pain relief from acupuncture is not enough, and is too invasive. The needle insertion in the proximity to the original injury can become a new source of pain and can aggravate the disease.

H. Hooshmand, M.D.

RSD PUZZLE #122
Hip Replacement And RSD

Hip replacement in RSD is a big No-NO.

It flares up RSD and grounds the patient without being able to walk.

The "osteomomyelitis" is typical of RSD involving the hip, but is not really osteomomyelitis but osteonecrosis due to RSD complicated by inactivity.

The first step of treatment should be to limit the patient to no more than 8 to 9 hours in bed every 24 hours. Prolonged inactivity is the worst aggravator of RSD.

If your brother has the hip replacement he should realize that he will probably end up in a nursing home as the osteonecrosis can not hold any hardware from the hip replacement.

His only hope is to walk to get rid of this problem. His pain can be helped a great deal by trigger point injections to the greater trochanteric areas of bursitis.

H. Hooshmand, M.D.

RSD PUZZLE #123
Traumatic Stellate Ganglion Block

A Stellate Ganglion Block (SGB) is mainly a traumatic diagnostic procedure, it cannot be considered therapeutic because it doesn't last more than a few hours or days.

When performing an epidural block you do not stick the needle into the nerve cells (as is the case with SGB). When an epidural block is preformed with local anesthetic and an anti-inflammatory medication such as Depo - Medrol ® in the back of the neck, it will last up to two to three months.

According to the late Dr. Bonica [1] (who was the best pain doctor in the world), the stellate ganglion block (SGB) has a 25% failure rate, because of the fact that the stellate ganglion is very variable in different individuals.

When the ganglion cannot be reached because of anatomical variations, then the repeated trauma during performing the block can cause damage to the nerve to the vocal cord causing difficulty with phonation (speaking). It also can cause rupture of blood vessels in the same area.

Incidentally the pain management doctors are very scared of giving epidural nerve blocks with anti-inflammatory medicine.

H. Hooshmand, M.D.

Reference:

1. Bonica JJ: Causalgia and other reflex sympathetic dystrophies. Post Grad Med 1973; 53:143-148

RSD PUZZLES #124
Nerve Blocks

Question:

Dear Dr. Hooshmand,

I am an anesthesiologist who has a small chronic pain practice. I am curious as to how you obtain a three-month lasting sympathetic block. Is this by using a local anesthetic? If so, what anesthetics are you using? Is this prolonged sympathetic blockade obtained by some other method? I look forward to your reply.

Answer:

Dear Doctor,

As you are well aware of, the standard stellate lumbar and sympathetic blocks are done with local anesthetics alone. The effect of using local anesthetics lasts no longer than a few hours to a few days. As such, they are mainly diagnostic rather than therapeutic blocks. In addition, repetitive sympathetic blocks are traumatic and in the long-run cause so much damage to the sympathetic ganglion that the patient develops "virtual sympathectomy"[1, 2]. As is the case with all sympathectomies, the virtual sympathectomy only aggravates the condition by damaging the temperature regulation of the body.

The nerve blocks we give to patients, are epidural, caudal, paravertebral, occipital or brachial plexus nerve blocks which are done with a combination of 10-20 cc Marcaine and a maximum of 5 to 20 mg Depo- Medrol®. As the name Depo - Medrol® implies, the prednisone is attached to a large molecule of protein which cannot penetrate through capillaries causing systemic side effects of corticosteroids unless it is given in toxic doses.

In patients who have had such epidural nerve blocks when they have a laminectomy, at the time of surgery we find wafers of crystallized molecules of Depo- Medrol®, still present in the extracellular tissue even years after the performance of the nerve blocks.

Clinically, the patient receives excellent pain relief and anti-inflammatory effects lasting anywhere for 2 to 6 months. Anti-inflammatory aspect of a block refers to the fact that the involved extremity usually shows neuroinflammatory edema and even skin rashes. Obviously, single injection of local anesthetic cannot do anything for this but the Depo- Medrol® markedly reduces the neuroinflammation. As a result, the neuroinflammation is not mistaken for carpal tunnel, thoracic outlet, or tarsal tunnel syndromes and the patient does not have to go through damaging and unnecessary surgical procedures.

H. Hooshmand, M.D.

References

1. Hooshmand H: Is thermal imaging of any use in pain management? Pain Digest. 1998; 8:166-170.

2. Hooshmand H, Hashmi H: Complex regional pain syndrome (CRPS, RSDS) diagnosis and therapy. A review of 824 patients. Pain Digest. 1999; 9: 1-24.

RSD PUZZLE #125
Manipulation Under Anesthesia

Question:

Dear Dr. Hooshmand,

Our daughters team of doctors have suggested doing a procedure which involves giving sodium amytal through an i.v. and videotaping the procedure and when the patient is nearly asleep and very relaxed, can manipulate the body and touch the person's skin without hurting them, and can thereby better understand what TYPE of pain the person has (as in our daughter's case which is all over her body and of course the epidurals only help with the lower extremity) and therefore give the more appropriate medication for that type of pain. Have you ever done this type of procedure? What do you advise?

Answer:

Do not be so cruel to your child. Manipulation under anesthesia causes severe damage to areas of nerve injury. The amytal anesthesia simply is a convenience for the doctor so that when such a cruel procedure is done the child cannot scream and bring to their attention how damaging they are causing the patient. Traumatic manipulation makes the pain much worse afterwards and can spread the CRPS (RSD).

In addition the sodium amytal test is usually done just to decide if the patient is telling the truth or not, it is really a lie detector test, and it should not be a form of treatment for CRPS (RSD).

H. Hooshmand, M.D.