ELEMENTARY-
UNLOCKING THE MYSTERY OF CRPS

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MAY 18, 2019
“Holmes and Watson are on a camping trip. In the middle of the night Holmes wakes up and gives Dr. Watson a nudge. "Watson" he says, "look up in the sky and tell me what you see."

"I see millions of stars, Holmes," says Watson.

"And what do you conclude from that, Watson?"

Watson thinks for a moment. "Well," he says, "astronomically, it tells me that there are millions of galaxies and potentially billions of planets. Astrologically, I observe that Saturn is in Leo. Horologically, I deduce that the time is approximately a quarter past three. Meteorologically, I suspect that we will have a beautiful day tomorrow. Theologically, I see that God is all-powerful, and we are small and insignificant. Uh, what does it tell you, Holmes?"

"Watson, you idiot! Someone has stolen our tent!"
NOMENCLATURE

- Causalgia
- Sudek’s Atrophy
- Post traumatic Pain Syndrome
- Post traumatic Painful Arthrosis
- Sudek’s Dystrophy
- Post Traumatic Edema
- Reflex Dystrophy
- Shoulder Hand Syndrome
- Chronic Traumatic Edema
- Algodystrophy
- Peripheral Trophoneurosis
- Sympathalgia
- Reflex Sympathetic Dystrophy
- Reflex Neurovascular dystrophy
DEFINITION

Complex Regional Pain is a neuropathic/inflammatory pain disorder characterized by:

1. Severe pain that extends beyond the injured area and is disproportionate to the inciting event.
2. Autonomic dysregulation
3. Edema – usually neuropathic in nature
4. Movement disorders
5. Atrophy and/or dystrophy
1. Continuing pain, which is disproportionate to any inciting event

2. Must report at least one symptom in three of the four following categories:
   Sensory: Reports of hyperalgesia and/or allodynia
   Vasomotor: Reports of temperature asymmetry and/or skin color changes and/or skin color asymmetry
   Sudomotor/edema: Reports of edema and/or sweating changes and/or sweating asymmetry
   Motor/Trophic: Reports of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and or trophic changes (hair, nails, skin)
BUDAPEST CRITERIA

3. Must display at least one sign at the time of evaluation in *two or more* of the following categories:
   - **Sensory:** Evidence of hyperalgesia (to pinprick) and/or allodynia (to light touch and/or deep somatic pressure and/or joint movement)
   - **Vasomotor:** Evidence of temperature asymmetry and/or skin color changes and/or skin color asymmetry
   - **Sudomotor/edema:** Evidence of edema and/or sweating changes and/or sweating asymmetry
   - **Motor/Trophic:** Evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nails, skin)

4. There is no other diagnosis that better explains the signs and symptoms

EXACERBATING FACTORS

- Stress
- Cold
- Changing Barometric Pressure
- Infection (Especially dental)
- Humidity
- Poor diet
- Vaccinations
- Toxins (Aluminum & Fluoride)
- Certain Prescription Medications
- Candida
- Lyme disease
LIFE IS INFINITELY STRANGER THAN ANYTHING WHICH THE MIND OF MAN CAN INVENT
THERMOGRAPHY

A great benefit of infrared imaging is its ability to image the function of the nervous system, especially with chronic pain conditions.

The Nervous System along with the blood vessels creates most of the heat patterns we see using thermal imaging.

A hallmark of CRPS is an excessive vasoconstriction of blood vessels that can cause cold hands and feet.

Thermography provides images of the sympathetic nervous system and given that CRPS is considered by some to be a disease of sympathetic origin, it is the perfect tool for the corroboration of the clinical diagnosis.
CASE HISTORY

This is a 19 year old male who presented with pain beneath the right side of his rib cage so severe that he was acutely short of breath. There was no history of trauma. He was otherwise perfectly healthy. He had no other areas of pain.
The image shows a thermal scan of hands with various temperature measurements marked. The table below lists the temperature readings:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Temp</td>
<td>27.6°C</td>
<td>28.1°C</td>
<td>24.9°C</td>
<td>26.8°C</td>
<td>24.8°C</td>
<td>29.7°C</td>
</tr>
<tr>
<td>Avg Temp</td>
<td>25.9°C</td>
<td>27.2°C</td>
<td>23.0°C</td>
<td>24.6°C</td>
<td>23.4°C</td>
<td>22.7°C</td>
</tr>
<tr>
<td>Min Temp</td>
<td>24.8°C</td>
<td>26.0°C</td>
<td>21.5°C</td>
<td>21.2°C</td>
<td>22.4°C</td>
<td>20.3°C</td>
</tr>
</tbody>
</table>

The temperature difference (Delta Avg) is also noted:

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Avg</td>
<td>-0.3°C</td>
<td>-1.6°C</td>
<td>0.7°C</td>
<td></td>
<td></td>
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</tr>
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</table>
CASE #2

- This is a 45 year old male, working construction in work boots who stepped on a long nail. The nail went up through the boot, the sock and into the foot. It necessitated surgical repair. He then developed a Morton’s neuroma in the foot. He could not bear weight or walk. The surgeon wanted to re-operate.
ABNORMAL SWEATING
MOTOR DISTURBANCE - DYSTONIA
FACIAL DYSTONIA
DYSTONIA - BEFORE
AFTER 5 DAYS OF KETAMINE
NEUROGENIC EDEMA
ERYTHEMA
LIVIDO RETICULARIS
STASIS DERMATITIS
You see but you do not observe.....the distinction is clear

Sherlock Holmes
SYSTEMIC MANIFESTATIONS OF C.R.P.S.
Gastrointestinal

Apart from the obvious acid peptic and irritable bowel symptoms, we have to deal with intractable nausea and vomiting. Endoscopically there may be some mild gastric irritation but generally the findings are minimal. Conventional treatment is rarely effective. The etiology is clearly gastroparesis and objectively identified via gastric emptying studies.

We have had great success with the endoscopic administration of Botox into the pyloric sphincter. In many instances one to three such injections have stopped the vomiting for prolonged periods of time.
Another interesting finding is a number of patients with clinical and laboratory confirmed pancreatitis with no other etiology evident save for their CRPS.

Other G.I. symptoms include:

- Dysphagia, indigestion
- I.B.S
- Constipation (frequently opioid induced)
- Biliary dyskinesia
Commonly, patients experience urinary incontinence, dysuria or inability/difficulty voiding. The condition is usually misdiagnosed as Interstitial Cystitis. The problem has responded marginally to conventional medications. Bladder pacemakers have been somewhat useful. Again, Botox injections into the pelvic floor have helped a great number of sufferers. Additionally, I have found that lumbar epidural infusions of bupivicaine over a 5 day period works very well. Ketamine has resolved this to a small degree as well.
Vertigo is common as an early symptom. Sometimes it is positional but mainly it is movement related.

Treatment is based upon reducing the CRPS symptoms and occasionally meclizine helps make the vertigo tolerable pending the improvement of the disease process.
“Syncope is common in patients with CRPS especially with lower limb involvement. Autonomic dysregulation of the lower extremities leads to sympathetic vasoconstriction and venous pooling which can predispose these patients to syncope.”

Syncope in Complex Regional Pain Syndrome – Smith et al. – *Clinical Cardiology* 34.4; 222-225 (2011)
A 44 year old female with long standing history of CRPS is involved in a MVA which accelerates her symptoms. She further injures her brachial plexus in the accident and has classic symptoms of that sub-division of CRPS. However she begins to have “drop attacks” with increasing regularity.

Comprehensive work up with brain MRI, EEG, laboratory testing and carotid ultrasound all prove negative. The solution proved to be immobilization in a soft cervical collar. Here is how that transpired........
HEADACHES

MIGRAINES(?)
TENSION HEADACHES
GREATER OCCIPITAL NEURALGIA
VISUAL DISTURBANCE

DOUBLE VISION
BLURRED VISION
OCCULAR MIGRAINES
VISION LOSS
PHOTOFEOPHOBIA
BURNING OF THE EYES
Patients report significant *otophobia*. Recently there has been an increase in individuals reporting significant discomfort from *vibration*, specifically the bass of stereos even through walls and from adjacent motor vehicles while travelling.

Intermittent and transient *hoarseness* comes from the effect of the disease on the *branchial* plexus and is frequently misdiagnosed as immune compromise.
Unfortunately dental disease is rampant in patients with CRPS

Part of this stems from dietary indiscretions, part from immune system compromise and part from the disruption of the dental nerve roots.

Perhaps the greatest reason is that the side effects of common medications prescribed for chronic pain lead to a change in lifestyle, poor oral hygiene, poor nutrition and a loss of saliva (dry mouth) that result in decay, periodontal disease and ultimately tooth loss.
• The most common finding apart from dry skin or hyperhydrosis is neurodermatitis. This can occur randomly on any area of the body. Lesions have the appearance of small acne-type eruptions that itch for hours to days and disappear spontaneously. There is no specific etiology apart from the CRPS and no treatment save for topical low potency steroids or anti-histamines to reduce the itch. If scratched they will scar.
Dercum’s disease, is a rare condition characterized by multiple, painful lipomas. These lipomas mainly occur on the trunk, the upper arms and upper legs. The understanding of the cause and mechanism of Dercum’s disease remains unknown. Possible etiologies include: nervous system dysfunction, mechanical pressure on nerves, adipose tissue dysfunction and trauma.
Morton’s neuroma is a mechanically induced degenerative neuropathy predominantly affecting the second and third common digital nerves. It is not actually a tumor but a thickening of the tissue that surrounds the nerves leading to the toes. It is eight to ten times more likely to occur in women than in men and most prevalent in middle aged women.
COGNITIVE DYSFUNCTION

There have been an increasing number of CRPS patients with cognitive issues. Mostly these are STML, word retrieval & difficulty with expression. It has been theorized that this is medication related but it occurs in individuals who take virtually no meds. Current thoughts abound with no single answer surfacing as being definitive.
OTHER SYMPTOMS

- Shortness of breath
- Inability to take a deep breath
- Neurogenic edema
- Muscle weakness/atrophy
- Endocrine dysfunction – adrenal, thyroid, hormonal imbalance
- Gardner Diamond Syndrome – spontaneous bruising in uninjured areas
- Lethargy
- Fatigue
- Sleep Disturbance

“Systemic Complications of Complex Regional Pain Syndrome”- Robert J. Schwartzman - *Neuroscience & Medicine, 2012, 3, 225-242*
A 37 year old female casino worker is struck by a “money cart” in the left lateral thigh and subsequently develops CRPS in that limb. It later migrates to the left arm.

One year later, her sister, a 35 year old police officer was broadsided in her patrol car while driving. The door handle impacts her left lateral thigh and SHE develops CRPS in the left leg which within months migrates to the left arm!
### MEDICATIONS

<table>
<thead>
<tr>
<th>Antidepressants</th>
<th>Pamidronate</th>
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<tbody>
<tr>
<td>Anti-anxiety agents</td>
<td>*Neridronate</td>
</tr>
<tr>
<td>Antispasmodics</td>
<td>Lenalidimide</td>
</tr>
<tr>
<td>Calcium Channel Blockers</td>
<td>Mexilitine</td>
</tr>
<tr>
<td>Antihypertensives</td>
<td>Capsaicin</td>
</tr>
<tr>
<td>Anti-epileptics</td>
<td>DMSO</td>
</tr>
<tr>
<td>Muscle Relaxants</td>
<td>Topical Compounds</td>
</tr>
<tr>
<td>Anti-inflammatories</td>
<td>Dextromethorphan</td>
</tr>
<tr>
<td>Analgesics</td>
<td>Amantadine</td>
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<td></td>
<td>Calcitonin</td>
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<td>IVIG</td>
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Opioid-induced hyperalgesia is a phenomenon observed in patients treated with opioids, who paradoxically demonstrate an increased sensitivity to painful stimuli.

- Pain is associated with hyperalgesia, allodynia or both and may be experienced in a different location; and of a different quality than the original pain.
KETAMINE
KETAMINE & SURGERY

- In cases of known or suspected RSD/CRPS, Ketamine should ALWAYS be used Intravenously during the surgery to lessen the likelihood of spread of the disease.
- “The major findings of this study are that Ketamine, used as adjunctive anesthesia in refractory CRPS patients undergoing surgery was successful in reducing pain, and blocking spread in severely affected, long standing patients” –

OTHER TREATMENTS

Diet and Lifestyle Alteration
Gluten free & Anti-inflammatory diet
Organic & Healthy Foods
Smoking & alcohol cessation
Home exercise program

Alternative Therapies

Reiki
Manipulation/Massage
Acupuncture
Vitamins and Neutraceuticals
B-12 and intrinsic factor
Hormonal & Neurotransmitter balancing
If you think eating healthy is expensive... just wait till you see the medical bills from eating cheap, crappy food.
Pre & Post REIKI-Week 1
WEEK FIVE
Diet & Lifestyle modification

EAT ORGANIC FOODS- CONSIDER GLUTEN FREE
ELIMINATE PROCESSED FOOD, WHITE SUGAR, WHITE FLOUR, WHITE SALT
ELIMINATE COMMERCIAL HOUSEHOLD CLEANING PRODUCTS AND TOXIC GARDEN PESTICIDES
DRINK PURE FILTERED WATER
REFUSE SYNTHETIC HORMONE TREATMENTS
SEEK NATURAL APPROACHES TO HEALTHCARE
DETOXIFY THE BODY
EMPOWER YOURSELF WITH A POSITIVE OUTLOOK - ADOPT AN ATTITUDE OF GRATITUDE
SUPPLEMENT YOUR DIET WITH APPROPRIATE VITAMINS AND NUTRITIONAL SUPPORT
EXERCISE
FIND A HEALTHY AVENUE FOR STRESS RELEASE SUCH AS MEDITATION, YOGA, GARDENING READING ETC.
MAINTAIN HEALTHY RELATIONSHIPS
EXPLORE YOUR SPIRITUALITY
SEVEN “FOODS” TO AVOID

Aspartame (nutrasweet)
Additives like MSG & Nitrates
Sugar, fructose and simple carbohydrates
Caffeine
Yeast & Gluten
Dairy
Nightshades (tomatoes, potatoes, eggplant)
Eliminate (or limit)

GLUTEN
Caffeine
Alcohol
Sugar
Processed food
Stress
Smoking
GLUTEN SENSITIVITY

Gluten sensitivity is actually an autoimmune disease that creates inflammation throughout the body, with wide-ranging effects across all organ systems including your brain, heart, joints, digestive tract, and more. It can be the single cause behind many different "diseases." To correct these diseases, you need to treat the cause--which is often gluten sensitivity--not just the symptoms.
DISEASES ASSOCIATED WITH GLUTEN

A review paper in *The New England Journal of Medicine* listed 55 "diseases" that can be caused by eating gluten. These include osteoporosis, irritable bowel disease, inflammatory bowel disease, anemia, cancer, fatigue, canker sores, rheumatoid arthritis, lupus, multiple sclerosis, and almost all other autoimmune diseases. Gluten is also linked to many psychiatric and neurological diseases, including anxiety, depression, schizophrenia, dementia, migraines, epilepsy, and neuropathies such as CTS, sensory ganglionopathies and fibromyalgia. It has also been linked to autism.
AVOID

Beer
flavoring
Pasta

Matzo
Processed meats
Cakes & Pies
Candy
Cereal
Cookies & Crackers

French Fires
Gravy
Imitation meats or seafood

Food Additives such as malt
Medications & Vitamins bound with gluten
Bread
Salad dressing
Sauces & Soy sauce
Seasoned Rice mixes
Snack foods (potato & tortilla chips) Croutons
Self-basting poultry
Soups
Vegetables in sauces
THE DREADED E-WORD

Most people know that exercise is good for you but they don’t put it into practice. Just 20-30 minutes of simple walking can tone the muscles, accelerate the elimination of body weight, clear the lymphatics and burn calories.

Whenever possible walk outdoors to get the added benefit of sunlight—still the best source of Vitamin D.

Also, being out in nature has a very calming effect on the body.
Do something to work up a sweat every day. Sweating is a natural way to detoxify.
Infrared saunas
Take a fiber supplement containing both soluble and insoluble fiber which helps the body secrete excess estrogen and other substances
Drink at least half of your body weight in water daily
Practice deep breathing
Neurotransmitters are chemical messengers that facilitate communication between neurons. This affects every cell, tissue and organ system within the body. When neurotransmitters are out of balance this communication is altered causing a wide variety of physical, mental and emotional clinical symptoms.
HORMONES

- Cortisol
- DHEA
- Estradiol
- Estrone
- Estriol
- Progesterone
- Testosterone
- Melatonin
B - VITAMINS

Low levels of folic acid B12, Thiamine, Riboflavin, and B6 have all been associated with mood disorders. Excessive B6 has actually been shown to create pain. The brain requires lots of B vitamins for repair and permanent maintenance of proper brain neurotransmitter and adrenal function. Stress causes the B vitamins to be quickly depleted.
BASIC SUPPLEMENTS

- Fish Oil (Omega 3)
- Probiotics
- Multivitamins/multiminerals
- Vitamin D3
- Magnesium & Calcium
- Digestive Enzymes
- Hydrochloric Acid
PAIN AND NUTRITIONAL SUPPLEMENTS

5HTP - acts as a painkiller and antidepressant

DLPA – has opiate agonist qualities

Methionine - helps reduce pain in the manner of anti-histamines - good in arthritis, Parkinson’s disease and depression

Fish oil - acts similar to ibuprofen

B6, zinc and manganese - aid in pain relief
• Make Smart Choices
• Do Not “own” your disease
• Educate yourselves and your family and friends
• Remove toxic people from your life
• Take as little medicine as possible
• Eat healthy
• Get outside
• Do not set limits on yourselves and do not let others do so either
YES
I
CAN
- Sammy Davis Jr.
- Happy Talk
- Keep Talkin Happy Talk
- Talk about things you’d like to do
- You gotta have a dream
- If you don’t have a dream
- How you gonna have a dream come true?

South Pacific 1949
• You gotta know when to hold ‘em
• Know When to fold ‘em
• Know when to walk away
• Know when to run!

♂ Kenny Rogers