

## MEDICAL INFRARED IMAGING - BODYSCAN

CBHPM 41.50.11.36

### TECHNIQUE:

Examination performed with a medical infrared imaging sensor Termocam FLIR E85, definition 640x480, focal length 18.9mm, exposure time 1/59 s. Undressed patient for thermal stabilization for 15 minutes in thermally controlled environment (23 ° C), with minimum convection air (0.2 m / s) and relative humidity below 60%. We analyzed bilateral neurovascular territories as explained in the final sheet.

### DIAGNOSTIC IMPRESSION:

Main functional changes from the overall systemic evaluation, according to the symptoms presented by the patient. See specific indications in multispectral images:

#### a. Nervous System:

- The feet and hands have a difference in temperature between the toes and there is compromise of the peripheral nerves in the extremities, characterizing a neuropathy of fine fibers. Sympathetic vasomotor response so far preserved in lower limbs after cold stress test.
- Neurovegetative characteristics present in fibromyalgia, including a deficient regulation of body temperature (thermal mantle), moderate noradrenergic hyperactivity causing peripheral vasoconstriction with a variation of -9.3 °C (dT), periocular congestion due to non-restorative sleep, and gastrointestinal tract dysfunction.

#### b. Musculoskeletal/Inflammatory System:

- Temporomandibular and left temporal joint dysfunction, masseter, bilateral upper trapezius, suboccipital, levator scapula, rhomboids and right scalenus with right posterior cervical tension (osteoarthropathy).
- Bilateral incipient rotator cuff tendinopathy. Bilateral acromioclavicular osteoarthritis.
- Bilateral lateral epicondylitis.
- Bilateral wrist flexor tendinopathy.
- Dysfunction of the right iliopsoas, abdominal obliques, adductors and fibular, left piriformis, lumbar quadratus, gluteus medius, gastrocnemius and soleus bilateral with lumbar paravertebral spasm (spondylosis, facet joint spondylodiscopathy). Bilateral sacroiliac joint degenerative alteration. Right trunk lateral inclination.
- Right trochanteric enthesitis.
- Valgus knee osteoarthritis.

#### c. Metabolic System:

- Slow metabolism (core temperature 35.1 °C-BTT). A slow metabolism can be caused by various factors, including age, genetics, hormone levels, body composition, level of physical activity, diet, and medical conditions such as hypothyroidism. Hyper cervical anterior focal signal irregular in the projection of the thyroid, right lobe (dTglandular=1.2°C, dTchin=3.0 °C).

#### d. Vascular System:

- Venous congestion in the lower limbs: anterior leg and right calf.

#### e. Visceral System:

- Presence of hepatic overload (the cause can be multifaceted).

Additional information:

- Blood perfusion of the terminal branches of the internal carotid artery within normal parameters.

f. Mammary System:

- Distribution and behavior of blood vessels on the skin symmetrical and moderately bilateral, with agreement between the patient's age and changes in multispectral mammary images. Pattern within normal limits for the examination performed. It is recommended, at the clinical discretion, to consider the correlation of the patient's clinical information and the results obtained by other morphological imaging exams, for a definitive diagnosis and if necessary, a specific thermography exam of the breasts for risk assessment.

Multicontextualization

1 - This patient's pelvic pain may be caused by a combination of factors, including the presence of fine fiber neuropathy, neurovegetative dysfunctions and musculoskeletal dysfunctions, including muscle, tendon and joint dysfunctions, including the sacroiliac joint, trochanteric enthesitis, tendinopathies and valgus knee osteoarthritis.

2 - Some postural imbalances may be involved in the intense pain of this patient. The postural changes include a right-sided trunk inclination, right trochanteric enthesitis, muscle imbalance in the lumbar region including paravertebral lumbar spasm (spondylosis, facet joint spondylodiscitis), dysfunction of the iliopsoas, abdominal oblique, adductors, and right fibular muscles, left piriformis, lumbar quadratus, gluteus medius, gastrocnemius and soleus muscles, and valgus knee joints. These postural imbalances can lead to an overloading of the bone and muscle structures, including joints, tendons, and ligaments, which can result in pain and inflammation.

3 - The myofascial chains that may be involved in the intense pain of this patient include:

a. Anterior myofascial chain: includes the iliopsoas, abdominal oblique, adductors, and right fibular muscles, left piriformis, lumbar quadratus, gluteus medius, and gastrocnemius and soleus muscles bilateral. These muscles are associated with paravertebral lumbar spasm (spondylosis, facet joint spondylodiscitis) and bilateral sacroiliac joint degeneration, which can lead to pain in the lumbar and pelvic regions.

b. Posterior myofascial chain: includes the bilateral upper trapezius, suboccipitals, levator scapulae, rhomboids, and right scalenes, which are associated with left temporomandibular and temporal joint dysfunction, masseter, and right posterior cervical tension (osteoarthropathy). These changes can lead to neck, shoulder, and dorsal pain.

c. Shoulder myofascial chain: includes bilateral rotator cuff tendinopathy and bilateral acromioclavicular osteoarthritis, which can result in shoulder pain and limited movement.

d. Elbow myofascial chain: includes bilateral lateral epicondylitis, which can result in elbow pain and limited movement.

e. Hand myofascial chain: includes bilateral wrist flexor tendinopathy, which can result in hand pain and limited movement.

f. Knee myofascial chain: includes valgus knee osteoarthritis, which can result in knee pain and limited movement.

4 - The presence of neurovegetative characteristics, such as deficient temperature regulation (thermal mantle) and noradrenergic hyperactivity, suggests that there is an autonomic nervous system dysfunction. In addition, the presence of liver overloading may indicate oxidative stress and imbalances in the energy metabolism.

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## CUTANEOUS THERMOMETRY BY INFRARED - THERMOGRAPHY

**PROCEDURE:** This patient was examined by digital infrared thermal imaging to determine asymmetric signals indicating physiological abnormalities. The digital infrared thermometry is a physiological test that evaluates thermal patterns suggestive of abnormalities. The thermal image is a reproduction of thermal changes of the skin surface of the body that changes in cases of disease and functional and structural abnormalities. Once found abnormal thermal patterns is essential to continue the relationship with medical developments. The digital infrared thermometry is a resource capable of recording thermal changes in time. A body without abnormalities has a stable and symmetric thermal pattern that does not change over time. Another objective of this study is to establish the normal or abnormal basic standard for each patient for comparison. An infrared image in a patient without disease remains identical and symmetrical for study of its evolution. Any change means the existence of local physiological changes which require investigation. In the case of a first significant asymmetry, return to the symmetrical condition and / or decreasing its intensity, which is the thermal differential indicates recovery. Sometimes the standards are complex and require clinical correlations, laboratory and / or other imaging methods in order to obtain diagnostic safety. This test alone does not diagnose cancer. There should always be used in conjunction with clinical evaluation and complementary tests. For confirmation of motor neuropathies is indicated electromyography if necessary.

Cutaneous thermometry total body consists of bilateral dermatomeric review the following territories: 1) ophthalmic nerve, 2) maxillary nerve, 3) mandibular nerve, 4) headset large nerve, 5) greater occipital nerve, 6) lesser occipital nerve, 7) cervical cutaneous nerve, 8) dorsal branches of the cervical nerves, 9) transverse nerve neck, 10) lateral supraclavicular nerves, 11) intermediate supraclavicular nerve, 12) medial supraclavicular nerves, 13) dorsal branches of thoracic nerves, 14) axillary nerve, 15) ICB nerve, 16) medial cutaneous nerve of the arm, 17) posterior cutaneous nerve of the arm, 18) medial cutaneous nerve of the forearm, 19) posterior cutaneous nerve of the forearm, 20) lateral cutaneous nerve of the forearm, 21) superficial branch of the radial nerve, 22) median nerve, 23) ulnar nerve, 24) radial nerve, 25) lateral cutaneous branch from T1 to T12, 26) medial cutaneous branches of T1 to T12, 27) dorsal cutaneous branches of T1 to T12, 28) dorsal branches of the lumbar nerves 29) dorsal branches of the sacral nerves, 30) nerves coccígeos, 31) iliohypogastric nerve, 32) ilioinguinal nerve, 33) genitofemoral nerve, 34) posterior cutaneous nerve of the thigh, 35) anterior cutaneous nerve of the thigh, 36) lateral cutaneous nerve of the thigh, 37) obturator nerve, 38) nerve common peroneal, 39) superficial peroneal nerve, 40) deep peroneal nerve, 41) sural nerve, 42) saphenous nerve, 43) medial plantar nerve, 44) lateral plantar nerve, 45) tibial nerve.

**REPORT:** The interpretation relates to an objective description of the thermal asymmetries based on information by the patient and post-exam physical signs, clinically significant.

**EXAM RESULTS:** Results are determined by studying the different patterns and differential thermal captured in the infrared images.

**CONSIDERED NORMAL VALUES:** diffuse thermal patterns with good symmetry between the contralateral regions of the body. No significant specific asymmetries without clinical correlation, and other laboratory tests, which are stable and indifferent over time and are considered as part of normal thermal patient anatomy.

**EXCHANGE CONSIDERED ABNORMAL:** localized areas of hyper-radiation or hypo radiation, thermal asymmetry between the opposite regions of the body or with temperature differentials greater than 0.3° C. typical vascular patterns of suspicious changes. Any thermal change recorded during the comparative analysis during the disease process. Non-physiological responses to abnormal or specific testing of the heat variations. The medical assistant requesting this examination must check with the held to answer any question with the descriptive and conclusive content of this report.

### COMMENTS:

The interpretation of the results of this exam and diagnostic conclusion are medical procedures depend on the joint analysis of the clinical data and other tests of a patient. For questions or further information, please contact. The intent of this report is to be used by trained health professionals to assist in the assessment, diagnosis and treatment of their patients. It is not intended to be used for self-assessment or self-diagnosis. It is appropriate file and compare this study with another study in the case of therapeutic drug monitoring.







