



CASE REPORT

Charcot Arthropathy in the Lumbar Spine: Case Report

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Abstract

Introduction: Charcot arthropathy of the spine is a process in which the stability of the spine is affected due to joint involvement, causing joint destruction, pain and deformity. The most frequently associated cause is trauma, conservative treatment is an option depending on the characteristics of each patient, and surgical treatment, if indicated, can represent a real challenge for the orthopedist due to the instrumentation techniques that are generally needed.

Clinical case: A clinical case of a patient treated in the orthopedics and traumatology division of the ISSSTE Susulá hospital clinic is presented. A 57-year-old woman with a 15-year history of type 2 diabetes mellitus treated with metformin, the patient was diagnosed with Charcot arthropathy in the left foot with conservative treatment based on immobilization, after resolution of the condition, already in the consolidation stage. The patient is offered the possibility of opting for surgical treatment, which is rejected by the patient. In his follow-up consultation, he reported pain at the level of the lumbar spine that began approximately 2 years ago, referring pain at the level of the lower back, to the neurological examination with preserved reflexes at all levels, with a decrease in muscle mass as well as strength at level of the knee extensor muscles and also the ankle flexor, all bilaterally. AP and lateral radiographs of the lumbar spine demonstrate loss of intervertebral space between L2 and L3, as well as fusion between the vertebral bodies themselves. A biopsy is taken in which an infectious and tumor process is ruled out. The lumbar spine tomography shows data of loss of intervertebral space at the level of L2-L3 with fusion at the level of the same vertebral bodies without signs of instability, so the diagnosis of Charcot spine in the lumbar spine is made at the level of L2-L3 in consolidation stage. The diagnosis is integrated and conservative treatment is chosen, so the patient is sent to rehabilitation.

Discussion: We present the case of a 57-year-old patient. It is important to remember that the diagnosis can be confused with an infectious or tumor process. It is reported that on average the time of diagnosis after the onset of neurological deterioration in this entity is 17.3 years.

The current and ideal treatment is surgical instrumentation to provide support in patients who present instability, with single or multistage 360 arthrodesis being the most used treatment that has demonstrated a reduction in spasticity and even a recovery of the neurological deficit prior to presenting joint Charcot spine in patients in whom there are no neurological alterations or signs of infection.

Likewise, it has been shown that conservative treatment is the idea in patients with stable consolidations or who are already in the fusion stage without associated alterations, in our case the patient was diagnosed in the consolidation stage with stability, therefore conservative treatment was performed through radiological follow-up in consultation.

Introduction

Charcot arthropathy of the spine, also called Charcot spine, is a process in which the stability of the spine is affected by involvement of the intervertebral joints, causing destruction, pain and deformity. It was first described by doctors in the 19th century. Kronging and Mitchell, currently the most frequently associated cause is trauma [1-3] although it can be associated with other entities, in the same way the diagnosis is difficult due to its multiple differential diagnoses within which are infections and tumors.

Therefore, special attention is required when performing the necessary tests to confirm the diagnosis. Conservative treatment is an option depending on the characteristics of each patient, with stable spinal columns and patients without motor or sensory alterations being candidates for it.

Surgery can be a real challenge for orthopedists due to the instrumentation techniques typically needed, with multilevel instrumentation being the primary form of treatment [1,4-7].

Objective

Report the case of a patient with an incidental finding of Charcot spinal arthropathy treated conservatively and with adequate evolution.

Case Report

A clinical case of a patient treated in the orthopedics and traumatology division of the ISSSTE Susulá hospital clinic is presented. 57-year-old woman with a history of type 2 diabetes mellitus, 15-year-old diagnosed on metformin treatment. His current condition began 7 years ago, presenting edema on the sole of the left foot at the level of the head of the first metatarsal, with erythema and increased temperature, moderate pain, a suppurative wound with apparent purulent secretion.

Charcot arthropathy is diagnosed and treatment begins. After resolution of the condition, already in the consolidation phase, surgical treatment is offered to the patient, which is rejected. During his follow-up visit, he reported pain in the lumbar spine that had started approximately 2 years ago without previously mentioning it in the consultation for fear of the possible diagnosis. He reported pain in the lumbar area, with preserved deep tendon reflexes on neurological examination at all levels, with a decrease in muscle strength at the level of the knee extensor muscles, as well as the ankle flexor with a scale of 4/5, decrease of sensitivity at the same levels with hypoesthesia bilaterally, the rest of the examination without alterations.

AP and Lateral X-rays were requested in which loss of the intervertebral space between L2-L3 was observed.

A biopsy is taken from the area which does not report the growth of any microorganism, thus ruling out the possibility of an infection. A sample is also taken and sent to pathology, with no evidence of neoplasms. A tomography of the lumbar spine is performed, where data of loss of intervertebral space is evident at the level of L2-L3 with fusion at the level of the same vertebral bodies without data of instability, which is why it is integrated into the diagnosis of Charcot arthropathy in the L2-L3 spine in the consolidation stage, due to the patient's characteristics and the fact that she does not present signs of instability, conservative treatment is offered with the start of rehabilitation. After 3 months, the patient reports improvement in symptoms,

attributing it to rehabilitation.

Discussion

Charcot arthropathy is most common in the knee, foot, and spine; when it affects the spine it is called spinal neuropathy (SNA) [1,3,5,7].

The normal progression of this entity is the destruction of the joint elements that provide stability at different levels, in this case in the spinal joints, the most frequent site of spinal neuropathy is in the transition zones (thoracolumbar and lumbosacral), being exceptional in cervical, thoracic and sacral areas, it is important to establish an adequate differential diagnosis due to the frequency with which this entity is confused with an infection or a malignant process [1,3].

The main cause of this entity is trauma. Patients who undergo spinal instrumentation as a treatment for their underlying pathology are the most frequently affected, up to 70% [1,7], with the procedures being laminectomies and spinal fusions. More associated, other causes are known that are less frequent than trauma but important to determine as the cause of origin, such as infectious causes, ankylosing spondylitis, bone tumors or secondary to radiation [1,5,7].

Currently there are two theories, the neurovascular theory, which refers to autonomic dysfunction with increased bone resorption of the subchondral bone located under the vertebral articular facets, which generates microfractures, consolidation and deformity, and the neurotraumatic theory, which refers to because patients with SCI lose proprioception and therefore increase loads and destruction due to loss of compensation [1,3,7,8].

Clinically, our patient presented the characteristics reported in the literature with pain, radicular symptoms as well as a clicking sensation in the lumbar area when performing certain activities, the same symptoms that are considered the most frequent in the literature, associated with a charcot arthropathy process in the left lower extremity, the latter being what led her to seek medical attention [1,8].

We present the case of a 57-year-old patient. It is important to remember that the diagnosis can be confused with an infectious or tumor process. It is reported that on average the time of diagnosis after the onset of neurological deterioration in this entity is 17.3 years [1,7].

Radiological images are essential to establish the diagnosis by identifying what stage of disease progression the patient is in (trophic or hypertrophic stage), in the case of our patient he is in a hypertrophy stage (Figure 1), in which we can observe destruction and erosion of the vertebral bodies as well as disc degeneration and the presence of atrophic osteophytosis at the L2-L3 level [1,7].

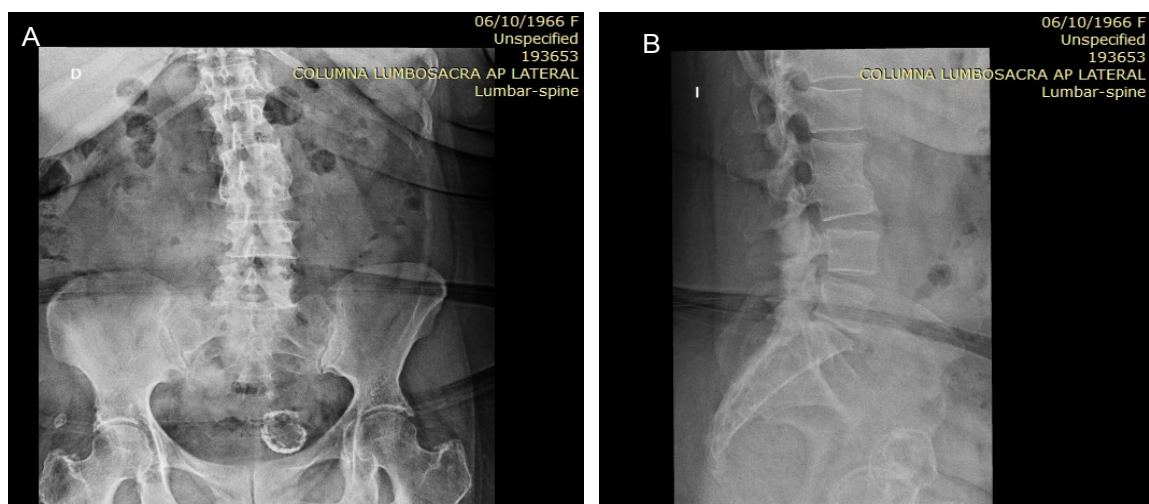


Figure 1: (A,B) AP and Lateral X-ray of the lumbar spine showing complete vertebral fusion at the level of L2-L3. The process can be observed already in the consolidation phase, without signs of instability.



Figure 2: (A,B,C) (Coronal, sagittal and axial sections respectively) in the tomography that demonstrates the complete loss of the intervertebral space at the L2-L3 level with fusion of both vertebral bodies in their entirety.

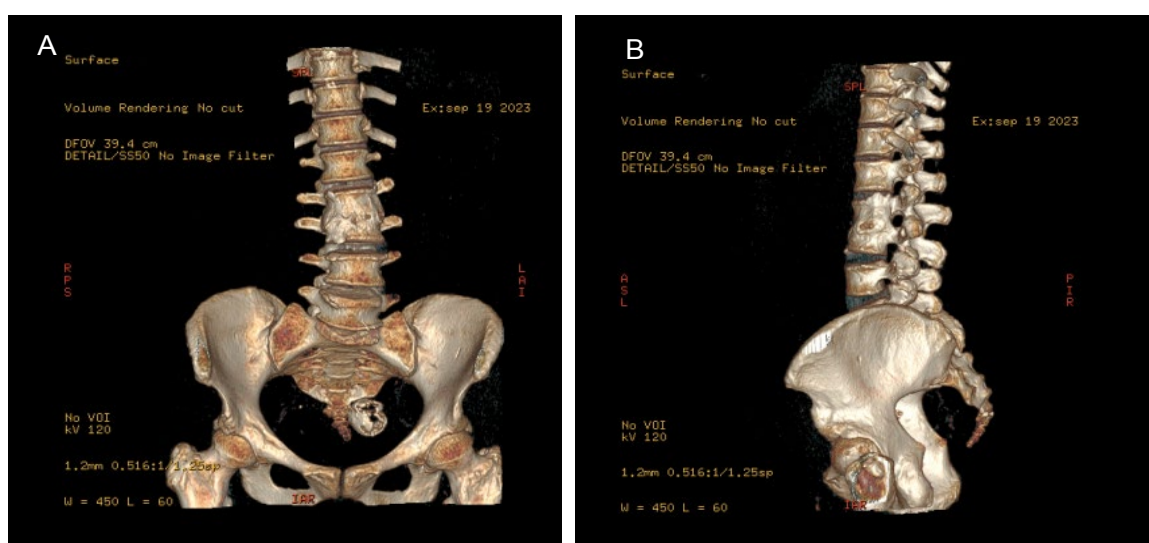


Figure 3: (A,B) 3-dimensional (3D) tomographic reconstruction, image A AP view, Image B Lateral view. In both images, the consolidation between the L2 and L3 vertebral bodies can be corroborated.

The use of tomography focuses on identifying and differentiating areas due to normal wear and tear of the joints due to age or a cause of arthropathy, as well as differentiating a possibly tumorous process (Figure 2 and Figure 3). MRI could help establish and clarify the diagnosis especially in the early stages of Charcot arthropathy of the spine [1,7,8].

The use of laboratory studies is indicated as a differential diagnosis tool. In the case of our patient, normal leukocyte levels were reported, as well as ESR and CRP within normal parameters.

Regarding the use of biopsy to determine the infectious or tumor origin of this entity, it remains controversial, being reserved to the decision of the treating doctor or in case of suspicion of one of these two entities that justify it, the result of the biopsy.

In our case, the anatomopathological study showed fibrosis, with granulation tissue and pseudoarthrosis, which corroborates the diagnosis of Charcot spinal arthropathy [1,7,8].

The current and ideal treatment is surgical instrumentation to provide support in patients who present instability, with single or multistage 360. Arthrodesis being the most used treatment, which has demonstrated a reduction in spasticity and even a return to the neurological deficit prior to Charcot arthropathy.

Likewise, it has been shown that conservative treatment is the idea in patients with stable spines or who are already in a fusion stage without associated alterations.

In the case of our patient, he was diagnosed at a consolidation stage of the intervertebral joint, so conservative treatment was performed through radiological follow-up in consultation [1,5,7,8].

Results

Currently our patient does not present motor or sensory alterations in the spine, with no current need for surgical treatment due to the stability she presents, which demonstrates that conservative treatment is a valid treatment option in this pathology as long as the conditions of the patient need it.

Funding

None.

Conflict of Interest

None.

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