

## DIAGNOSIS PROCESS AND MANAGEMENT OF SCIATIC NEURALGIA REVEALING A LUNG ADENOCARCINOMA, A CASE REPORT

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### Abstract

Sciatic neuralgia is commonly due to lumbar disc herniation. However, malignancy infiltration of the nerve's roots must also be considered. When metastasis is revealed by complication, its management must follow a particular approach. Authors report one case of sacral metastasis of a lung adenocarcinoma revealed by neuralgia and skeletal related events, worsening the patient's life quality.

One 65-year-old man experienced progressive and persistent left buttock pain beginning six months earlier, that radiated to the lower limb following the sciatic path. Progression of its intensity led to step limitation and disabilities.

Thoracolumbosacral Spine CT scan showed a huge tumoral mass with osteolytic process infiltrating all the sacrococcygeal area (113x112x107 mm) and a malignant vertebral collapse of L1. Pelvic organ investigations didn't find any neoplasm. The full body CT scan found a heterogeneous nodule (21x11 mm) in the left apical lung lobe. Histopathology after biopsy of the sacral mass and the pulmonary nodule confirmed the adenocarcinoma and immunohistochemistry specified its lung origin. Surgical sciatic

nerves decompression, radiotherapy and chemotherapy had increased survival time and pain improvement.

**Key-words:** immunohistochemistry; lung adenocarcinoma; sacrococcygeal, metastasis region; sciatic neuralgia

**Introduction:**

Sciatic neuralgia seems to be a common symptom of radicular and spine disc conflict due to disc herniation according to the stage of degenerative spine lesion. Hence, practitioners have to keep in mind the possibility of infiltrative lesion as a cause of sciatica [1]. Sciatic radicular nerves can be infiltrated within pelvic area by a primitive or secondary sacral tumor [2].

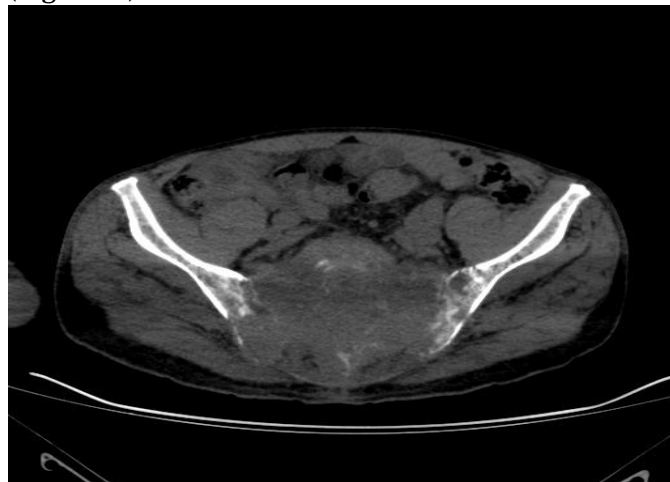
Sacral metastases are relative rare conditions among sites of deposits of metastatic lesion [2]. Their management must follow complex process [2]. Pain is the common initial symptom of sacral masses [2], radiotherapy use is among skeletal related event [3]. When metastasis complications reveal the cancer, a systematic management must include in parallel way: complications treatment, malignant state of the mass confirmation, primitive tumor searching, extension assessment of the cancer [4]. Here, authors report one case of a lung adenocarcinoma revealed by a mixed pain due to the sacral metastasis.

**Case report:**

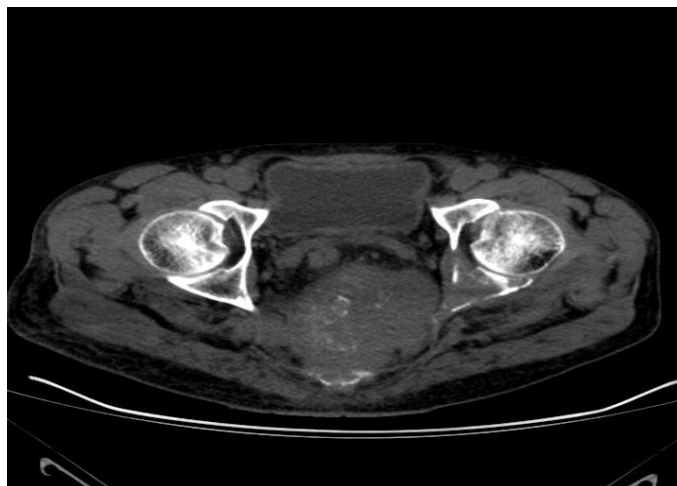
A 65-year-old man, a retired teacher, nonsmoker nor drinker was seen at our neurological visit in August 2017. He complained having left buttock pain which installed progressively and intensified six months prior to this visit and became permanent and appeared even at rest. Buttock pain radiated into the left lower limb to the foot and toes. His step perimeter became restrited but he could always move; and his symptomatology led to depression. His initial neurological examination noticed a left limping on gait, a normal tone and muscle strength, a normal motor reflex, a left lower limb amyotrophic without neurogenic systematization. The straight leg raising test noticed pain at 30°. Sensitivity, cognition and cranial nerves were without abnormalities. There was no sphincter problem. Axial examination noticed no deformities but pain

was felt when pressing the first lumbar spines and sacrococcygeal area. Rectal touching, abdominal and thoracic examination and thyroid gland palpation were without abnormalities.

The thoracolumbosacral spine CT scan without and with iodine product perfusion noticed two abnormalities: one huge infiltrative mass of the sacrum (113x112x107 mm) which structure was not well identified because of local osteolytic process with mild condensation (Figure 1, Figure 2) and L1 spine collapse due to the osteolysis of spine body suggesting secondary malignancy (Figure 3).



*Figure 1 : Axial pelvic CT scan of a 65 yo man showing a sacral tumor involving coccyx and sacrum bone completely infiltrated (sacral slice)*



**Figure 2 : Axial pelvic CT scan of a 65 yo man showing a sacral tumor involving coccyx and sacrum bone completely infiltrated (coccyx slice)**



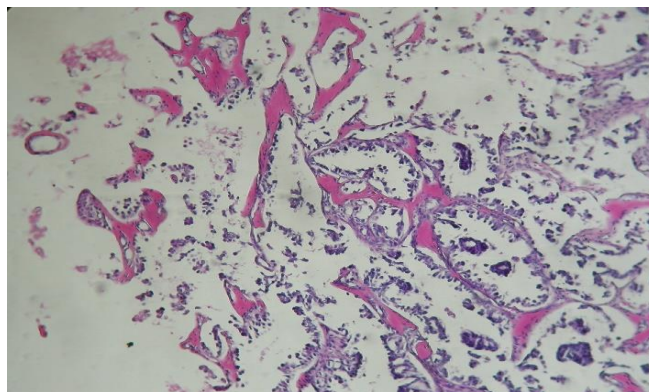
**Figure 3 : Sagittal lombopelvic CT scan of a 65 yo man showing huge tumor involving sacrum bone and coccyx and L1 collapse spine**

The extension assessment by a full body CT scan found a heterogeneous solid nodule (27x21 mm) in the left apical lung lobe (Figure 4).



**Figure 4 : Axial chest CT scan showing the spiculated nodular lesion on lung parenchym suggesting malignancy**

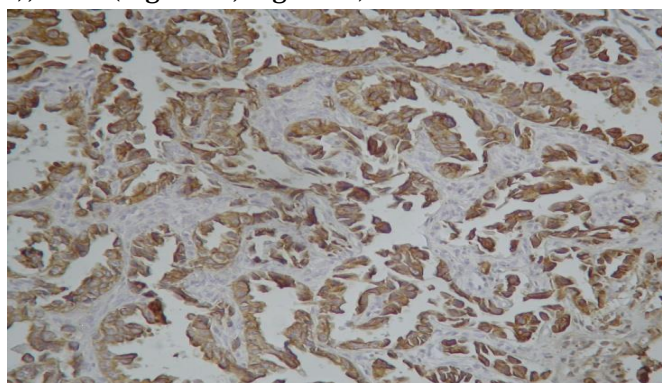
The patient was then managed by the oncology team. A surgical decompression of sciatic radicular nerves was performed with the sacral mass biopsy. An adenocarcinoma metastasis moderately differentiated in the sacrum was identified (Figure 5); the primitive of which had yet to be determined.



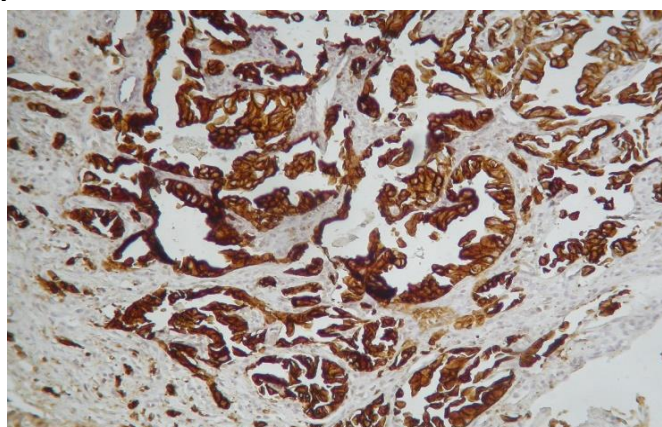
**Figure 5 : Haematoxylin and eosin staining [H&E] X10**

The first primitive investigations were not conclusive. The first bronchial fibroscopy with biopsy didn't find abnormalities. Thyroid ultrasonography and thyroglobulin level was normal. Total colonoscopy was also normal. PSA level was normal and the serum protein electrophoresis as well.

An immunohistochemistry of sacral mass biopsy confirmed the lung origin of the metastasis with intense marking AE1/AE3 (Figure 6), CK7 (Figure 7), TTF1(Figure 8, Figure 9).

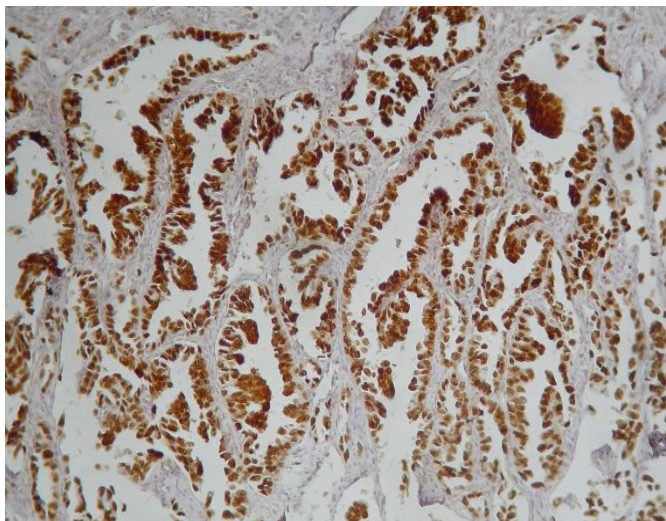


**Figure 6 : Immunohistochemistry AE1/AE3 is positive 10X**

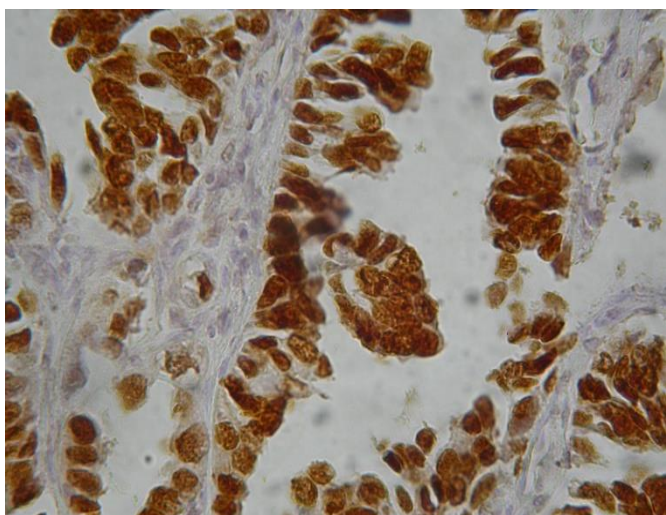


**Figure 7 : Immunohistochemistry staining CK7 positive, 10X**





**Figure 8 : Immunohistochemistry of TTF1 is positive, 10X**



**Figure 9 : Immunohistochemistry of TTF1 is positive, 40X**

A second lung fibroscopy with biopsy confirmed the diagnosis of carcinoma poorly differentiated of lung.

To manage the pain, in addition to decompression, the patient received 10 sessions of 30Gy of radiotherapy in the pelvic area and L1 with perfusions of biphosphonate and neuropathic analgic. After histological findings, the patient received a palliative chemotherapy associating Carboplatine and Etoposid. After 3 courses of chemotherapy, the patient could walk without help. Full body CT scan on June 2018, showed important reduction of the sacral tumor (Figure 10, Figure 11, Figure 12). He is continuing courses of chemotherapy until now. His performance status is normal and the sciatica is mild and well tolerated without medications.



**Figure 10 : Control after treatment Axial pelvic CT scan of a 65 yo man showing a sacral tumor involving coccyx and sacrum bone completely infiltrated (coccyx slice)**



**Figure 11 : Control after treatment Axial pelvic CT scan of a 65 yo man showing a sacral tumor involving coccyx and sacrum bone completely infiltrated (sacral slice)**



**Figure 12 : Control after treatment sagittal lumbopelvic CT scan of a 65 yo man showing size reduction and re-ossification of the tumor**

***involving sacrum bone and coccyx and L1 collapse spine***

**Discussion:**

Bone metastasis revealing cancer frequently occur in sixty decades [5] and the first episode of sciatica in person after 50 years-old is a clinical clue of symptomatic radicular pain of tumor [6]. In fact, sciatic neuralgia commonly due to disc herniation could be the expression of tumoral condition [6]. The inflammatory timing of the pain, its aggravation trend, its occurrence without physical strongly effort suggest a non discal radicular pain [6]. In addition, pain during bone metastasis is permanent, though insidious at the beginning, increase in intensity progressively until it becomes very intense, permanent, even with nocturnal impulse. It leads to disabilities and loss of autonomy, worsening the quality of life with depression, implicating an important health burden [7]. In our case, pain is typical of sciatica due to the compression of radicular nerves and the sacrococcygeal metastasis.

The expression of a cancer by its bone metastasis is a common condition in emergency unit and rheumatology unit by the great frequency of pain and other complications of metastasis [3,4]. Our patient visited the neurology unit initially for an intense sciatica and buttock pain.

Sacral metastases are rare and represent the minority of spine metastases [2,8]. In our patient, the infiltrative sacral mass had a huge size (113x112x107 mm) at the first imaging assessment (Figure 1, Figure 2). The diagnosis of sacral tumors is often delayed because they become only expressive when they have a sufficient huge volume to compress nerves and pelvic organs around [2,8,9,10]. On CT scan, osteolytic and osteocondensation types of the mass and the occurrence of multiple location including the spine suggest the metastasis pattern [9]. In our case, there were in addition to the sacral mass, the L1 spine collapse suggestive (Figure 3).

In our patient, the malignant criterion of the sacral mass was confirmed by the histopathology findings of sacral bone. This confirmation is useful because rare infectious osteitis and primitive malignant bone tumor can resemble a bone metastasis [4]. Marcelli and al. stated that

biopsy is almost mandatory in case of bone metastasis as the revelation of cancer [4].

Antitumoral and anti-inflammatory effects of radiotherapy give its antalgic effect [7]. Radiotherapy is the therapeutic standard for the management of bone metastasis and it is systematically performed after a consolidation or stabilization surgery to prevent intramedullary tumoral dissemination [7]. Results of radiotherapy in our patient are pain control on its neuropathic and nociceptive compound. The antalgic effect is complete in 15 to 40% of cases and it also improves the quality of life including anxiety and depression improvement [7].

Investigations of primitive tumor must include careful interview and clinical examination [5]. Identification of abnormalities lead to guided investigations [5]. But in our case, the patient didn't have respiratory troubles, coughing, hemoptysis, or chest pain on his history. In this case of no clinical clues, there is no definitive consensus [5]. Even if, cancer prognosis is already worse in stage of bone metastasis, it is important to have precision of the primitive neoplasm for the most frequent neoplasm targeting bones (lung, prostate, kidney, breast and thyroid). These neoplasms could respond to active antitumoral therapy and improve prognosis and so the patient's comfort at short or long terms [4,5]. Identification of primitive tumor is difficult for more than half of cases and the origin is not found for 4 to 10% of cases [5]. We search the primitive tumor by a systematic process and secondary guided by the results of histopathology [5]. However, histological assessment and immunohistochemistry need a certain period of time to bring out findings. During this period, all investigations in looking for the primitive tumor is initiated [4]. Assessments must be efficient, specific and rapid to not prolong the period before treatment [5].

Magnetic resonance imaging (MRI) is more sensitive and show better extensions on loco-regional settings such as intramedullary, smooth parts and neurological structure but its specificity is lesser than X-ray imaging's that analyze well bone structure. [5]. In addition, diagnosis process depends on the local investigation's facilities [4]. CT scan centered on the painful area is more

sensitive than bone radiography and have a good specificity.

[5] Performing a thoracoabdominopelvic CT scan is more efficient and rapidly done. It increases the detection rate of respiratory tumor and susmesocolic area [5]. In case of bone metastasis of undetermined origin, performing of tumor markers group without diagnosis aiming is not justified. Thus, it is commonly practiced because of easiness of demand and the results delivering [5]. For our patient, thoracoabdominopelvic CT scan found the primitive tumor as a nodular lung. In the study by Syed et al. fine needle aspiration of sacral mass showed that colorectal tumors are the most frequent primitive tumors [11]. Because of proximity, sacrum metastasis come actually from colorectal cancer [8,11]. But, by the fact that the sacrum metastasis dissemination is commonly by hematogene pathway from its sites of primitive detachment [2], so primitive sites could be varied. A systematic review by Quraishi and al. about sacral metastases report that the most dominant primitive cancers were breast cancer, lungs, kidneys, thyroid and prostate [2]. This point the management process as displayed in our case.

Histopathology assessment of bone biopsy aims to confirm malignant state of the lesion and identify the primitive tumor but also the immunohistochemistry performing [2,4]. There is minimal morphology difference between the primitive tumor and the bone location [5]. The bone metastases are exceptionally more differentiated than the primitive tumor [5], as it is in our case; the sacrum metastasis is moderately differentiated but the lung primitive tumor was poorly differentiated. More often, lesion of bone metastases are less differentiated or with non-characteristic aspects [5]. In our case, the origin of the adenocarcinoma must be identified. Immunohistochemistry is useful to recognize the type and origin of the tumor and allow in more than 80% of cases a précised identification of the primitive tumor [5].

In our case, immunohistochemistry had enhanced the diagnostic of lung adenocarcinoma and confirmed by the second bronchial biopsy. Therefore, bronchic fibroscopy's usefulness is undeniable for providing the diagnosis of lung cancer. In a quarter of case, more than two sessions of bronchic fibroscopy are needed [12].

Our patient got back his autonomy. In the study by Yoong and al., early palliative care in the management of advanced lung cancer is effective [13]. Decreased volume in response to chemotherapy-radiotherapy constitute signs of efficacy of treatment and certain changes such as ossification of an initially osteolytic lesion may indicate stable disease [9], such as find with our case (Figure 10, Figure 11, Figure 12). For patients with metastasis within the sacrum, decompressive surgery followed by radiotherapy showed efficiency for pain improvement and neurological function recovery [2,14].

### Conclusion:

Sciatic neuralgia in elderly persons point the usefulness of considering the possibility of infiltrative lesion of sciatic radicular nerves but not only as the common disc herniation as its mechanism. A distant metastasis in sacrum is possible without locoregional involvement at first dissemination of lung adenocarcinoma. Challenge on identifying the primitive of adenocarcinoma is helped by immunohistochemistry. This identification allows a gain on the survival time and comfort of the patient.

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### Consent:

Verbal consent was given by the patient and all documents and iconography are anonymous.

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