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Spinal cord compression secondary to metastatic invasion of breast phyllodes tumour. Case report

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Keywords
spinal cord compression.
paralysis vertebral
metastasis.
oncologic emergency.
vertebral fracture

Abstract

Spinal cord compression syndrome is one of the most frequent oncologic emergencies, in which early diagnosis and treatment are key factors to prevent severe and irreversible neurological damage. It is estimated to have a prevalence of 3.4% in oncologic patients and is a source of significant morbidity in cancer patients.

Spinal cord infiltration with hematogenous dissemination is the most common cause of spinal cord compression. In the present case, we present a clinical case of spinal cord compression syndrome secondary to a phyllodes tumour of the breast who was admitted to the emergency for lumbar pain with red flags and who suffered a spinal cord infarction with irreversible sequelae and poor prognosis.

Introduction

Oncological emergencies are a group of complications that arise in the course of disease progression in cancer patients, and these complications increase morbidity and mortality, as well as sequelae. Dealing with these clinical situations requires a high level of suspicion, a correct approach and timely treatment in the emergency department, as it helps to decrease the mortality rate and the costs of hospital care.

There are multiple oncological emergencies; however, within this article we will address oncological emergencies of a neurological nature, specifically spinal cord compression syndrome, a common phenomenon in oncological patients. It occurs in 5% to 10% of patients with oncological pathology. Spinal cord compression syndrome is common in breast, lung and prostate tumors (about 60% of cases); however, about 20% of patients presenting with spinal cord compression syndrome did not have an official diagnosis of any oncological pathology. [1-2]

Generally, spinal cord compression occurs at the thoracic level in about 70% of cases, followed by involvement of the lumbosacral vertebrae (25%) and cervical vertebrae (up to 15%). However, the

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literature documents that in up to 40% of cases several segments are compressed, hence the importance of performing imaging studies that allow us to evaluate all compressed segments. [3-5]

It has been documented that patients with compression have a poor prognosis and there is evidence of a drastic decrease in 5-year survival, especially in cases where paralysis is present. However, the neurological prognosis will depend on the degree of neurological focality of the patient and the timeliness of intervention. The final prognosis depends on the type of tumour and the degree of invasion and malignancy of it. [6-7]

We describe the case of a patient with spinal cord compression syndrome secondary to metastatic invasion of the primary tumour and the presentation of low back pain with alarm flags. We present the article with the aim of providing tools for the management of low back pain in the ED and documenting a curious case.

Clinical case

A 41-year-old female patient with a history of malignant phyllodes tumor of the left breast with mesenchymal fibroepithelial component with ki 67 of 21%, managed with left radical mastectomy, chemotherapy and radiotherapy and under follow-up for 4 years, who three days previously consulted for severe headache associated with amaurosis fugax, in which the simple cranial tomography showed no alterations and it was decided to discharge her due to total resolution of the pain. She was admitted to the emergency department for a week of sudden onset of pain in the left lumbar region radiating to the ipsilateral flank associated with moderate to severe holocranial headache with no other associated symptoms.

The patient was found to be in good general condition, without neurological focality, and with no other abnormalities on physical examination. Laboratory tests on admission found no alterations suggestive of an active inflammatory or obstructive process (Table 1); Urinary tract computed tomography (CT) ruled out urolithiasis. In view of the clinical improvement, it was decided to discharge the patient again with analgesia and indication for outpatient magnetic resonance imaging of the lumbosacral spine.

She consulted again a week later due to persistent low back pain that intensified to severe intensity; Lassegue and Bragard signs, present bilaterally. She brought an MRI of the lumbosacral spine which showed L4 - L5 and L5 - S1 disc protrusion without foraminal compromise. She was assessed by neurosurgery, who did not indicate surgical management and she was discharged once again. Four days later, she consulted for the third time due to exacerbation of pain that she was unable to control with medication and the appearance of paresthesia in both lower limbs. After two days of hospital stay, she suddenly presented with paraplegia with sensory level at T10. A new MRI of the lumbosacral spine revealed an extradural tumor lesion involving the left pedicle of T10 with a large mass effect on the spinal canal, causing critical narrowing (Figure 1).

Given this, urgent decompression was decided with osteotomy of the posterior arch of the thoracic spine in segments T9, T10 and T11 via the posterior approach and resection of the tumor lesion, without success.

Probably metastatic lesions were found in the brain and in the lower lobe of the right lung (Figure 2), so the therapeutic effort was redirected, and the patient was discharged with controls by the treating specialty and pain medicine and palliative care.

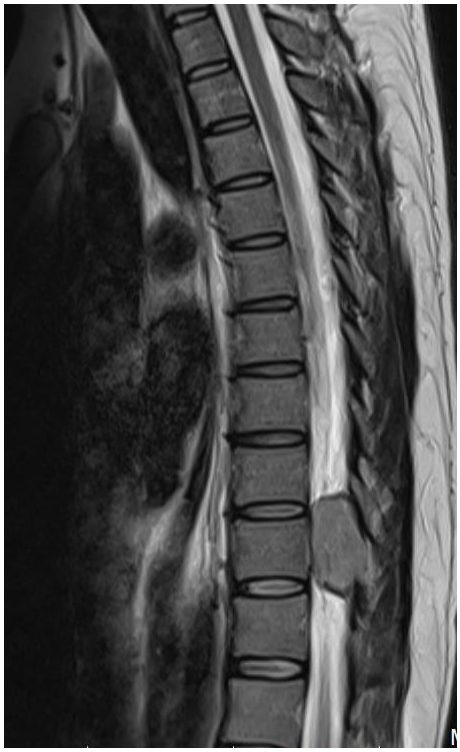

Figure 1. Tumour compression and invasion by metastasis of primary tumour at T9 level.

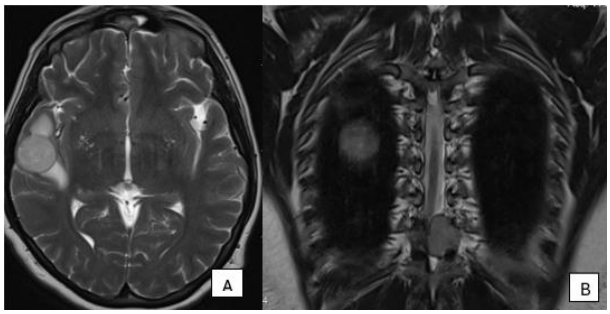

Figure 2. a. Shows brain metastasis in right temporal lobe and right occipital lobe; **b**. Metastasis of tumour in the middle lobe

Discussion

Breast phyllodes tumor is a rare fibroepithelial neoplasm that accounts for less than 1% of breast tumors. The average age of diagnosis is 45 years, being more common in women. [8] It has a highly metastatic component that predisposes to tumor seeding in places distant from the primary tumor, such as the spinal canal, predisposing patients like the one in this case to suffer from secondary spinal cord compression syndrome, which in most cases occurs through direct invasion of the primary tumor, increasing this risk by 20% if there are metastatic lesions in the spine. [9]

Regarding the incidence of spinal cord compression syndrome, it is estimated to have a prevalence of 3.4% of oncology patients; regarding the survival time of patients with this syndrome, it has been shown that it is greater in patients with breast cancer compared to other cancers, being around 114 days, compared to other cancers such as lung or prostate cancer, whose survival is estimated at around 32 days. [12] About 97% of metastatic lesions generate extradural compression, while intradural, intramedullary or leptomeningeal lesions represent only 3%. Regarding the relationship of the tumor with the medulla, this generates alterations with the epidural venous plexus, the vertebral body and the medullary canal, causing medullary oedema secondary to vascular leakage. This leads to a decrease in blood flow, which increases free radicals, inflammatory markers and prostaglandins, predisposing to spinal cord infarction and therefore to all the symptoms of neurological focalization, ischemia, irreversible tissue damage that the patient in this case presented, increasing her morbidity and mortality exponentially [8-9].

The main symptoms of spinal cord compression syndrome include low back pain in 80% of cases, as happened with our patient; and claudication symptoms in up to 60% of cases. (10) Symptoms of lower limb weakness, sensory loss and altered bowel or bladder function, secondary to autonomic dysfunction, are also associated in 40% of patients in the literature, in most cases associated with severe motor weakness or paraplegia, as in the case in question [9-10].

In an oncology patient, low back pain should always be considered as a red flag pain (Table 2). Pathology that puts the patient's functionality and life at risk should be suspected, as treatment should be timely to avoid partially or totally irreversible spinal cord injury. [7] In general, a complete clinical history and neurological examination are useful for diagnosis. As for the use of simple vertebral radiography, this has not presented an adequate diagnostic performance, with a sensitivity of less than 70%, while magnetic resonance imaging of the spine has shown the best performance with a sensitivity of 93% and specificity of 97%, being useful for prognosis and for the selection of treatment.

Regarding the lumbar pain in our patient, the majority of metastatic infiltrates (60-80%) are located in the thoracic spine and are associated with signs of neurological focalization. [11-12] The rapidly progressive course of involvement in the case of the patient is interesting. In this case, computed tomography and magnetic resonance imaging are the indicated methods and it is suggested that in up to 46% of cases the management can be changed by magnetic resonance imaging, improving the approach and prognosis. [13-15]

In terms of management, it has been documented that patient who underwent surgery had an increased survival rate and significantly more functional preservation than patients who received radiotherapy or no intervention. In addition, the need for stronger analgesics after surgery was reduced. In addition, a recent study showed that surgery in addition to radiotherapy had a very similar outcome of improved motor function to that of patients who received radiotherapy alone. However, surgery-related complications can occur in 11-29% of patients. [16-17]

In patients with established paraplegia, the effect of surgery may be more significant, with up to four times the recovery rate to functional ambulation compared to radiotherapy. [9] In the case of a patient, surgery was attempted as an option to

decompress and avoid severe damage. However, the involvement was severe, and the spinal cord was infarcted at the thoracic level.

Conclusion

Oncological emergencies are a group of frequent pathologies in patients with neoplastic disease, including spinal cord compression syndrome. It is important to systematically and timely search for differential diagnoses to the usual ones in oncological patients in order to perform interventions and timely diagnosis and early treatment to avoid neurological sequelae and decrease the survival rate. Treatment is still debated; however, surgery or radiotherapy is an important determinant of the patient's prognosis. Individualized management should also be given according to the prognostic factors of each patient.

References

1. Instituto Nacional del Cáncer. Estadísticas del cáncer [Internet]. 2015 [citado el 17 de julio de 2024].Disponible en: https://www.cancer.gov/espanol/cancer/naturaleza/estadisticas
2. Zuluaga M, Roldan MD, Baena F, Upegui S. Generalidades de las principales urgencias en el paciente oncológico: Revisión de tema. Med UPB. 2022;41(1):38-50. DOI:10.18566/medupb.v41n1.a06
3. Lawton AJ, Lee KA, Cheville AL, Ferrone ML, Rades D, Balboni TA, et al. Assessment and management of patients with metastatic spinal cord compression: A multidisciplinary review. J Clin Oncol [Internet]. 2019;37(1):61–71. Disponible en: http://dx.doi.org/10.1200/jco.2018.78.1211
4. Halfdanarson TR, Hogan WJ, Madsen BE. Emergencies in hematology and oncology. Mayo Clin Proc. 2017; 92(4):609-41
5. Paulino Pereira NR, Mclaughlin L, Janssen SJ, et al: The SORG nomogram accurately predicts 3- and 12-months survival for operable spine metastatic disease: External validation. J Surg Oncol 115:1019-1027, 2017
6. Bautista-Hernández MY, Medina-Villaseñor EA. Síndrome de compresión medular por cáncer. Gac Mex Oncol [Internet]. 2011 [citado el 17 de julio de 2024];10(5):295–302. Disponible en: https://www.elsevier.es/es-revista-gaceta-mexicana-oncologia-305-articulo-sindrome-compresion-medular-por-cancer-X1665920111894309
7. Corti M, De Carolis L, Centioni A, Velásquez J, Rizzo C, Narbaitz M. Síndrome de compresión medular como forma de presentación de linfoma no Hodgkin epidural espinal primario. Descripción de un caso y revisión de la literatura. Neurol Argent [Internet]. 2017;9(2):120–4. Disponible en: http://dx.doi.org/10.1016/j.neuarg.2016.04.006
8. Parker SJ, Harries SA. Phyllodes tumours. Postgrad Med J [Internet]. 2001 [citado el 24 de julio de 2024];77(909):428–35. Disponible en: https://pubmed.ncbi.nlm.nih.gov/11423590/
9. Romero P, Manterola A, Martínez E, Villafranca E, Domínguez MA, Arias F. Compresión medular. An Sist Sanit Navar [Internet]. 2004 [citado el 24 de julio de 2024];27:155–62. Disponible en: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1137-66272004000600015
10. Sacoto García XE, Guillén Núñez R, Juárez Lemus A. Evolución de la lumbalgia en el paciente oncológico tratado con manejo intervencionista del dolor. Rev Soc Esp Dolor [Internet]. 2021 [citado el 25 de julio de 2024];28(2):76–81. Disponible en: https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1134-80462021000300005
11. Quint DJ. Indications for emergent MRI of the central nervous system. JAMA: 2000: 253-283.
12. Santos C, Donoso R, Ganga M, Eugenin O, Lira F, Santelices jp. dolor lumbar: revisión y evidencia de tratamiento. Rev médica Clín Las Condes [Internet]. 2020;31(5–6):387–95. Disponible en: http://dx.doi.org/10.1016/j.rmclc.2020.03.008
13. Spinal metastases and metastatic spinal cord compression. National Institute for Health and Care Excellence; 2023.
14. .Boussios S, Cooke D, Hayward C, Kanellos FS, Tsiouris AK, Chatziantoniou AA, et al. Metastatic spinal cord compression: Unraveling the diagnostic and therapeutic challenges. Anticancer Res [Internet]. 2018;38(9):4987–97. Disponible en: https://ar.iiarjournals.org/content/anticanres/38/9/4987.full.pdf
15. Federspiel C, Morgen SS, Suppli MH, Kamby C, Kelsen J, Gehrchen M. Treatment of metastatic spinal cord compression. Ugeskr Laeger [Internet]. 2021 [citado el 17 de julio de 2024];183(33). Disponible en: https://pubmed.ncbi.nlm.nih.gov/34477101/
16. Kuah T, Vellayappan BA, Makmur A, Nair S, Song J, Tan JH, et al. State-of-the-art imaging techniques in metastatic Spinal Cord Compression. Cancers (Basel) [Internet]. 2022 [citado el 17 de julio de 2024];14(13):3289. Disponible en: https://pubmed.ncbi.nlm.nih.gov/35805059/
17. DePalma MG. Red flags of low back pain. JAAPA [Internet]. 2020 [citado el 26 de julio de 2024];33(8):8–11. Disponible en: https://pubmed.ncbi.nlm.nih.gov/32740106/.