Posterior Mediastinum Embryonal Carcinoma with Pulmonary Metastasis: Case Report

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Carcinoma Embrionário de Mediastino Posterior com Metástase Pulmonar: Relato de Caso

Carcinoma Embrionario de Mediastino Posterior con Metástasis Pulmonar: Relato de Caso

Flávia Adrianne de Castro Grello[1]; Adrielly Elane Sousa Maia[2]; Katiane da Costa Cunha[3]

Abstract

Introduction: Embryonal carcinomas are the rarest, and usually present when they are already associated with other components of germ cells. They have clinical and radiological features similar to yolk sac tumors. **Case report:** Patient G.A.S.L, male, 30 years old, former smoker and alcoholic. Initially, the patient reported pain in the left hemithorax in February 2018 with extension of the symptoms to the region of the thoracic and lumbar spine. A tomography of the total abdomen and chest was performed, with result suggestive of mediastinal tumor, pulmonary nodules, tissue material with soft tissue density in the posterior mediastinum and numerous retroperitoneal lymph node enlargement, which evolved with paraplegia of the lower limbs by nerve compression and hypoesthesia. It was conducted a biopsy of a mediastinal tumor posterior to the left with result of malignant epithelial neoplasia and diagnosis of extragonadal embryonic carcinoma very little differentiated. The patient presented pulmonary metastasis confirming that these tumors frequently infiltrate into the adjacent organs. Cisplatin-based chemotherapy is the standard treatment, leading to improved survival in patients with this type of tumor. After chemotherapy, the tumor volume decreased, but the patient continued with paraplegia of lower limbs due to nerve compression. **Conclusion:** This study reports the case of a young patient with a rare germ cell tumor and pulmonary metastasis who evolved clinically stable after specific chemotherapy treatment. Because there is still scarce literature on the subject, this study brings new evidences and findings.

Key words: Mediastinal Neoplasms; Neoplasm Metastasis; Carcinoma, Embryonal; Case Reports.

Resumo

Introdução: Os carcinomas embrionários são os mais raros e, geralmente, se apresentam quando já estão associados com outros componentes de células germinativas. Possuem características clínicas e radiológicas similares aos tumores de saco vitelino. **Relato do caso:** Paciente G.A.S.L, sexo masculino, 30 anos, ex-tabagista e etilista. Iniciou com quadro de dores no hemitórax esquerdo em fevereiro de 2018 com extensão dos sintomas para a região da coluna torácica e lombar. Realizou tomografia de abdômen total e tórax, com resultado sugestivo de tumor de mediastino, nódulos pulmonares, material tecidual com densidade de partes moles no mediastino posterior e numerosas linfonodomegalias retroperitoneais, evoluiu com paraplegia de membros inferiores por compressão nervosa e com hipoestesia. Realizou biópsia de tumor de mediastino posterior à esquerda com resultado de neoplasia maligna epitelial e diagnóstico de carcinoma embrionário extragonodal pouco diferenciado. O paciente apresentou metástase pulmonar, confirmando que esses tumores frequentemente se infiltram nos órgãos adjacentes. A quimioterapia baseada em cisplatina é o tratamento padrão, levando à melhora da sobrevida em pacientes com esse tipo de tumor. Após a quimioterapia, houve diminuição do volume tumoral, porém, seguiu com a paraplegia de membros inferiores em razão da compressão nervosa. **Conclusão:** Este estudo relata o caso de um paciente jovem, com tumor raro de células germinativas e metástase pulmonar, que evoluiu clinicamente estável após tratamento específico com quimioterápicos. Por ainda haver uma escassa literatura acerca do tema, este estudo traz novas evidências e achados.

Palavras-chave: Neoplasias do Mediastino; Metástase Neoplásica; Carcinoma Embrionário; Relatos de Casos.

Resumen

Introducción: Los carcinomas embrionarios son los más raros y generalmente se presentan cuando ya están asociados con otros componentes de células germinativas. Se presentan características clínicas y radiológicas similares a los tumores de saco vitelino. **Relato del caso:** Paciente G.A.S.L, sexo masculino, 30 años, ex tabaquista y etilista. Se inició con cuadro de dolores en el hemitórax izquierdo en febrero de 2018 con extensión de los síntomas para la región de la columna torácica y lumbar. Se realizó una tomografía de abdomen total y tórax, con resultado sugestivo de tumor de mediastino, nódulos pulmonares, material tisular con densidad de partes blandas en el mediastino posterior y numerosas linfonodomegalias retroperitoneales, evolucionó con paraplejia de miembros inferiores por compresión nerviosa y con hipoestesia. Se realizó biopsia de tumor de mediastino posterior a la izquierda con resultado de neoplasia maligna epitelial y diagnóstico de carcinoma embrionario extra gonodal poco diferenciado. El paciente presentó metástasis pulmonar confirmando que estos tumores frecuentemente se infiltran en los órganos adyacentes. La quimioterapia basada en cisplatino es el tratamiento estándar, llevando a la mejora de la supervivencia en pacientes con este tipo de tumor. Después de la quimioterapia hubo la disminución del volumen tumoral, sin embargo, siguió con la paraplejia de miembros inferiores debido a la compresión nerviosa. **Conclusión:** Este estudio informa el caso de un paciente joven con un tumor raro de células germinales y metástasis pulmonar que evolucionó clínicamente estable después de un tratamiento de quimioterapia específico. Debido a que todavía hay poca literatura sobre el tema, este estudio aporta nuevas pruebas y hallazgos.

Palabras clave: Neoplasias del Mediastino; Metástasis de la Neoplasia; Carcinoma Embrionario; Informes de Casos.

[1] Ophir Loyola Hospital. Pará (PA), Brazil. Orcid iD: https://orcid.org/0000-0003-3031-6682
[2] Ophir Loyola Hospital. Pará (PA), Brazil. Orcid iD: https://orcid.org/0000-0002-6940-2417
[3] Ophir Loyola Hospital. Pará (PA), Brazil. Orcid iD: https://orcid.org/0000-0001-5361-5090
Address for Correspondence: Flávia Adrianne de Castro Grello. Travessa Angustura, 1961, Ed. Tereza Borsoi, Apto. 1403 – Pedreira. Pará (PA), Brazil. CEP 66080-180. E-mail: flaviaadrianne@hotmail.com

INTRODUCTION

Mediastinal germ cells tumors are relative rare neoplasms, responsible for only 1% to 4% of all the mediastinal tumors and less than 1% of all the mediastinal tumors is germ cells malignant[1-3].

Patients with mediastinal germ cells tumors have worst diagnosis when compared with those with origin in gonadal primary cells, especially in the case of non seminomatous germ cells malignant tumors. The histogenesis of mediastinal germ cells tumors is completely defined, but it is believed that the tumors have their origin in primordial germ cells that are unable to complete the normal migration through the urogenital crest to the gonadal crests during the embryogenesis or distributed themselves physiologically to the liver, spinal cord and brain in order to perform regular functions[3].

The mediastinal germ cells tumors are classified as seminomatous or non seminomatous. The non seminomatous are histologically classified as embrionary carcinoma, choriocarcinoma, yolk-sac tumor, teratoma or tumors or germ cells combined tumors. These tumors are generally encountered in the mediastinum and in most of the cases, are male patients (15 to 35 years)[4,5]. The embrionary carcinoma are the rarest and, overall, onset when already associated with other components of germ cells[5,6].

In most of the cases, the germ cells malignant tumors evolve more locally with its growth compressing the normal adjacent tissue to them. Usually, the lymphatic dissemination occurs before the dissemination via hematogenic route. The first route of affection is the retroperitoneal lymph nodes soon after the para-aortic, continuing to the mediastinal and supraclavicular. The hematogenic dissemination occurs later, preferentially to the lungs, liver, brain and bones can also be affected[7].

The non seminomatous germ cells tumors has as characteristic the early development of metastasis, in addition to faster dissemination through hematogenic route. In addition to being more prone to metastasis, this type of tumor has a worse prognosis when compared to the seminomatous type in the same stage[7].

This study has the objective of reporting a case of a patient with posterior mediastinum tumor, evolving to pulmonary metastasis. The bibliographic search was conducted to stimulate a broader discussion and deepening of the theme.

The work proposed is a report case of one individual, selected according to clinical and radiological findings encountered through direct search in the chart at Ophir Loyola Hospital (HOL). Upon approval by the Institutional Review Board of the Institution (CAAE: 96279018.6.0000.5550) and exemption of the Informed Consent Form (ICF) the study was initiated.

CASE REPORT

Patient G.A.S.L, male, 30 years, former smoker and alcoholic. On February 2018, the patient reported pain in the left hemithorax, sought medical consultation with an ultrasound whose result was steatosis grade I (mild, reduced accumulation of fat), being prescribed only analgesics.

Because of the extension of the symptoms to the thoracic and lumbar spine, he had to be hospitalized in his hometown. During the hospitalization, it was performed tomography of the total abdomen and chest with contrast with result suggestive of mediastinal tumor with findings of herniated disc L4-L5 and L5-S1, pulmonary nodes of random distribution, tissue material with density of soft parts in the posterior mediastinum, vertebral at left and discreetly at right and numerous retroperitoneal lymph node enlargement (Figure 1).

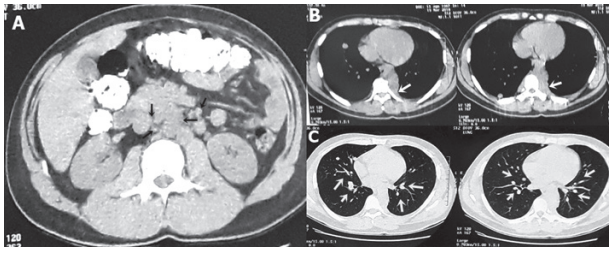

Figure 1. Computed tomography with contrast. A: lymph node enlargements represented by black arrows; B: white arrows representing the tissue material of soft parts in the posterior mediastinum; C: white arrows representing the pulmonary nodes

The patient was referred to HOL on March 2018 where evolved with paraplegia because of the nerve compression at T10 with hypoesthesia (reduction of the sensitivity to touch in a certain part of the body), and loss of muscular strength and gradual loss of sensitivity.

Still hospitalized, the anatomopathological test for biopsy of the posterior mediastinum tumor at left was performed with microscopic result of epithelial malignant neoplasm and diagnostic of embrionary carcinoma little differentiated with report of immunohistochemical, supporting the diagnosis of carcinoma little differentiated expressed diffusely CD30. The lab tests of the patient (Table 1) presented alterations for lactic dehydrogenase (DHL), human chorionic gonadotrophin (HCG) and negative for alpha-fetoprotein (AFP).

A new computed tomography of the patient was performed yet in April with findings of expansive lesion, extension along the paravertebral muscle of T3-11 and

pyramidal invasion of T7-8 associated to pulmonary nodes (Figure 2).

Table 1. Lab tests of the patient with reference values for males

Date	Exam	Result	Value of reference
17/4/18	Lactic dehydrogenase	2.238 U/L	135-225 U/L
	Serum Beta-HCG	1.5 mUI/mL	<1.0 mUI/mL
	Alpha-fetoprotein	3.02 ng/mL	<10.9 ng/mL
07/5/18	Lactic dehydrogenase	2,373 U/L	135-225 U/L
14/5/18	Lactic dehydrogenase	1,237 U/L	135-225 U/L

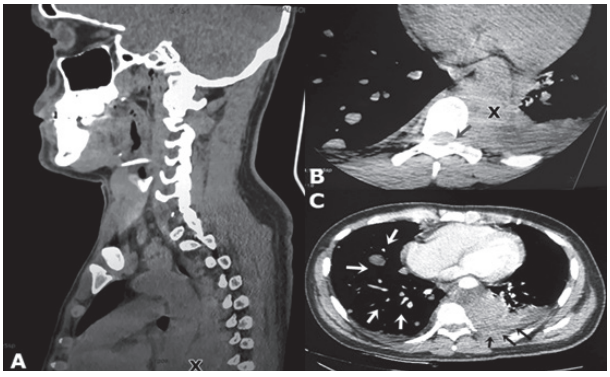

Figure 2. Computed tomography of the patient performed at HOL. A: Sagittal plane evidencing the paravertebral muscle and tumoral mass represented by X black; B: pyramidal invasion evidenced by black arrow and tumoral mass evidenced by X black; C: axial plan evidencing pulmonary metastatic nodes (white arrows) and pleural stroke (black arrows)

After the result of the biopsy, analysis of the image tests and clinical condition of the patient, it was concluded that it was a malignant mediastinum tumor with invasion of the spine classified as carcinoma of extragonadal embrionary cells of the posterior mediastinum. The patient was transferred to the Oncoclinic where chemotherapy treatment was initiated, with a cycle of bleomycin, etoposide and cisplatin (BEP) on May 2018 for 7 days.

After chemotherapy, the patient evolved clinically stable and without severe complications but still paraplegic. He was discharged in May 2018 for follow up and out-patient chemotherapy. Cancer, at the discharge, was stage IV because of the pulmonary metastasis.

The patient submitted to out-patient chemotherapy at HOL for eight months and completed the follow up in December 2018. At the end of the chemotherapy sessions, the patient's response was reduction of the mediastinal tumoral mass, however, with lower limbs paraplegia. Upon the completion of the chemotherapy cycles, he returned to his hometown.

DISCUSSION

In the case in question, in addition to the mediastinum tumor, the patient had pulmonary metastasis, findings encountered in the images exams that showed tissue material with density of soft parts in the posterior mediastinum, to the vertebral at left and discreetly at right, expansive lesion with extension along the paravertebral muscle of T3-T11 and pyramidal invasion T7-T8 associated to pulmonary nodes of random distribution.

To help and complement the diagnosis of embrionary carcinoma of the patient, it was performed the immunohistochemical exam with result of carcinoma little differentiated expressed diffusely CD30.

After the diagnosis, the patient was submitted to the first cycle of chemotherapy BEP. At the end of the chemotherapy cycles, yet hospitalized, there was a reduction of the tumor volume, but the patient continued with paraplegia because of the nerve compression.

In this case, the seminomatous tumor produced beta-HCG and HDL and did not produce AFP, being done the dosage of beta-HCG and AFP only before the chemotherapy; the dosage of HDL before chemotherapy was elevated and after chemotherapy, reduced, which shows the reduction of the tumor volume.

It is known that the non seminomatous germ cells tumors, where the primary lesions are in the mediastinum, result in vital prognosis extremely unfavorable. The survival rate in five years is of approximately 40%, although this varies among the studies[8,9].

It was not possible to identify environmental, occupational or viral risk factors, but there are causal associations with genetic, hormone, congenital (undescended testicles) and acquired (atrophy and testicular trauma) factors[10].

The several radiologic factors of the patient allowed the diagnosis and the therapeutic conduct to be applied. Since studies[11,12] show that imaging is essential for the staging and therapeutic decision of these tumors, it permits to decide the best route of surgical approach and evaluate the extension of the disease and or signs of invasion of adjacent structures.

Usually, germ cell origin tumors show masses of great dimensions, heterogeneous with irregular borders suggestive of malignancy, and may evidence invasion of mediastinal structures, central airways and pleura[12].

Studies[9,13] in literature show these tumors frequently infiltrate into adjacent organs during the progress and, as result, are difficult to remove surgically in full.

The non seminomatous germ cells (85%) and the seminomatous (10%) tumors have the capacity of synthetizing glycoproteins that are used as tumor markers (HCG and AFP and DHL). HCG and AFP are related with the activity of the tumor and the levels of LDH correlate with the tumor volume[10]. The concentrations of elevated AFP and beta-HCG or in elevation signify disease in activity with the necessity of subsequent treatment. After chemotherapy or surgery, the concentration of the tumor markers should fall in their half-lives: five to seven days for AFP and 30 hours for beta-HCG[6].

The literature brings CD30, CD117, PLAP and OCT3/4 as markers of highly specific immunostaining for the embrionary carcinoma, being useful for confirmative diagnosis because of its especially high sensitivity and specificity[9,14].

A study with[15] 40 patients showed that the cisplatin-based chemotherapy is the standard treatment leading to the improvement of the survival in patients with mediastinal germ cells tumor. More than 90% of the study patients[15] received chemotherapy as front line treatment, being BEP the most commonly used (87%).

Curiously, the testicular cancers are among the most responsive cancers to chemotherapy. With conventional chemotherapy and surgery, 99% of the patients with disease in initial stage and 74% of the patients with disease in advanced stage now live at least for five years[16].

It is important to emphasize that the prognosis of the patient in question is connected to two important factors that determine the vital prognosis in the treatment of the mediastinum germ cells: the metastasis for the surrounding organs and its response to chemotherapy[9,17].

As limitations of this work, is the fact that, so far, there is paucity of articles and scientific researches about the theme in study that specifically address the germ origin mediastinal tumors with posterior location. These aspects may be approached in the future.

CONCLUSION

This study reports the case of a young patient with rare germ cells and pulmonary metastasis that evolved clinically stable, despite continuing paraplegic after specific treatment with chemotherapics.

However, because it is a rare disease and of high incidence in youths, there is still scarce literature about carcinoma of embrionary cells of the mediastinum.

The importance of this case brings new evidences and findings about the theme in study, further to expanding the diagnostic argument for mediastinum tumors, since it is a differential rare diagnostic and if detected early, favors a better prognosis, overall in young patients.

CONTRIBUTIONS

Flávia Adrianne de Castro Grello and Adrielly Elane de Sousa Maia performed the field research, analysis of data and elaboration of the final version of the manuscript. Katiane da Costa Cunha coordinated the study, participated of the review, correction and formatting for the final version for submission of this article. All the authors read and approved the final manuscript.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare

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