Desmoplastic Small-Round-Cell Tumor: Case Report

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Tumor Desmoplásico de Pequenas Células Redondas: Relato de Caso

Tumor Desmoplásico de Células Pequeñas y Redondas: Relato de Caso

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Abstract

Introduction: The desmoplastic small round cell tumor is a rare neoplasm that starts and spreads through the peritoneal surface. It was first described in 1989 and in 1991 was recognized as a distinct clinical and pathological entity. **Case report:** A 34-year-old man presented with abdominal pain and weight loss, progressing to an intestinal obstruction after two months. Laparotomy showed an unresectable abdominopelvic mass. Anatomopathological an immunohistochemistry analysis showed a desmoplastic small-round-cell tumor. Computerized Tomography showed bilateral pleural effusion, peritoneal implants, along with masses in the abdominal and pelvic region. Chemotherapy with carbo/taxol was administered at intervals of 21-days. Later, the chemotherapy was changed to VAC/IE at a 21-day interval, with a partial response, but it was still an unresectable tumor. There was a worsening in patient performance, and he died of an abdominal obstruction on the 15º month of follow-up. **Conclusion:** Due to its rarity, the desmoplastic small-round-cell tumor, is still a diagnostic and treatment challenge.

Key words: Neoplasms; Desmoplastic Small Round Cell Tumor; Connective Tissue; Peritoneal Cavity.

Resumo

Introdução: O tumor desmoplásico de pequenas células redondas é uma rara neoplasia que se inicia e se espalha pela superfície peritoneal. Foi descrito pela primeira vez em 1989 e, em 1991, houve seu reconhecimento como entidade clínica e patológica distintas. **Relato do caso:** Homem de 34 anos apresentou quadro de dor abdominal e perda de peso, evoluindo para obstrução intestinal dois meses após. A laparotomia demonstrou grande massa abdominopélvica irressecável. O laudo anatomopatológico associado à imuno-histoquímica evidenciou diagnóstico de tumor desmoplásico de pequenas células redondas. A tomografia computadorizada confirmou derrame pleural bilateral, implantes peritoneais e massas abdominais e pélvicas. Realizou-se quimioterapia com carbo/taxol com intervalo de 21 dias. Substituiu-se o esquema para VAC/IE com intervalo de 21 dias, com resposta parcial, porém ainda se mantendo um tumor irressecável. Houve piora progressiva da performance do paciente, com evolução ao óbito por obstrução intestinal no 15º mês de seguimento. **Conclusão:** O tumor desmoplásico de pequenas células redondas, em razão da sua raridade, continua sendo um desafio para o diagnóstico
e o tratamento.

Palavras-chave: Neoplasias; Tumor Desmoplásico de Pequenas Células Redondas; Tecido Conjuntivo; Cavidade Peritoneal.

Resumen

Introducción: El tumor desmoplásico de células pequeñas y redondas es una neoplasia rara que comienza y se disemina a través de la superficie peritoneal. Fue descrito por primera vez en 1989 y en 1991 fue reconocido como una entidad clínica y patológica distintas. **Relato del caso:** Un hombre de 34 años presentó dolor abdominal y pérdida de peso, progresando a una obstrucción intestinal después de dos meses. La laparotomía mostró una masa abdominopélvica irresecable. El análisis anatomopatológico e inmunohistoquímico mostró un tumor desmoplásico de células pequeñas y redondas. La tomografía computarizada mostró derrame pleural bilateral, implantes peritoneales y masas en la región abdominal y pélvica. Se administró quimioterapia con carbo/taxol en un intervalo de 21 días. Más tarde, la quimioterapia cambió a VAC/IE con un intervalo de 21 días, con una respuesta parcial, pero seguía siendo un tumor irresecable. Hubo un empeoramiento en el estado del paciente, y murió de una obstrucción intestinal en el 15º mes de seguimiento. **Conclusión:** Debido a su rareza, tumor desmoplásico de células pequeñas y redondas, sigue siendo un desafío de diagnóstico y tratamiento.

Palabras clave: Neoplasias; Tumor Desmoplásico de Células Pequeñas Redondas; Tejido Conectivo; Cavidad Peritoneal.

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INTRODUCTION

The desmoplastic-small-round-cells-tumor (DSRCT) is a less frequent neoplasm, affecting especially male individuals between the second and third decade of life[1-2]. The main site of DSRCT is the peritoneal cavity and almost often at an advanced stage, with regional dissemination, most of the times with ample involvement of the serosa and unrelated to a certain organ or system[3].

Overall, the symptoms of the disease are weight loss, pain and abdominal distension, hepatomegaly, ascites and less often, lymphadenopathy, urinary obstruction, calcifications and nodular thickening of the peritoneum [1-4]. The characteristics of the immunohistochemistry DSRCT profile are the positivity for epithelial markers of cytokeratin and the antigen of the epithelial membrane, for the mesenchymal markers desmin and vimentin, for the marker neural enolase-specific neuron and sometimes, for the protein S100[5].

Recent studies have been demonstrating an association between DSRCT and the translocation (11.22) (p13; q12), which results in a fusion gene of among the genes of the sarcoma of Ewing and of the tumor of Wilms[6]. The treatment consists in high doses of chemotherapy, surgery and radiotherapy [7]. The analysis of the DSRCT cases had the objective to understand in a better way the pathology and contribute to enhance the information about this rare neoplasm.

Based in these data, associated to the unprecedented theme in the region and, yet, to its clinical rarity in the international literature, with less than 200 cases reported all over the world[4], it was quite clear the interest in the clinical and epidemiological study of DSRCT.

The present case report has the aim of reporting a rare case of DSRCT attended at the reference service of Oncology of Petrolina (PE), Brazil.

DESCRIPTION OF THE CASE

A 34-year old male, from Nossa Senhora da Glória (SE), Brazil, a tradesman, residing in Petrolina (PE), Brazil, had a background of alteration of the bowel habits, with diarrhea, rectal bleeding, hyporexia, asthenia, weight loss, meteorism, dyspepsia and abdominal pain. With the progression of the symptoms and clinical worsening associated to intestinal obstruction, he was admitted at the local healthcare facility where it was performed exploratory laparotomy (two months after the symptoms began), with finding of a large abdominopelvic mass with infiltration in omento. Because of the great tumoral volume, it was removed some material for anatomopathology, whose result was poorly differentiated carcinoma. The patient was then referred to a public reference service for conclusion of the diagnosis, conduct and follow up. Initially, he was asthenic, with growth of the abdominal volume and pain. In the physical examination, he was hypocolored, dyspneic, with ascites and an abdominal mass of approximately 12 cm in its larger diameter (Figure 1).

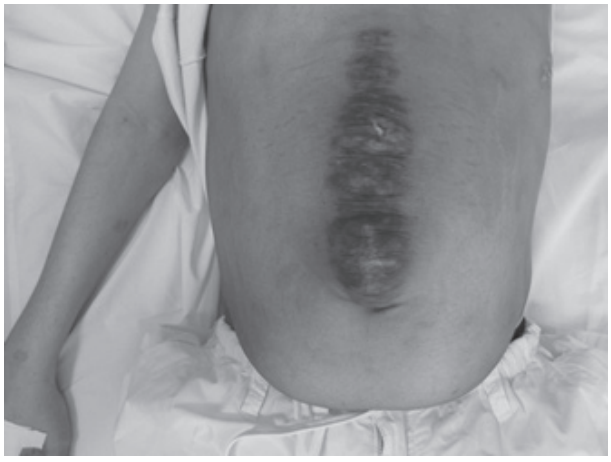

Figure 1. Scar of exploratory laparotomy approach, evidencing pelvic voluminous mass with nearly 12 cm

The lab tests revealed hemoglobin of 10.9 g/dL, leukocytes 10,100 cells/dL and 900 thousand platelets /mm³.

Computerized tomography indicated bilateral pleural effusion, peritoneal implants (Figure 2) and pelvic and abdominal masses.

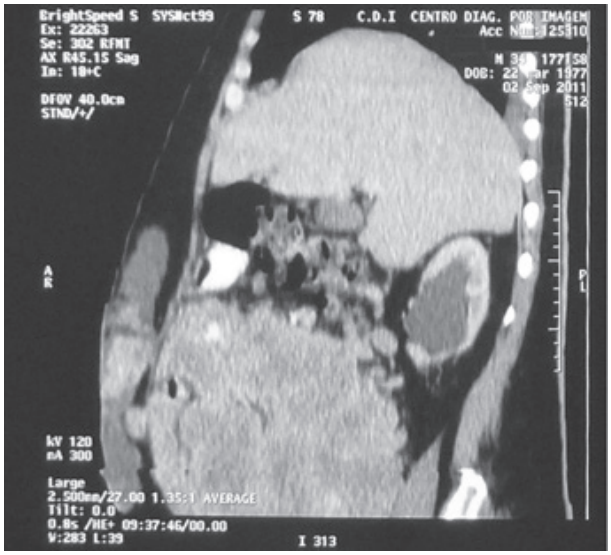

Figure 2. Computerized tomography in sagittal cut with expansive injury in lower abdomen with peritoneal implants

Only with the result of the anatomopathological examination of the poorly differentiated carcinoma, it was considered unknown primary site metastatic tumor and was initiated a carbo/taxol regimen at 21-days interval.

The immunohistochemical presented positive result for AE1/AE3 (pan-cytokeratin) and desmin; focally positive for MIC2, synaptophysin and WT-1 and negative for protein S-100. The anatomoclinical findings combined with the immunohistochemical study converged to the diagnosis of DSRCT. After one month and with the result of the immunohistochemical, the protocol was replaced by VAC/IE (vincristine-adriamycin®(doxorubicin) - cyclophosphamide/ifosfamide-etoposide) obtaining partial response, but with the tumor still unresectable. Eight months after the beginning of the treatment, the patient presented Herpes Zoster with involvement of C2 and T8. He was treated with acyclovir with good therapeutic response. There was a progressive worsening of the patient status and he died in the 15th month of follow up, because of intestinal obstruction due to the disease progression.

DISCUSSION

The DSRCT is a malignant neoplasm that predominantly affects young adult males. It is a rare neoplasm with poor prognosis that presents itself as a sole node or multiple nodes in the peritoneal cavity, almost in advanced staging. Currently, it is unknown the disease's hazard factors, apparently originated from childhood primitive cells. It was described for the first time in 1989[1] and in 1991, it occurred its knowledge as distinct pathological and clinical entity [2]. So far, less than 200 cases were described in the world literature [8].

The main location of the DSRCT is the peritoneal cavity and similar to the patient of our study, the diagnosis occurs at an advanced staging with regional dissemination. It is usually located in the intra-abdominal region, often with ample involvement of the serosa and unrelated to a certain organ or system[9] and are, most of the times, associated to lymphadenopathy and hepatic metastasis [10]. Some authors describe other locations including the paratesticular regions and scrotum[11], ovaries, pleural region, sinus cavity, Central Nervous System[4], and *tunica vaginalis*[12].

According to the anatomopathologic examination, the histological characteristic of the DSRCT includes niches of small round cells, separated by abundant desmoplastic stroma. Typically, the tumoral cells present high nuclear/cytoplasmic proportions, granular chromatin, nuclear molding and imperceptible nucleoli. This tumor has an immunohistochemical profile characterized by the co-expression of epithelial markers (cytokeratin and antigen of epithelial membrane), neural (neuron-specific enolase and CD56), mesenchymal (vimentin), and myogenic (desmin), findings that converged to the diagnosis of DSRCT of this report [13,14]. Recent studies have demonstrated an association between DSRCT and translocation (11.22) (p13; q12), which results in fusion genes between the genes of the sarcoma of Ewing and of the tumor of Wilms[15].

Histologically and cytologically, the DSRCT must be distinguished from other entities of small round cells as sarcoma Ewing/primitive neuroctodermal tumor (PNET), tumor of Wilms and neuroblastoma [13]. Like DSRCT, the sarcoma of Ewing/PNET is formed by small round cells in nests or sheets. However, in immunohistochemical, the sarcoma of Ewing/PNET is typically positive for MIC2 (CD99) and vimentin, but negative for cytokeratins and myogenic markers[16,17]. The neuroblastoma and the tumor of Wilms also share many morphologic characteristics of DSRCT, but occur in very young children and, cytogenetically, lacks translocation [13].

Currently, no therapeutic modality proved effective for DSRCT is available [18]. Regardless of multiple treatment strategies, several chemotherapies regimens for sarcoma of Ewing, aggressive surgery to reduce the volume, radiation of the total abdomen and high doses of chemotherapy with autologous transplant of stem cells, the DSRCT has not been showing significant improvement as far as the evolution of the disease[8] is concerned. The therapy is based in cyclophosphamide, doxorubicin, vincristine alternating with ifosfamide and e etoposide – protocol P6 represents adjuvant chemotherapy for the treatment of DSRCT [8-14] combined with other modalities as aggressive surgical excision, radiation of total abdomen, transplantation of autologous stem cells or a combination of these treatments.

The role of the autologous transplant of the bone marrow and aggressive doses of chemotherapy remain obscure[3].

The use of other agents was also reported. The erlotinib, a multitarget inhibitor of kinasis tyrosin, lead to a partial response in a case report [19]. The activity against the disease was reported with use of pazopanib[20,21] and eribulin[22]. A recent report demonstrated negative results with imatinib[23]. The limited activity with the use of antiangiogenic as sunitinib, sorafenib and bevacizumab was also reported [24-26]. The prognosis of DSRCT continues poor with average survival of 17 months [27].

CONCLUSION

The DSRCT, because of is rarity, continues being a challenge for diagnosis and treatment. Through the

present report, it was possible to compare the clinical, epidemiological, laboratorial characteristics and the great difficulty to determine an effective treatment to contain the evolution of the pathology and avoid an unfavorable outcome. This case is levelled with the other already described in literature, evidenced that it is necessary a high degree of clinical suspicion for early treatment and diagnosis in search for the improvement of the prognosis.

CONTRIBUTIONS

Philippos Apolinario Costa and Wagner Gomes Reis contributed for the conception or planning of the study, gathering and interpretation of the data, wording, critical review and final approval of the version published. Bruna Menon Loureiro, Edson Gonçalves Ferreira Junior and José Roberto Coelho Ferreira Rocha contributed for the interpretation of the data, wording, critical review and final approval of the version published. Kamilla Maria Souza Aires Alencar contributed for gathering and interpretation of the data, critical review and final approval of the version published.

DECLARATION OF CONFLICT OF INTERESTS

There are no conflict of interests to declare.

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