pISSN 1598-2998, eISSN 2005-9256

Cancer Res Treat. 2016;48(1):422-424

http://dx.doi.org/10.4143/crt.2015.175

Letter to the Editor

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Commentary on "A Case of Paratesticular Leiomyosarcoma Successfully Treated with Orchiectomy and Chemotherapy"

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We have read with great interest the article written by Ko et al. [1] on a particularly rare type of malignant mesenchymal tumor, paratesticular leiomyosarcoma (LMS), and we appreciate the argumentation on the utility of adjuvant chemotherapy in treatment of stage III disease. As for our experience, we would like to shed light on a very rare and little-known aspect surrounding this neoplasm, which is the capability of dedifferentiation exerted in order to recur or metastasize.

In 2007, a 56-year-old male underwent right orchifunicolectomy for a LMS of the spermatic cord. No metastasis was detected on preoperative whole body computed tomography scan. Histologically, the tumor measured 2.5 cm in diameter, was well differentiated (G1 with a Ki-67 index of 10%), had disease-free surgical margins and the result was composed of neoplastic spindle cells with elongated nuclei and prominent nucleoli arranged in interlaced fascicles; immunohistochemistry was positive for smooth muscle actin (SMA) and vimentin but negative for S100 protein. In 2012, a para-aortic and right external iliac lymphadenectomy was performed because of two centimetric lymph nodes showing a maximum standardized uptake value (SUVmax), respectively, of 14 and 4 on 18-fluoro-2-deoxyglucose positron emission tomography–computed tomography (^{18}F-FDG PET-CT) scan (Fig. 1A): such metastases had the same histopathological features previously described for LMS (Ki-67 index of 10% and staining positive for SMA but negative for S100 protein) (Fig. 1B) and adjuvant epirubicin-ifosfamide was given for 4 months. In 2013, two centimetric nodules were removed from the perineal and sovrapubic area (SUVmax less than 2.0 on ^{18}F-FDG PET-CT scan) (Fig. 2A). Histology showed that both specimens were adipose tissue neoplasms consisting of spindle cells with nuclei devoid of nucleoli interspersed with a few larger polynucleated elements as well as smaller cells with plump nuclei; immunohistochemistry yielded the diagnosis of metastatic soft tissue tumor, but, of interest, excluded the well differentiated leiomyosarcomatous in favour of a dedifferentiated liposarcomatous phenotype (G2, Ki-67 30%, SMA-negative but S100- and MDM2-positive) (Fig. 2B). Adjuvant radiotherapy was administered through five cycles and as of now the patient has been disease-free for 2 years. Of note, all pathologic verifications were performed at the same department of histopathology.

Sarcomas of the spermatic cord are rare tumors including mostly liposarcomas (LPSs) (50% with 110 cases as of 2014) and LMSs (18%). Characterization is not simple because they sometimes present as hybrid tumors consisting of two or more cell lines of differentiation: such an occurrence has generated some confusion regarding the nomenclature as well as the assessment of pathobiological features of these neoplasms. The term malignant mesenchymoma (MM) has referred to different tumors through the years: currently, it indicates a sarcoma with two or more unrelated, differentiated malignant components, such as LPS or rhabdomyosarcoma combined with osteosarcoma [2]. When MM consists of a well-defined, low-grade LPS along with a less differentiated high-grade component (such as fibrosarcoma or malignant fibrous histiocytoma), the name dedifferentiated LPS (DDLS) should be used. DDLS can also present as heterologous areas of LMS in the dedifferentiated zone (DL-LMS). When the biphasic pattern of MM is represented by the synchronous or metachronous coexistence of LPS with LMS, the term lipoleiomyosarcoma (L-LMS) should be preferred [2]. Of note, only 11 cases of paratesticular L-LMS exist to date [3-5]. Histologically, MMs differ from DDLSs because the two components are intermingled whereas in the latter they can be sharply distinguished from each other. Both L-LMS and DL-LMS have a poor prognosis: the former tends to recur, the latter to metastasize.

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Received May 21, 2015 **Accepted** November 7, 2015 **Published Online** December 2, 2015

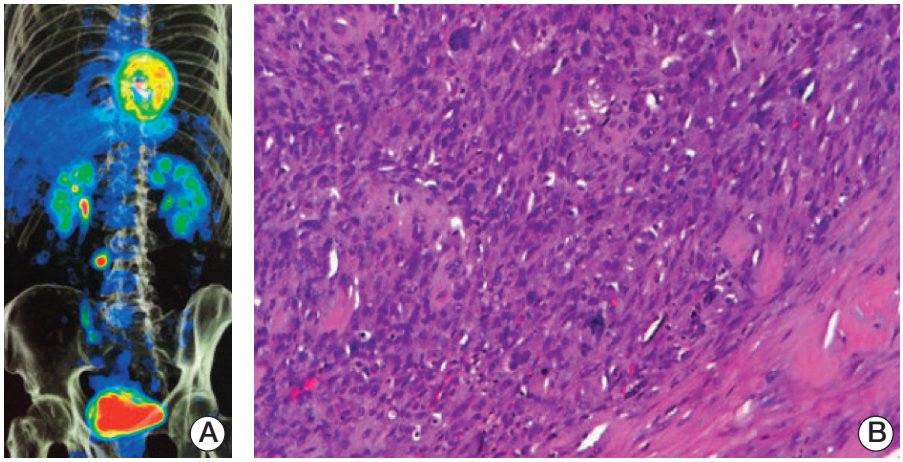

Fig. 1. (A) 18-Fluoro-2-deoxyglucose positron emission tomography–computed tomography scan showed two right external iliac centimetric lymph nodes with an increased maximum standardized uptake value (of 14 and 4, red color with yellow halo). (B) Immunohistochemistry of the metastases revealed leiomyosarcoma consistent with the histological findings of the previous lesion of the spermatic cord (Ki-67 index of 10% and staining positive for smooth muscle actin but negative for S100 protein) (cross section, H&E staining, ×63).

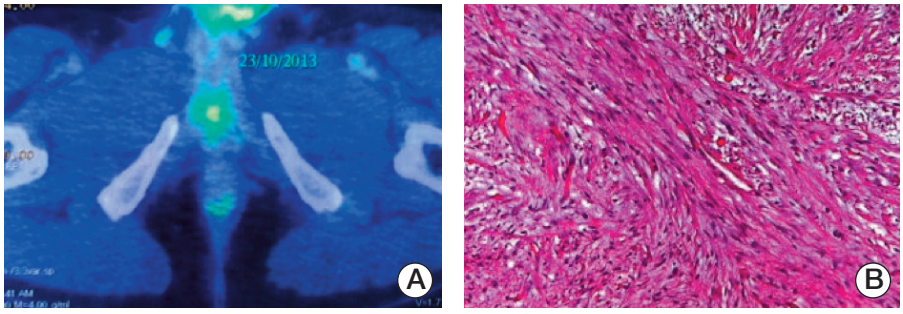

Fig. 2. (A) 18-Fluoro-2-deoxyglucose positron emission tomography–computed tomography scan detected two centimetric nodules in the perineal and sovrapubic area (maximum standardized uptake value less than 2.0, white color with green halo). (B) Histological examination yielded the diagnosis of metastatic soft tissue tumor, but, of interest, excluded the well differentiated leiomyosarcomatous in favour of a dedifferentiated liposarcomatous phenotype (G2, Ki-67 30%, smooth muscle actin–negative but S-100- and MDM2-positive) (cross section, H&E staining, ×63).

As for our case, since both the original and recurrent cancer did not contain undifferentiated cell elements, we consider it an instance of MM rather than a DDLS. And, differently from the other reported instances of L-LMS, our case showed an inverse temporal sequence of the histological patterns (LMS anticipated LPS phenotype): of interest, no similar case has been reported in the pertinent literature. Regarding the etiopathogenesis, we can speculate that the primitive tumor itself probably selected different cellular clones in order to recur, developing a sort of acquired resistance to the administered chemotherapy. Its future behaviour is unpredictable: considering the high frequency of local recurrences by this and other paratesticular sarcomas, we strongly recommend careful and prolonged surveillance [2-5].

In conclusion, characterizing paratesticular soft tissue tumors is not a simple task: they can show single (LPS and LMS above all) as well as multiple lines of differentiation (MM, L-LMS, DDLS, and DL-LMS). As for multilineage paratesticular sarcomas, from the literature we know of cases of LPS hosting synchronous or metachronous LMS. The occurrence of the inverse event, that is a LMS transforming into LPS in order to recur, is an unreported phenomenon which should alert oncologists to the aggressive potentiality and malignant evolution of paratesticular LMS.

Conflicts of Interest

Conflict of interest relevant to this article was not reported.

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