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Editorial
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Multimodal Treatment for Soft Tissue Sarcoma of the Extremity

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Abstract

Radical surgery for colorectal cancer is undoubtedly necessary for stages I, II and III and must consider the removal of the intestinal segment and the relative afferent lymph node stations affected by the tumor. This surgical technique called Complete Mesocolon Excision seems to satisfy an optimal oncological quality. The aim of this retrospective preliminary study is to verify the actual possibility of performing CME by laparoscopy on the left and right colon. After this fundamental requirement is met, the study aims to evaluate whether the laparoscopic technique is a valid alternative to the open approach, in terms of oncological quality. We retrospective analysed the chart of 38 pts affected by colon cancer.

20 patients underwent left resection. Of these, 9 in open surgery and 11 using the laparoscopic approach. The remaining 18 patients underwent right hemicolectomy, open for 14 of these, laparoscopic for the remaining 4. After check of the integrity of the mesocolon we collected data regarding the length of the removed colon, the distance of the tumor from the central vascular ligation, the peritoneal area and the number of lymph node removed. The statistic analysis of the samples was carried out using the Student's T test, Fisher's exact test and Mann-Whitney's U test, where appropriate. Our data showed despite a small sample size, that CME performed laparoscopically is oncologically equivalent to open CME. With sufficient training and experience, the laparoscopic approach seems to offer a lower number of complications with comparable results.

Editorial

Soft tissue sarcomas (STS) are a heterogeneous group of rare tumors; every year, in fact, only about 12,000 new cases are diagnosed in the United States [1]. Although STS can arise at any site within the body, 40% typically originate in the limbs. The most common histotypes are liposarcoma, pleomorphic undifferentiated sarcoma, myxofibrosarcoma, and synovial sarcoma. Most STM are sporadic, and only a few have an identifiable cause. There is an association between viral infections such as Ebstein Barr virus in patients with AIDS and leiomyosarcoma [2].

These tumors usually arise as a painless mass discovered by swelling of a limb, or detected during a US scan performed for other reasons. Although most of the lesions are benign tumors, any deep mass or superficial lesion greater than 5 cm must be considered suspicious and indicate the need to perform computed tomography or MRI. A CT scans without and with contrast makes it possible to calculate the size of the mass and its extent defines the anatomical compartment. MRI allows better delimitation of the mass, the component of peritumoral edema and the possible involvement of the skeletal component [3].

For years, STS limbs were treated with extremely mutilating operations such as amputation. However, a clinical trial has changed the treatment of this tumor. In this study, 43 patients were randomized to surgery with preservation of limbs ("limb-sparing surgery") associated with post-operative radiotherapy or amputation; only 15% of the patients who underwent limb-sparing surgery showed local recurrence and the two groups did not differ in terms of 5-year disease-free or overall survival [4].

Limb-sparing surgical procedures are therefore now considered the mainstay therapy for the treatment of STS [5]. Initially, this surgery was performed by resecting all of the involved muscle, while now the standard for most STS is resection with a free margin of 1 cm. For superficial lesions, the underlying fascia is removed with the tumor, while for deep tumors (under the fascia) located within the muscle, it is necessary to remove the muscle group [6]. The skeletonization of vessels and motor nerves is considered adequate oncologically unless clearly infiltrated by the tumor.

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The infiltration of a high-grade lesion may require resection of an important structure of neurovascular bundle. Arterial reconstruction can be scheduled when the artery is involved. Patients should be advised carefully with regard to the expected results of a nerve resection [7].

Radiotherapy and adjuvant chemotherapy are used in combination with surgery to prevent local recurrence and metastasis [6]. However, while the indication for radiotherapy appears relatively clear, the role of chemotherapy is more controversial, with considerable differences in treatment strategies used in highly specialized sarcoma centers.

The role of radiotherapy to prevent local recurrence was defined in a series of clinical studies and prospective studies such as a randomized trial conducted at the National Cancer Institute. These studies indicated the equivalence of treatment options of amputation versus surgery with wide margins plus radiotherapy, prompting the move to a conservative approach and highlighting the role of radiotherapy. Furthermore, a second randomized study, again conducted by researchers at the National Institutes of Health, showed that RT is able to reduce the local recurrence rates [8,9].

Radiation therapy can be administered pre-, intra and post-operatively. The optimal mode of association between surgery and radiation therapy has not yet been defined. In fact, a statistically significant difference between the pre and the postoperative approach as regards local control, incidence of distant metastasis and survival has not been demonstrated by any RCT.

Since pre-operative treatment is burdened by greater morbidity in terms of wound healing (31% vs. 8%: p=0.0014) compared to post-operative treatment, it is believed that pre-operative radiotherapy should be reserved for cases of initially inoperable tumors [10]. Post-operative radiotherapy is the most conventional mode of association with surgery. Radiotherapy completes the surgery in high-grade sarcomas, particularly if they have a large diameter (>5 cm) and in the case of local recurrence of any grade and dimension. Even in low-grade sarcomas, radiotherapy can complete the surgery from a clinical point of view, especially in relation to the size of the mass, the marginality of the surgery and other possible risk factor.

Chemotherapy in soft tissue sarcomas has a complementary role, because the treatment of choice is surgery. Chemotherapy may be used as an adjuvant to make the mass more easily respectable or to sterilize micrometastatic foci, or post-operatively to reduce the risk of local or distant recurrence (for high grades tumors). Recommendations regarding the prescription of adjuvant chemotherapy in patients with STS limbs vary greatly, even among high-volume specialized centers.

Conventionally active drugs in STM include anthracyclines (doxorubicin and epirubicin), ifosfamide and dacarbazine [11].

In selected cases, chemotherapy can be performed pre-operatively with neoadjuvant aims to improve both local and distance control. There is no evidence that prior use of chemotherapy in surgically respectable forms can offer an advantage in local control.

The use of chemotherapy should not be considered a standard treatment and should be reserved for special clinical situations.

This clinical variability arises from the conflicting results of randomized clinical trials [12].

The argument in favor of chemotherapy was further supported by subset analysis of the cohort of patients enrolled in the EORTC 62931 study [13]. In fact, the patients who achieved the best results were those in the adjuvant chemotherapy arm with grade III tumors, with a diameter >10 cm. This subset analysis did not reach statistical significance, but the results indicate the possibility that these clinical features may define cohorts who would receive the most benefit from adjuvant chemotherapy [14].

Based on these results, there is consensus that adjuvant chemotherapy can be proposed to patients with high grade STM, informing patients of the risk of the result based on the studies available so far. High grade STM larger than 10 cm if superficial or 5 cm if deep are defined as high risk. The risk of developing distant metastases in patients with high-grade lesions with 5 to 10 cm volume is 34%, rising to 43% for lesions of 10-15 cm and 58% for lesions >15 cm.

Treatment with anticancer drugs should only be prescribed in unresectable or metastatic forms as a palliative function.

Sarcomas of the limb require, in some advanced cases, amputation due to the involvement of large or multifocal masses or in the case of neurovascular bundle infiltration. Isolated limb perfusion has been used in patients who would otherwise require an amputation in an attempt to convert them to the limb-sparing operation. ILP with melphalan alone had limited success; However, combination treatment with tumor necrosis factor-α has been shown to have a good clinical response with limb salvage rates up to 60% to 70% [15,16].

References

1. Brennan MF, Antonescu CR, Moraco N, Singer S. Lessons learned from the study of 10,000 patients with soft tissue sarcoma. Ann Surg. 2014;260(3):416-21.
2. Hoefkens F, Dehandschutter C, Somville J, Meijnders P. Soft tissue sarcoma of the extremities: pending questions on surgery and radiotherapy. Radiat Oncol. 2016;11(1):136.
3. Demas BE, Heelan RT, Lane J, Marcove R, Hajdu S, Brennan MF. Soft-tissue sarcomas of the extremities: comparison of MR and CT in determining the extent of disease. AJR Am J Roentgenol. 1988;150(3):615-20.
4. Rosenberg SA, Tepper J, Glatstein E, Costa J, Baker A, Brennan M, et al. The treatment of soft-tissue sarcomas of the extremities: prospective randomized evaluations of (1) limb-sparing surgery plus radiation therapy compared with amputation and (2) the role of adjuvant chemotherapy. Ann Surg. 1982;196(3):305-15.
5. Katz SC. Tailoring Surgical Therapy for Extremity Soft Tissue Sarcoma. Ann Surg Oncol. 2017;24(1):13-14.
6. Ahmad R, Jacobson A, Hornicek F, Haynes AB, Choy E, Cote G, et al. The Width of the Surgical Margin Does Not Influence Outcomes in Extremity and Truncal Soft Tissue Sarcoma Treated With Radiotherapy. Oncologist. 2016;21(10):1269-76.
7. Davis LA, Dandachli F, Turcotte R, Steinmetz OK. Limb-sparing surgery with vascular reconstruction for malignant lower extremity soft tissue sarcoma. J Vasc Surg. 2017;65(1):151-6.
8. Yang JC, Chang AE, Baker AR, Sindelar WF, Danforth DN, Topalian SL, et al. Randomized prospective study of the benefit of adjuvant radiation therapy in the treatment of soft tissue sarcomas of the extremity. J Clin Oncol. 1998;16(1):197-203.
9. Beane JD, Yang JC, White D, Steinberg SM, Rosenberg SA, Rudloff U. Efficacy of adjuvant radiation therapy in the treatment of soft tissue sarcoma of the extremity: 20-year follow-up of a randomized prospective trial. Ann Surg Oncol. 2014;21:2484-9.

10. O'Sullivan B, Davis AM, Turcotte R, Bell R, Catton C, Chabot P, et al. Preoperative versus postoperative radiotherapy in soft-tissue sarcoma of the limbs: a randomised trial. Lancet. 2002;359(9325):2235-41.

11. Pervaiz N, Colterjohn N, Farrokhyar F, Tozer R, Figueredo A, Ghert M. A systematic meta-analysis of randomized controlled trials of adjuvant chemotherapy for localized resectable soft-tissue sarcoma. Cancer. 2008;113:573-81.

12. Petrioli R, Coratti A, Correale P, D'Aniello C, Grimaldi L, Tanzini G, et al. Adjuvant epirubicin with or without Ifosfamide for adult soft-tissue sarcoma. Am J Clin Oncol. 2002;25(5):468-73.

13. Woll PJ, Reichardt P, Le Cesne, Bonvalot S, Azzarelli A, Hoekstra HJ, A, et al. Adjuvant chemotherapy with doxorubicin, ifosfamide, and lenograstim for resected soft-tissue sarcoma (EORTC 62931): a multicentre randomised controlled trial. Lancet Oncol 2012;13:1045-54.

14. Le Cesne A, Ouali M, Leahy MG, Santoro A, Hoekstra HJ, Hohenberger P, et al. Doxorubicin-based adjuvant chemotherapy in soft tissue sarcoma: pooled analysis of two STBSG-EORTC phase III clinical trials. Ann Oncol 2014;25:2425-32.

15. Wilkinson MJ, Smith HG, Pencavel TD, Mansfield DC, Currie JK, Khan AA, et al. Isolated limb perfusion with biochemotherapy and oncolytic virotherapy combines with radiotherapy and surgery to overcome treatment resistance in an animal model of extremity soft tissue sarcoma. Int J Cancer 2016;139:1414-22.

16. Jakob J, Hohenberger P. Role of isolated limb perfusion with recombinant human tumor necrosis factor alpha and melphalan in locally advanced extremity soft tissue sarcoma. Cancer 2016;122:2624-32.