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GUEST EDITORIAL

The Molecular Evolution of Surgical Oncology

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Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of the gastrointestinal tract. For many years, GISTs were regarded as smooth muscle tumors and often misclassified as leiomyomas or leiomyosarcomas. With regard to the latter diagnosis, the treatment of advanced ''leiomyosarcomas'' was associated with dismal results utilizing various chemotherapy regimens. Subsequent electron microscopy and immunohistochemical staining reveal that GISTs do not have features of smooth muscle tumors. It is now known that the vast majority of GISTs express the oncogene, KIT, which is not the case for leiomyomas or leiomyosarcomas. It turned out that mutations in KIT were instrumental in the pathogenesis of GISTs. Ever since 2001, the treatment of GISTs has undergone a revolution because of a case report of a patient with advanced GIST who had a dramatic clinical response to a tyrosine kinase inhibitor [1]. Though other molecularly targeted therapies were being used in oncology, imatinib was one of the first that was specifically designed to inhibit the product of a constitutively activating mutation that drives pathogenesis of a solid tumor. Its use served as a ''paradigm'' of molecularly targeted therapies for malignancies. The wild success of molecularly targeted therapy has led vastly improved outcomes. Certainly, there have been ongoing changes in the management of GISTs, particularly in advanced or metastatic cases.

In this issue of Seminars in Surgical Oncology, we have put together a multidisciplinary group of experts to cover some of the most relevant topics in the management of GISTs. We have solicited a historical perspective on GISTs and contrasted it with the current use of histopathology and molecular diagnostics. Surgical approaches (including indications and timing of operations) have necessarily changed with vastly improved systemic treatments. With evolving treatments, it is necessary to consider new approaches to imaging modalities for diagnosis and surveillance. Finally, a chapter is devoted to special consideration with pediatric GISTs. Our increasing knowledge regarding the molecular events leading to cancer pathogenesis and metastasis will modify our treatment approaches including surgical therapies in the future.

REFERENCE

1. Joensuu H, Roberts PJ, Sarlomo-Rikala M, et al.: Effect of the tyrosine kinase inhibitor STI571 in a patient with a metastatic gastrointestinal stromal tumor. N Engl J Med 2001; 344:1052–1056.

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