Somatostatin and the Treatment of Cancer

In 1955 the surgical treatment of gastrointestinal diseases changed with the description of the Zollinger–Ellison syndrome.[1] For the first time a common disorder, peptic ulcer disease, was linked to a peptide-producing tumor. This ushered in an entire generation of surgeons and physicians attempting to diagnose and treat diseases caused by humoral abnormalities. In addition, scientists began investigating other common gastrointestinal diseases for an endocrine basis, eventually leading to the description of much of our current knowledge of gastric and pancreatic function. With the introduction of a somatostatin analogue, octreotide, the evolution of the management of gastrointestinal disease has again entered a new phase. Preliminary clinical use of octreotide suggests that peptide manipulation can be used to influence a wide variety of surgical diseases.[2,3]

Evers and associates from the University of Texas at Galveston have reviewed the use of somatostatin and its analogues in the treatment of cancer. The suggestion that the inhibition of growth factors or growth receptors may influence tumor growth is the basis for the use of octreotide in these patients. It is clear that growth factors probably drive the rapid growth of most malignancies and discovery of growth factors and their receptors certainly holds the key to the biologic or physiologic management of neoplasia. As reviewed by Evers and associates, somatostatin's impact on the growth of tumors may occur by direct inhibition of growth receptors on the tumor, inhibition of the release of growth factors that influence tumor growth, or by the inhibition of the release of other hormones that augment tumor growth. Unfortunately this field can at best be described as being in its infancy because tumor responses to somatostatin and its analogues are available only in animal experiments and in very limited clinical settings. The malignancies discussed include carcinoma of the breast, lung, pancreas, prostate, and a variety of endocrine tumors. Although most of the clinical data currently available have been presented as anecdotes, certainly several of these cases generate excitement because the tumor responses to somatostatin and its analogues have been dramatic.

Physiologic manipulation of tumors predictably will bring surgical oncology into a new era. Specifically peptide manipulation of tumors as reviewed in this manuscript may represent genuine progress in the battle against malignancies.

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References

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