

Neuro-oncology: The Promiscuous Discipline

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The relatively new field of neuro-oncology has arisen in response to the long overdue surge in interest in central nervous system (CNS) tumors by health care professionals. Since this field has no history or tradition, its definition remains elusive. What is clear is that the field concerns itself with the care (mostly postsurgical) of patients with CNS tumors. A neuro-oncologist typically assumes full responsibility for the care of patients with CNS tumors following surgery if ongoing care is necessary. Certainly all patients with malignant CNS tumors, low-grade or high-grade, completely or partially resected, should be followed by a neuro-oncologist. In addition, patients with benign tumors complicated by ongoing issues such as seizures, functional impairment, or significant comorbidities frequently benefit from the care of a neuro-oncologist who essentially becomes the primary care physician for issues related to the tumor.



Dr. Arenson was graduated from Cornell University and Habnemann Medical College. He completed a residency in pediatrics at the University of Colorado Health Sciences Center and Denver Children's Hospital. Over the past decade, Dr. Arenson has focused his attention on children and adults with central nervous system tumors. Dr. Arenson, along with Dr. Timothy Fullagar, has developed a multi-modal treatment strategy for adults with high-grade gliomas with curative intent, and has helped organize the CNI Center for Brain and Spinal Tumors Team.

Introduction. The relatively new field of neuro-oncology has arisen in response to the long overdue surge in interest in central nervous system (CNS) tumors by health care professionals. Since this field has no history or tradition, its definition remains elusive. What is clear is that the field concerns itself with the care (mostly postsurgical) of patients with CNS tumors. A neuro-oncologist typically assumes full responsibility for the care of patients with CNS tumors following surgery if ongoing care is necessary. Certainly all patients with malignant CNS tumors, low-grade or high-grade, completely or partially resected, should be followed by a neuro-oncologist. In addition, patients with benign tumors complicated by ongoing issues such as seizures, functional impairment or significant comorbidities frequently benefit from the care of a neuro-oncologist who essentially becomes the primary care physician for issues related to the tumor.

What is not clear is what the standard of care should include for patients with CNS tumors and what professional training and background is most appropriate (there is no

standard training or board exam). The current legion of neuro-oncologists includes physicians with subspecialty training in oncology (both pediatric and adult), neurology (both pediatric and adult) and neurosurgery (both pediatric and adult). Interestingly, many pediatric neuro-oncologists (including myself) have become increasingly involved in the care of adult patients because of a shortfall of committed adult neuro-oncologists. This conspicuous "promiscuity" in the discipline of neuro-oncology has had a major impact on the other area of ambiguity in the definition of neuro-oncology, the question of what constitutes a standard of care for the patients that neuro-oncologists treat.

My own perspective on this question of a standard of care is that there is none and will not be one until, and unless, the background and training of those that call themselves neuro-oncologists' becomes standardized. I have observed a major difference in approach to care dependent upon whether the neuro-oncologists background is in neurology/neurosurgery or oncology and whether they practice in an

academic or private practice model.

For example, patients treated by neuro-oncologists with oncology backgrounds are more likely to be offered aggressive treatment regimens that may involve substantial risks, but offer the possibility of better results. This is based on both a higher comfort level with aggressive treatment, especially chemotherapy, as well as the principle that the cancer itself is a bigger threat to the patient than aggressive therapy both in terms of survival as well as preservation of function. Additionally, oncologists understand that treatment approaches that seek to palliate cancer essentially never cure cancer, and that when cancer is cured, it is nearly always through the use of aggressive, but rational combinations of individually effective treatments. Neuro-oncologists with a background in neurology or neurosurgery, while comfortable with the neurologic and anatomic aspects of CNS tumors, are less likely to achieve a comfort level with the oncologic concepts necessary for aggressive treatment.

Settings of Care. Academic. The next major determinant of the standard of care is the setting of care; academic or private. My own career has evolved from an academic to private practice over the span of 30 years. While I have observed and participated in what certainly was a very high standard of care in academia, there is no question in my mind that neuro-oncologic care in academia is very different from what I have experienced since going into private practice a decade ago. The academic model emphasizes research and “protects” the physician from being overwhelmed by clinical care demands in order to allow research to be performed. Continuity of care is insured by the presence of fellows in training and physician extenders

such as nurse practitioners and physicians’ assistants. The attending physician is responsible for the care, but most of the care is provided by others. Secondly, academic clinicians are bound to conduct clinical and/or basic research. While such research is necessary in order for progress to be made, it is also relatively inflexible, and to a certain extent, limits the creativity of the treating physician as well as his ability to individualize care when appropriate.

Private Practice. An alternative to the academic model, at least in theory, is the private practice model in which care is delivered directly by the clinician without a hierarchy of subordinates and/or extenders. This approach optimizes care by allowing for the development of a more intimate relationship with each patient. The system allows greater flexibility in modifying or selecting treatment and more creativity in treatment protocol development. For example, in our Program, patients who fail our standard frontline therapy are frequently offered and benefit from second and third treatments, usually both chemotherapy and biological therapy. Many hours of time are required to obtain approval to provide such innovative treatments. The private practice model potentially suffers from a reduced level of peer input and criticism and from a lower commitment to research and data-based treatment. These problems are minimized, however, if the neuro-oncologist practices in a setting where a privately supported institute provides the means of creating a comprehensive and multidisciplinary program in which there is both the opportunity and the logistical support necessary to conduct clinical research. This approach is exemplified at the Colorado Neurological Institute where the Center for

1. Cowna J, et al. The impact of provider volume on mortality after intracranial tumor resection. *Neurosurgery*. 2003;52;48-54.

Brain and Spinal Tumors is a Program with a mandate to provide multidisciplinary care to its patients, track its clinical outcomes, provide an active educational program for its members as well as the lay community and perform credible and significant research. While these lofty goals have not been fully realized, there is every reason to expect that they will be in time.

Conclusion. Herein are described distinctly different approaches to the care of patients with CNS tumors dependent upon the background of the neuro-oncologist and the medical environment in which the patient is treated. Finally, an even larger problem, beyond the scope of this article, is the fact that many (most?) patients with CNS tumors never see a neuro-oncologist, but instead are managed by a general medical oncologist or no oncologist at all. Experience from MD Anderson Cancer Institute and other respected centers clearly indicate that patients are harmed by the latter approach and should be referred to centers, academic or otherwise, which provide a comprehensive program for a critical mass of patients with CNS tumors.¹

The issues outlined in this article are ones of major concern for any patient diagnosed with a central nervous system tumor. The resolution of the critical questions of who is a neuro-oncologist and what the standard of care should be will not occur until those who are currently most active in the field, including members of the Society for Neuro-Oncology, recognize that these are problems of sufficient importance to be addressed and acted upon.

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