SUCCESSFUL TREATMENT FOR A BENIGN BRAIN TUMOR - MENINGIOMA

by Gil Lederman M.D.

One of the silent success stories has been the use of radiation therapy in the treatment of a benign but potentially serious brain tumor called meningiomas. This is a type of tumor that has been traditionally treated surgically. Often meningiomas cannot be completely removed. Furthermore, there is the risk that efforts of removal may result in neurologic damage to the patient as well as the general risk of opening the head and its associated morbidity and mortality.

Because some meningiomas are often difficult to completely resect, new treatment options have developed. One such option is stereotactic radiosurgery. This is a method of directing beams with pinpoint precision to the meningioma while attemtping to protect the normal, healthy surrounding tissue. Radiosurgery is successful in stopping the tumor growth or causing shrinkage in the vast majority of patients.

Many patients, however, have had surgery and at the time of analysis have residual disease within the brain. Many believe that if the first surgical procedure could not remove all the tumor then it is highly unlikely that subsequent surgeries will remove the residual disease. Recently reported by Goldsmith et al was the analysis of 140 patients treated between 1967 and 1990. These are patients who underwent surgery but the surgery was unable to totally remove the meningioma and therefore had subsequent radiation.

Patients ranged in age from 3 to 80 years. Malignant as well as benign types of meningiomas were evaluated. Malignant meningiomas were based upon pathologic review under the microscope.

Eighty-three and one-half percent of patients had benign meningiomas with the remaining patients having malignant tumors.

Indeed, some patients do succumb meningioma. During the years of follow up, twenty-four patients died of all causes - eleven died of uncontrolled meningioma. The authors noted "the five year progression free survival rates were 89% for the benign and 48% for the malignant tumor group."

There was no statistical data showing that patients with larger meningiomas did worse than those with smaller tumors, although a trend was reported.

There was certainly a difference in response by dose. The success rate for those treated with at least 52 gray (gray is a dosage of radiation) was 93% at ten years compared to 65% in those treated with 52 gray or less. This was statistically significant.

Similarly those with malignant meningiomas did better with a greater dose than with those receiving a lesser dose.

Patients treated in the modern era with MRIs and CT scans did better, the authors noted. Patients treated after 1980 had a "five year progression-free survival rate of 98% whereas those treated before or during 1980, the rate was 77%."

It would be speculated that high resolution scanning such as CT or MRI allows better localization of the tumor and, therefore, much better treatment planning. The authors reported a complication rate was low at 3.6%.

The authors noted the excellent result using radiation for the treatment of meningiomas. They wrote, "for patients with a benign meningioma, the five year survival rate of 85% and progression-free survival rate of 89% compare favorably with results for similarly treated patients in reported series, and are considerably better than the 45% to 59% relapse/progression-free five year survival rates that are associated with subtotal resection followed by observation only."

Furthermore the authors noted the dose response effect with "the five year progression-free survival of 93% in patients treated with greater than 52 gray is comparable to the results reported for patients managed with total resection." The dose response was further noted with malignant histology. "For patients with malignant meningioma, the minimum radiation dose to the tumor appears to be even more critical as the five year progression-free survival in our study nearly quadrupled from 17% for patients receiving 53 gray or less to 63% for those receiving greater than 53 gray."

Because of visual complications, radiation dose using standard external beam radiation was (to the visual apparatus) altered to protect that crucial area.

The authors noted, "we believe that the potential for serious morbidity is slight and that the risk of potential side effects of treatment is offset by the reduced likelihood of recurrent neoplasm afforded by increasingly precise treatment planning techniques."

The authors concluded that "radiation therapy for subtotally resected meningioma is effective and safe and the results are substantially superior to those obtained in patients followed only with observation after subtotal resection."

Based upon the data presented it would be hard to disagree that "radiation therapy should be considered the standard adjuvant care following subtotal resection of meningioma."

The authors rationale was that "after subtotal resection, observation alone unnecessarily subjects the patient to an increased risk of recurrence with concomitant risk of requiring a second craniotomy. Moreover, when radiation is delayed until the time of recurrence the efficacy of therapy may be jeopardized if the meningioma should under malignant transformation to a more aggressive tumor and/or develop an increasing tumor burden."

Stereotactic radiosurgery allows higher doses of radiation to be safely and precisely administered to meningiomas. This technique diminishes radiation doses to the surrounding normal tissue and maximizes therapeutic impact to the tumor.

Thus, new analyses and technology are bringing positive results for the treatment of meningiomas.