Editorial

Gamma Knife Radiosurgery - A Revolutionary Modality in the Treatment of Brain Tumors

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For delivering highly accurate radiation therapy with pin-point accuracy to brain tumors, radiosurgery employing Gamma Knife Radiosurgery technique is a revolutionary new armamentarium that enables delivering focused intense beam of gamma rays to brain lesions. Neither employing an actual knife nor surgery, it is called "surgery" because the results are as good, even better, than actual surgeries.

Gamma Knife radiosurgery can be as effective in treating nerve conditions and blood vessel malformations as brain tumors [1] (Table **1**). The tumor gradually shrinks after treatment that damages and destroys the tumor cell DNA that cannot grow or reproduce anymore.

Table 1. Result of 3834 cases treated by gamma knife at a Karachi Centre [1].

Sr. no	Diagnosis	No. of patients	Male	Female
1	Arteriovascular Malformation	520	353	167
2	Other Vascular	91	60	31
3	Acoustic Schwannoma	501	275	226
4	Meningioma	550	245	305
5	Pituitary Adenoma	355	239	116
6	Pineal region Tumor	104	60	44
7	Craniopharyngioma	106	75	31
8	Other Benign Tumor	183	104	79
9	Metastasis Single	90	38	52
10	Metastasis Multiple	86	33	53
11	Glial Tumor	502	358	144
12	Other Melignant	31	26	5
13	Trigeminal Neuralgia	169	101	68
14	Parkinsonism	14	12	2
15	Epilepsy	12	6	6

In case of blood vessel malformations such as an arteriovenous malformations, this radiosurgery causes the malformed blood vessels gradually to close off [2].

In situations where nerves are the target for treatment, as in the case of the pain disorder trigeminal neuralgia, Gamma Knife radiosurgery diminishes the function of improperly acting nerves and this leads to alleviation of the condition.

Presently three such facilities are working in Sindh. These units enable delivering highly focused beams of gamma ray radiation therapy to target volumes, with minimal damage to surrounding healthy tissues that are spared from any significant deleterious effects of radiation.

Multiple beams, each carrying a very low dose, converge on the target volume to be treated and cumulatively deliver the desired high dose of radiation.

The technique allows treatment of tumors that are usually inoperable due to location in difficult to access areas of brain, or those treated unsuccessfully by conventional neurosurgery radiation therapy and chemotherapy [3, 4]. It is also indicated for patients not suitable for surgery due to illness or advanced age [5].

With established efficacy of treating a variety of neurological pathologies, and its increasing utilization in epilepsy and related disorders, it is felt that such facilities may be setup in all major hospitals with Neurology and Neurosurgical units.

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CONFLICT OF INTEREST

Declared none.

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