Intracranial stereotactic radiosurgery

Indications

Cerebral arteriovenous malformation

see Cerebral arteriovenous malformation radiosurgery.

Glioblastoma

Stereotactic radiosurgery is an emerging treatment option offered to patients with Glioblastoma multiforme (GBM). Radiosurgery is performed as an outpatient procedure and provides a safe and effective non invasive treatment for focal GBM. High energy beams originating from cobalt sources placed into an helmet (Gamma-Knife) or generated by a linear accelerator (LINAC) rotating on a gantry (X-Knife, Novalis) or maneuvered by a robotic arm (CyberKnife) are delivered with submillimetric accuracy to a selected intracranial target. Treatment accuracy is provided by image-guided volumetric CT and MR studies complemented with advanced metabolic neuroimaging techniques such as CT-PET. Radiosurgery is typically used as a salvage treatment in patients with recurrent GBM to avoid further surgical procedures or as a complement to conventional fractionated radiotherapy [1)].

Atypical meningioma

Atypical Meningioma radiotherapy.

Brain metastases

see Stereotactic radiosurgery for brain metastases..

pituitary neuroendocrine tumor

Is a common treatment for recurrent or residual pituitary neuroendocrine tumors. The persistence of symptoms and treatment related complications may impair the patient's quality of life (QOL). Symptom distress can affect different aspects of patient QOL. Levels of symptom distress, number of symptoms, age, and gender were variables significantly correlated with patient QOL. These results may be utilized by healthcare personnel to design educational and targeted interventional programs for symptom management to improve patient QOL [2)].

Vestibular Schwannoma

Vestibular schwannoma patients planned with the CyberKnife system had superior organs at risk (OAR) (cochlea and mesial temporal lobe) sparing compared with those planned with the Linac-based

system. Further evaluation of these findings in prospective studies with clinical correlation will provide actual clinical benefit from the dosimetric superiority of CyberKnife [3].

see Vestibular schwannoma radiosurgery

Metastases to the craniovertebral junction

Books

Intracranial Stereotactic Radiosurgery Thieme

[1]
Barbarisi M, Romanelli P. The emerging role of stereotactic radiosurgery in the treatment of glioblastoma multiforme. Curr Radiopharm. 2012 Oct;5(4):292-9. Review. PubMed PMID: 22642423.
[2]
Yang CJ, Huang GS, Xiao FR, Lou MF. Symptom distress and quality of life after stereotactic radiosurgery in patients with pituitary tumors: a questionnaire survey. PLoS One. 2014 Feb 5;9(2):e88460. doi: 10.1371/journal.pone.0088460. eCollection 2014. PubMed PMID: 24505492.
[3]
Dutta D, Balaji Subramanian S, Murli V, Sudahar H, Gopalakrishna Kurup PG, Potharaju M. Dosimetric comparison of Linac-based (BrainLAB®) and robotic radiosurgery (CyberKnife ®) stereotactic system plans for acoustic schwannoma. J Neurooncol. 2012 Feb;106(3):637-42. doi: 10.1007/s11060-011-0703-5. Epub 2011 Sep 4. PubMed PMID: 21892741.