PRESS RELEASE

1010 Gamma Knife Radiosurgery (GKRS) In The Management Of Parkinson's Disease And Essential Tremor : Long-term Follow-up Report Of 183 Cases

S. Johnson[1], H. Smith[1], R. Mark[1,2], D. Jacques[3], R. Young[3], B. Copcutt[3], C. Chen[3], P. Anderson[1], M. Nair[1]

[1]Joe Arrington Cancer Center, Lubbock, TX, [2]Texas Tech University, Lubbock, TX, [3]Good Samaritan Hospital, Los Angeles, CA

Purpose/Objective(s): Management options for tremors secondary to Parkinson's Disease (PD) and Essential Tremor (ET), include medications, Deep Brain Stimulation (DBS), Radiofrequency (RF), and Gamma Knife Radiosurgery (GKRS). Results with GKRS have compared favorably to DBS and RF with respect to tremor relief and complications. We report our updated long-term results with GKRS in the treatment of tremors.
Materials/Methods: Between 1991 and 2007, 183 patients underwent MRI Scan targeted GKRS thalamotomy for medically refractory tremors secondary to PD (n = 116) and ET (n = 67). The target was the Ventralis Inter-Medius (VIM) nucleus. The target received between 140 Gy in a single shot prescribed to D_m using the 4 mm collimator. Treatment planning was accomplished thru the Leksell Treatment Planning System. Pre-operative and post-operative blinded assessments were performed by a team of independent examiners. The Unified Parkinson's Disease Rating Scale and Clinical Rating Scale for Tremors was used to score tremors.
Results: With a median follow-up of 7 years (range 2-17 years), 84.2% (154/183) of patients had significant, or complete resolution of tremors. In patients with PD, 82.8% (96/116) had near or complete tremor resolution, vs. 86.6% (58/67) with ET (p = 0.54). Three patients experienced MRI proven edema and transient hemiparesis and speech difficulty. In two patients, the deficits were resolved on high dose steroids. The 3rd patient required high dose steroids and hyperbaric oxygen for resolution of deficits and edema. There were no cases of hemorrhage, infection, or death.
Conclusions: GKRS thalamotomy to the VIM nucleus provides favorable results, both in tremor relief and complications, for patients with medically refractory tremors secondary to PD or ET. Furthermore, these results compare favorably to DBS and RF, both with regard to tremor relief and complications. In view of these long-term tremor resolution results and low complication risks, GKRS should be considered as a primary initial treatment option in medically refractory tremors. The optimal dose with minimal complications, appears to be 140 Gy.

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