was able to identify the correct number of intra-sphenoidal septa in 65 (92%) patients. Hence, MRI was able to reliably identify the existence of an intra-sphenoidal septum with a sensitivity of 99%. A correct posterior termination at the sella turcica was identified in 66 (97%), a posterior termination along the carotid artery in 63 (93%), and an evident asymmetry in 63 (93%) of cases. Hence, MRI had a sensitivity of 94%, 97% and 92%, respectively. However, accuracy was less for accessory septa within this study. Cohens Kappa coefficient revealed a fair to moderate intrareader variability for the main assessor of this study.

Conclusions: MRI alone is feasible to reliably detect the posterior termination of a single intra-sphenoidal septum in cases without tumor infiltration of the posterior sphenoidal sinus wall, potentially limiting preoperative CT-scans to more complex anatomical configurations. Further studies are warranted to specifically confirm these findings and potential benefits.

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GAMMA KNIFE RADIOSURGERY AS PRIMARY TREATMENT FOR PINEAL TUMORS. CLINICAL, RADIOLOGICAL, AND SURVIVAL EVALUATION WITH TARGETED ANALYSIS OF PROGNOSTIC FACTORS IN A SINGLE-CENTER ORIGINAL SERIES

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Oral e-Poster Presentations - Booth 3: Skull Base A (Techniques), September 27, 2023, 1:00 PM - 2:30 PM

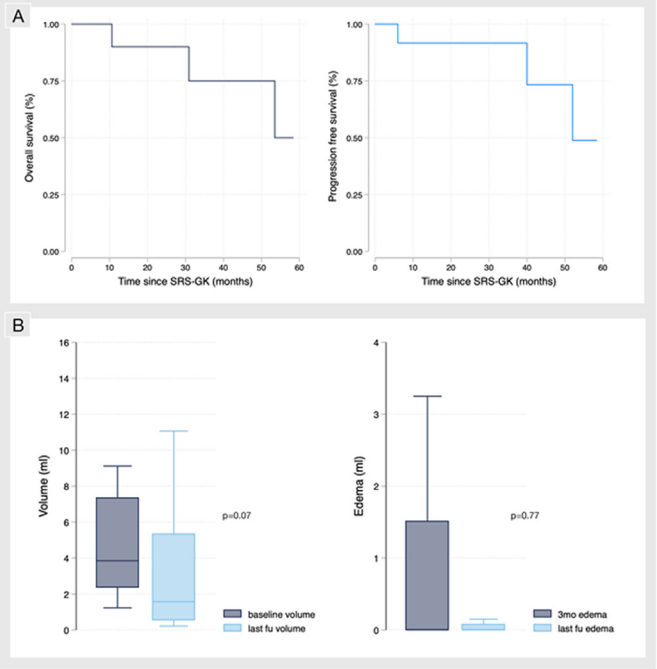
Background: Pineal region tumors (PTs) are a heterogeneous group of lesions whose management strategy remains controversial. Available data highlight the importance of the initial presumptive diagnosis for a therapeutic strategy which may comprise surgery for intrinsic lesions and chemo/radiotherapy for germ cell tumors. Surgical treatment, however, has been traditionally burdened by the extremely high rates of neurological deficits and perioperative mortality, thus Gamma Knife radiosurgery (GKRS) has gained popularity as an effective alternative in treating PTs. To date, given the rarity of the disease, literature reports on the topic are limited to small clinical series and single case reports. Only about 200 cases of primary GKRS treatments have been reported to date.

Methods: This is a single-center retrospective analysis of 12 patients receiving primary GKSR for pineal tumor region tumors. Patients were excluded if gross total or subtotal resection was attempted. The diagnosis was presumed based on neuroimaging and biological markers. Only biopsy (n=1) and CSF shunting (n=8) interventions were allowed. Included lesions were meningioma (n=1), low-grade glioma (n=1), germ-cell tumor (n=1), intrinsic pineal low-grade (n=3), or unclear (n=6). The mean lesional volume was 5.2 ± 4 cc, mean marginal dose (50% isodose) was 15 ± 2.2 Gy.

Results: At a median 30mo follow-up, local control was achieved in 74.9% of cases with a sustained reduction in tumor volume (5.2 ± 4 to 3.4 ± 4.1 cc; p=0.07). Three patients showed progression (25%) with a median time of 32.6 months and died. The median OS was 53.5 months. Clinical stability/improvement was recorded in 60% of patients. Seven patients experienced TRICs, among which 33.3% presented symptomatic radionecrosis (RN) with only transient symptoms. Clinical improvement was associated with lower doses to the brainstem (p=0.08), while the onset of new symptoms was associated with the amount of thalamic edema (p=0.01) as well as the degree of dose decay (p=0.03). Cystic degeneration was related to lower doses (p=0.04).

Conclusions: These encouraging results support the growing role of GKSR as a primary treatment for pineal region tumors, demonstrating the need for further studies aimed at validating its efficacy and safety.

Optional Image



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BRAIN AND SPINE 3 (2023) 101794 102207

GAMMA KNIFE RADIOSURGERY AS PRIMARY TREATMENT FOR PINEAL TUMORS, A SYSTEMATIC REVIEW AND POOLED ANALYSIS OF AVAILABLE LITERATURE WITH HISTOLOGICAL STRATIFICATION

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Oral e-Poster Presentations - Booth 3: Skull Base A (Techniques), September 27, 2023, 1:00 PM - 2:30 PM

Background: Pineal region tumors represent extremely rare pathologies, characterized by highly heterogeneous histological patterns, whose best management strategy is, to date, controversial. Most of the available evidence for Gamma Knife radiosurgical (GKSR) treatment of PTs arises from multimodal regimens, considering GKSR as an adjuvant modality following surgery or as a salvage treatment at recurrence. The experience with GKSR as primary treatment is limited to a few small case series. We aimed to gather the existing evidence on the topic and analyze single-patient level data to address the efficacy and safety of primary GKSR when only a biopsy was attempted or biochemical or neuroimaging diagnosis was available.

Methods: We conducted a systematic review of literature searching international databases (Pubmed, Embase, Cochrane, Science Direct) according to the 2020 PRISMA guidelines. The availability of single-patient-level data was among the inclusion criteria. A total of 1054 original works were retrieved. After the exclusion of duplicates and irrelevant works, we included 12 papers in our final analysis comprising 64 patients. We included 12 additional patients from the authors' original series (submitted to publication).

Results: A total of 76 patients reached the final analysis. Presumptive diagnoses included intrinsic pineal low-grade (46%), followed by glial low-grade (LGG,