

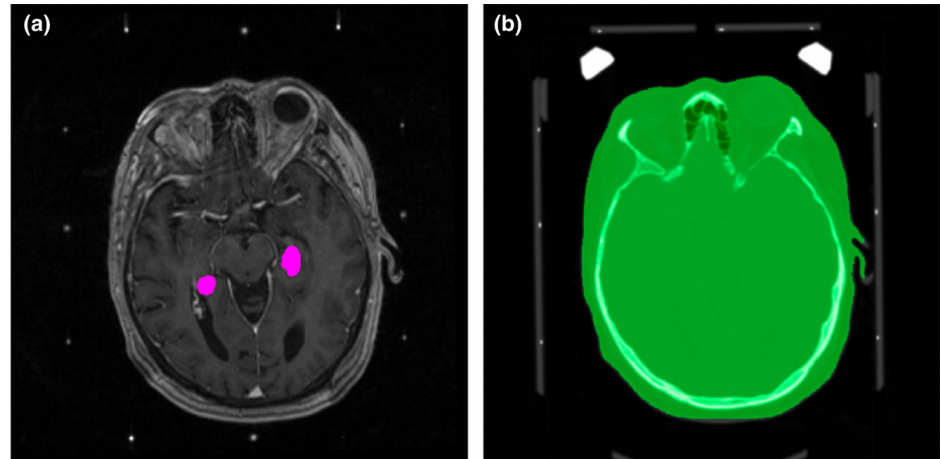
Gamma Knife MR/CT/RTSTRUCT Sets With Hippocampal Contours (GammaKnife-Hippocampal)

Summary

Redirection Notice

This page will redirect to <https://www.cancerimagingarchive.net/collection/gammaknife-hippocampal/> in about 5 seconds.

This collection is comprised of 390 patients who presented with vestibular schwannoma (VS, n=73), trigeminal neuralgia (TGN, n=119) or metastatic disease (M, n=198, 4-26 metastases) and were subsequently treated with Gamma Knife (Elekta AB, Stockholm, Sweden) stereotactic radiosurgery. For each patient, the treatment indication is designated with a suffix on their patient ID (VS, TGN or M).



Visualization of the hippocampus segmentation on MR (a) and head contour on CT (b) of a co-registered image study.

All patients are provided with at least one high-resolution (1 mm slice thickness) T1 FLASH trans-axial MR imaging study and their corresponding high-resolution axial planning CT. When available, treatment planning data (struct, dose, plan), alternative MR sequences (FLAIR, T2 CISS, etc.) and follow-up MR imaging studies were collected. Each MR image used during treatment planning was registered to the CT frame of reference and is provided with the DICOM registration file and the aligned secondary image. Additionally, for each patient in the cohort, hippocampal contours generated by multiple institutional observers are provided in a separate structure set. In total, this dataset contains: CT (n=390), MR (n=3868), REG (n=872), DOSE (n=928), PLAN (n=928), planning STRUCT (n=931), and hippocampal research STRUCT (n=390).

Planning Data

Gamma Knife planning studies are designated by “Gamma Knife Planning Data” in the study description DICOM header tag. For each patient, MIM (MIM Software, Beachwood, OH) was used to generate a rigid registration between CT and each MR sequence and the registration accuracy was validated using the stereotactic frame fiducial markers. From each registration, a DICOM RTREG file and aligned secondary are provided with each aligned secondaries series indicated by “[original series description] Co-registered to CT” in the series description DICOM header tag. During export from GammaPlan (Elekta AB, Stockholm, Sweden), the treatment planning files are provided in duplicate for each imaging modality frame of reference (CT and each MR sequence). Treatment planning structure names were renamed to remove misspellings, synonyms, and identifiable information. Structures with the format Plan1[tgt#]#Gy denote each target volume (a, b, ...) and the dose to the specified target in Gray. For patients with multiple lesions, ROI structure names are given as the brain region followed by the relative anatomical directions (e.g. Lobe_Frontal_R, Lobe_Parietal_L). Any empty contours were preserved but are designated with '(Empty)' in the name.

Follow-up Data

When available, patient follow-up images were collected between the provided treatment date and either the next Gamma Knife treatment or up-to approximately two years following treatment. In total, 197 patients are provided with follow-up imaging studies, with a median of 2 (range 1-13) follow-up studies provided per patient. Each follow-up imaging study is designated as “Follow-up Image Set #” in the Study Description. Each follow-up study exists in a unique frame of reference and was not co-registered to the original treatment planning CT volume.

Hippocampal Contours

Three independent observers generated hippocampal contours from the CT aligned-secondary of the T1-weighted MR image, with the resultant contours saved to the CT frame of reference. In total, 744 unique left, right contour pairs were generated (observer 1, n=390; observer 2, n=247; observer 3, n=107). In addition to hippocampal contours, the region grow tool was used to generate a head contour (ROI name ‘head’) to mask out the stereotactic frame and remove most of the reconstruction artifacts on the inferior extent of the image volume.

Additional Information

All MR images designated as ‘Co-registered to CT’ in the Series Description were interpolated to the CT frame of reference, potentially altering the field of view or voxel resolution. For all co-registered MR images, the original primary images and registration files are provided for use as needed.

Data Access

Data Access

Some data in this collection contains images that could potentially be used to reconstruct a human face. To safeguard the privacy of participants, users must sign and submit a [TCIA Restricted License Agreement](#) to help@cancerimagingarchive.net before accessing the data.

Data Type	Download all or Query/Filter	License
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Detailed Description

Detailed Description

Image Statistics	
Modalities	CT,MR,REG,RTDOSE,RTPLAN,RTSTRUCT
Number of Patients	390

Number of Studies	1509
Number of Series	8307
Number of Images	565921
Images Size (GB)	291

Citations & Data Usage Policy

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Users must abide by the [TCIA Data Usage Policy and Restrictions](#). Attribution should include references to the following citations:

Data Citation

Porter, E., Fuentes, P., Sala, I., Siddiqui, Z., Levitin, R., Myziuk, N., Squires, B., Gonzalez, T., Chen, P., Guerrero, T., & Grills, I. (2022). Gamma Knife MR/CT/RTSTRUCT Sets With Hippocampal Contours (GammaKnife-Hippocampal) (Version 1) [Data set]. The Cancer Imaging Archive. <https://doi.org/10.7937/Q967-X166>

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