

Scientific poster session

(original and unedited texts as received by the authors)

Advanced Imaging Modalities

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SPONTANEOUS THIRD-VENTRICULOSTOMY: EN VALVE MECHANISM REVEALED BY FLOW-SENSITIVE PHASE-CONTRAST CINE MRI

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PURPOSE

Spontaneous third ventriculostomy (STV) is a rare condition in which the cerebrospinal fluid (CSF) bypasses the cerebral aqueduct flowing from the inferior third ventricle into the interpeduncular cistern. Flow-sensitive phase-contrast (PC) cine Magnetic Resonance Imaging (MRI) can demonstrate the flow from the third ventricle floor. The aim of this study was to describe the on-off movement showed by PC cine MRI stationary tissue analysis.

METHODS

Flow-sensitive PC MRI was performed emphasizing both the relative CSF pulsation and stationary tissue characteristics. Clinical data of the patient was obtained.

RESULTS

A 56-year-old epileptic woman affected by hydrocephalus due to aqueductal stenosis underwent brain MRI. The size of the ventricular system was unchanged from previous examinations. Flow-sensitive phase-contrast cine MRI showed flow absence through the aqueduct and flow pulsations through the third ventricle floor which showed an on-off movement on stationary tissue images.

CONCLUSION

Spontaneous ventriculostomy is a rare condition occurring in chronic obstructive hydrocephalus patients as a result of long-term pulsations against third ventricle floor. On-off movements of the third ventricle floor could account for chronic hydrocephalus persistence by an “en valve” mechanism.

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FOUR-DIMENSIONAL MR IMAGING OF NORMAL AND PATHOLOGICAL PITUITARY GLAND BY USING TRICKS-XV

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PURPOSE

TRICKS (time-resolved imaging of contrast kinetics) is a recent three-dimensional (3D) gradient-echo sequence with characteristic 3D k-space segmentation and data recombination. Additional parallel imaging technique (TRICKS-XV) contributes to higher spatial resolution (sub-square millimeter) 3D imaging without sacrificing spatial resolution. In this study, we tried to adapt TRICKS-XV to dynamic MR imaging of the pituitary gland and evaluate the utility of time-resolved 3D (=4D) imaging in deal with pituitary adenoma.

MATERIALS AND METHODS

Time-resolved 3D dynamic MR imaging was performed in three normal (no pituitary gland lesion) and five pathological subjects. All MR examinations were performed on 3.0T MR unit (Signa HDx 3.0: GE Healthcare) with 8-channel head coil. Parameters of TRICKS-XV were following; TR/TE: 4.48/1.36 msec, FA:15, FOV: 20×20 cm, matrix: 256×256, slice thickness: 0.8 mm, gapless 32 slices, coronal plane, acquisition time: 5.3 sec/phase. Continuous 15 phases 3D isotropic imaging (0.8×0.8×0.8 mm) data accumulation after 10 ml Gd-DTPA and following 20 ml saline injection with fixed flow rate (2 ml/sec) was performed.

RESULTS

In all three normal subjects, progress of the contrast enhancement effect from pituitary stalk to anterior lobe and early contrast enhancement of posterior lobe were recognized. Color-scaled 3D viewing revealed the extension of contrast enhancement effect distinctly. Multiplanar projection technique based on 3D isotropic imaging was useful to evaluate the location and extension of microadenoma. High temporal resolution of TRICKS-XV depicted a change of an intratumoral enhancement effect.

CONCLUSION

High resolution 4D MR imaging using TRICKS-XV is useful for the evaluation of normal and pathological pituitary glands.

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AN ATTEMPT TO PREPARE HIGH-RESOLUTION IMAGES WITH WHICH CRANIAL NERVES CAN BE EASILY DIFFERENTIATED FROM CRANIAL VESSELS

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PURPOSE

To ascertaining structures around the brainstem, reverse images of heavy T2-weighted images are widely used. However when