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Introduction

Essential tremor (ET) is a common movement disorder with a prevalence of 5-6%. When the best medical treatment does not provide adequate tremor suppression, deep brain stimulation of the nucleus ventralis intermedius (VIM-DBS) is considered a safe and effective treatment. However, ventriculomegaly, caused by idiopathic normal pressure hydrocephalus (iNPH), can provide some targeting difficulties. We present the case of a 76-year-old female with disabling bilateral essential tremor despite best medical treatment (66 points on the Fahn-Tolosa-Marin scale). Pre-operative imaging displayed a supratentorial ventriculomegaly with an Evans index of 0,39. No clinical findings compatible with the Hakim-Adams triad were found at the time.

Material and Methods

Planning of the VIM-DBS was done using a pre-operative 3T MRI and Elements© software (Brainlab AG, Munich, Germany). The AC-PC line measured 28,6 mm and the width of the third ventricle at AC-PC level 14,1 mm. After fitting these measurements into the theoretical calculations of the bilateral VIM-targets, the autosegmentation of the software helped us to optimize the trajectories. Surgery was performed under awake conditions, using macrostimulation to verify the position of the microelectrode. Both directional leads (Vercise Carthesia, DB-2203-30, Boston Scientific) were implanted on the predefined targets at AC-PC level. The VIM-DBS therapy provided an excellent tremor control which resulted in an increase of overall QOL.

Results

The VIM-DBS provided an excellent control of the pre-operative tremor which resulted in an increase in overall quality of life. However, after 1 year, she developed an ataxic gait with no other symptoms, in particular no decrease of attention span nor urinary incontinence. Repeated spinal fluid evacuations provided relief and a ventriculo-peritoneal shunt was implanted after multidisciplinary consultation. After implantation, the gait improved considerably.

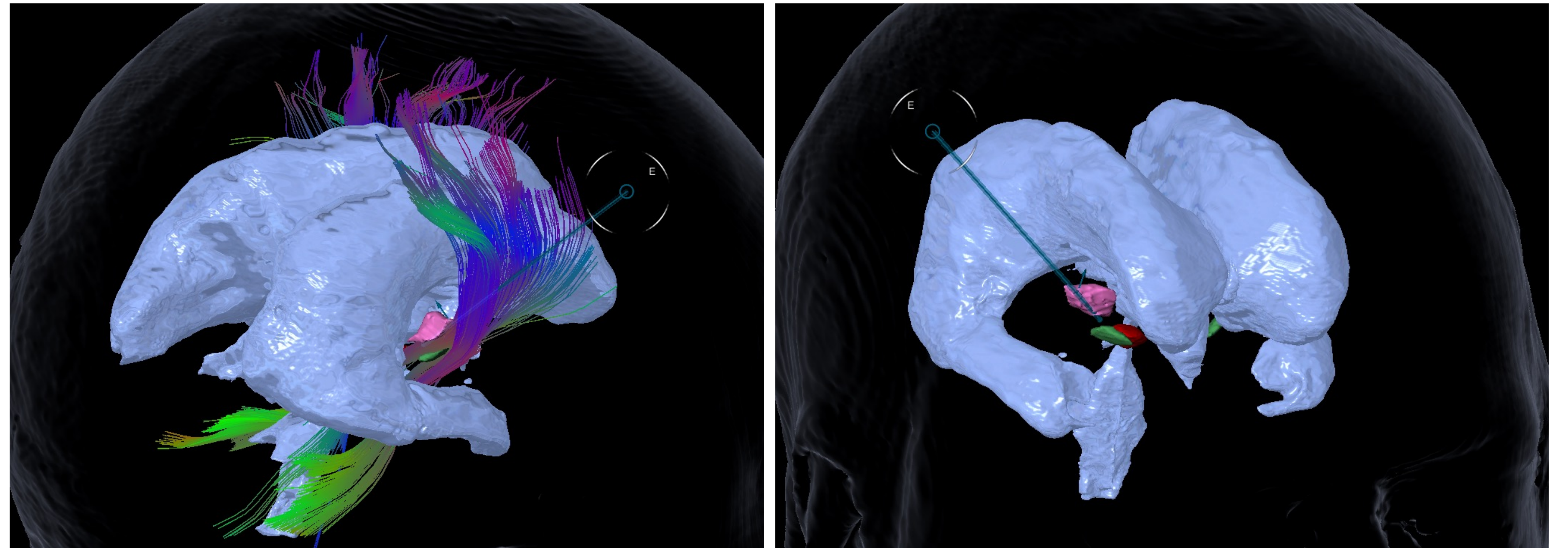


Figure 1. 3D Pre-operative planning of the VIM-DBS trajectory

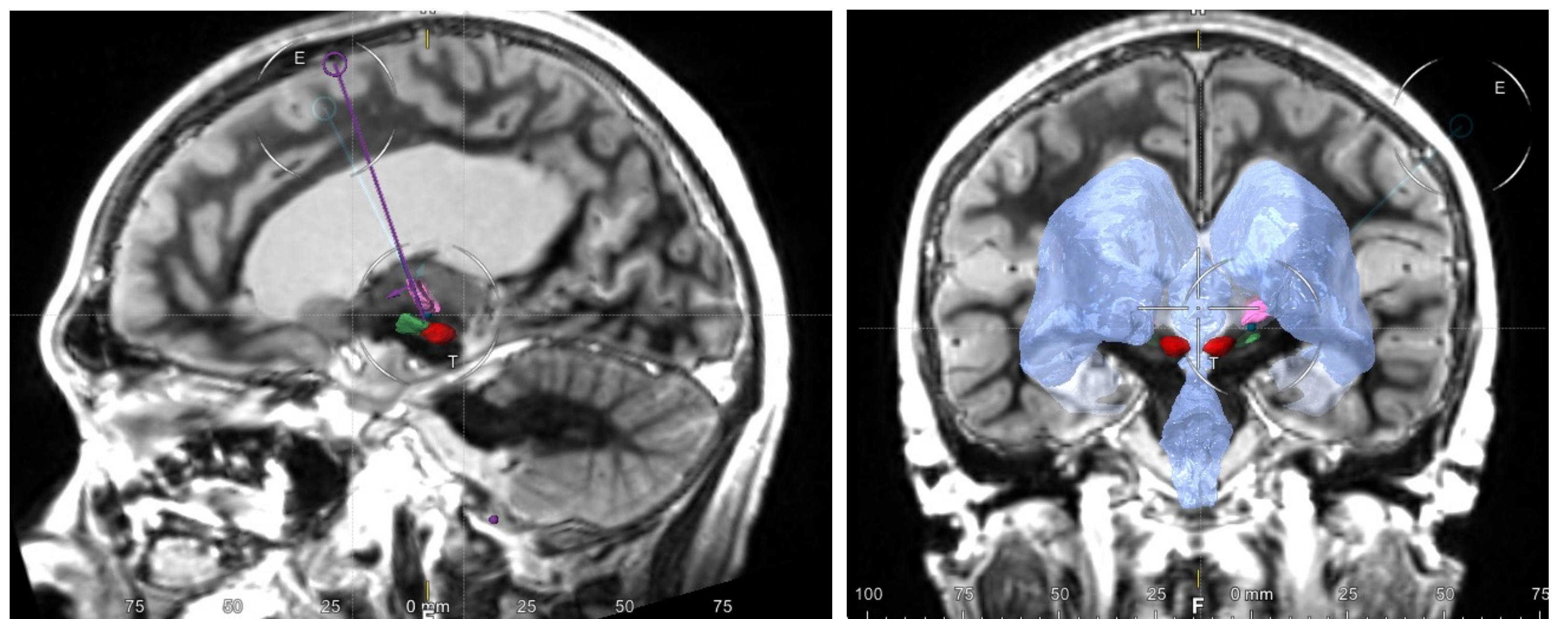


Figure 2. Pre-operative planning of the trajectory as depicted in sagittal and coronal FGATIR MRI

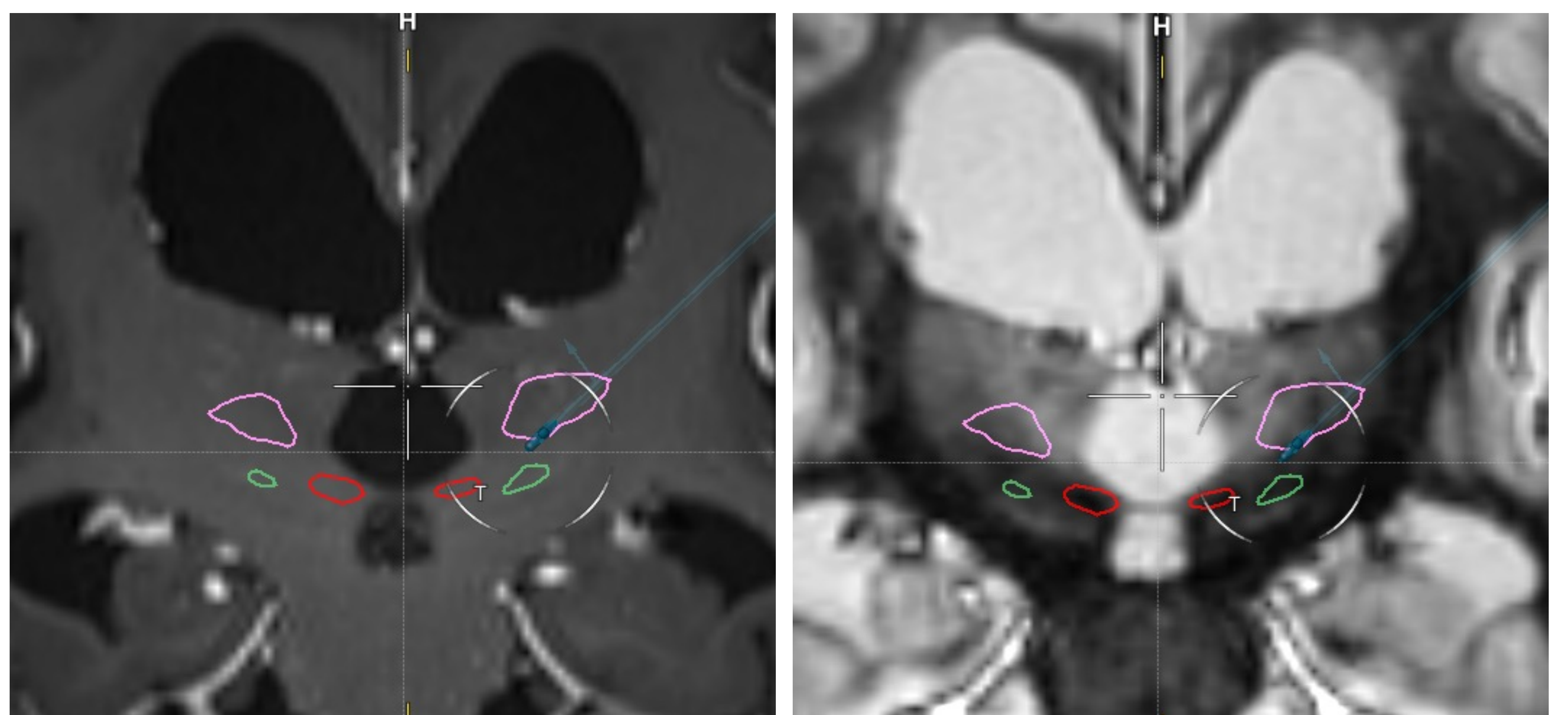


Figure 3. Close-up view of the VIM target in relation to the ventricles as depicted in coronal T1 and FGATIR MRI

Conclusion

Although VIM-DBS in ET patients with ventriculomegaly is a challenge, it should be considered for therapy-refractory patients with disabling symptoms.