Intraparenchymal Cystic Formation Around the Deep Brain Stimulator Lead: Three Case Reports

Yasaman Kianirad MD; Mark J. Nolt PhD; Kenny Tan MD; Cindy Zadikoff MD; Michael Rezak MD, PhD; Joshua M. Rosenow MD FAANS FACS

Northwestern Medicine

assfn American Society for Stereotactic and Functional Neurosurgery 2018 BIENNIAL MEETING DENVER | June 2-5, 2018

Introduction

Deep brain stimulation (DBS) is a well-established treatment for the management of medically refractory movement disorders. Various adverse events have been described. Formation of a cyst along the DBS lead is a less well-recognized, infrequent, and under-reported complications following surgery. Here we present three cases from our center in which formation of cysts occurred.

Learning Objectives

By the conclusion of this session, participants should be able to 1.) recognize that cyst formation is an adverse event that can occur following DBS lead implantation and to 2.) describe management of the patient once the cyst is observed.

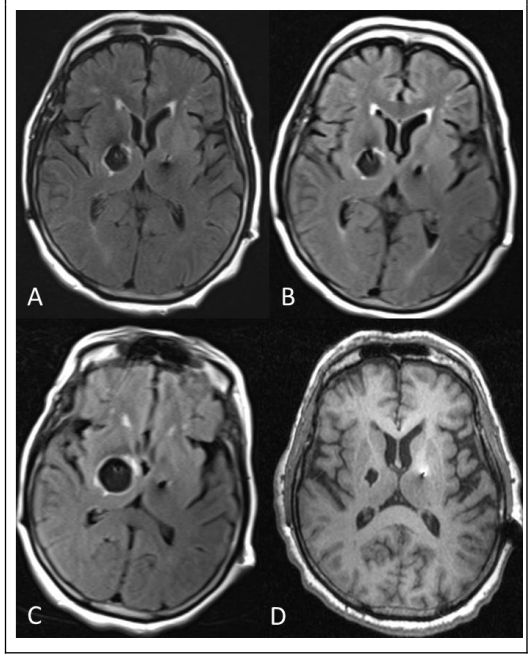
Conclusions

We report three cases of cystic formation around the DBS lead. To date, six reports describe this complication in ten patients. Conservative management may be successful, but in most cases, leads must be removed to decrease cyst size or reduce neurologic deficit.

CASE 1:

A 68-year-old female with idiopathic PD underwent bilateral STN DBS surgery. Ten weeks after right STN surgery, she began falling, developed dysarthria and dysphagia, and had left hemi-body weakness. MRI revealed fluid collection around right DBS lead (A). MRI repeated after two weeks showed unchanged cystic lesion (B). MRI four weeks later showed increase in cyst size (C). Due to gait and speech decline, lead was removed. MRI four months later showed decreasing size of cyst (D), and patient speech and gait improved.

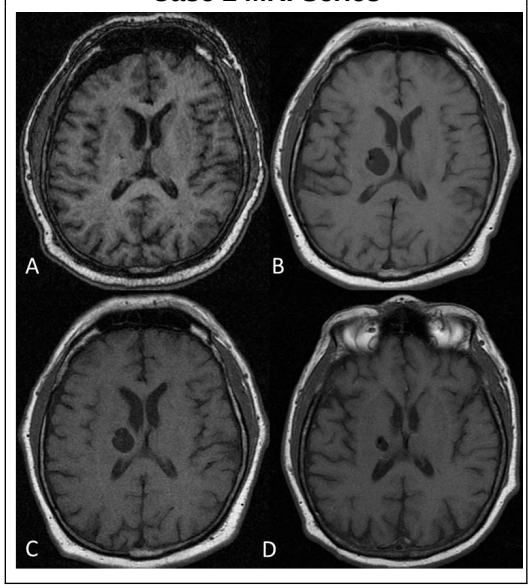
Case 1 MRI Series



CASE 2:

A 72- year-old male with essential tremor underwent left VIM DBS surgery. No cyst was observed in MRI one day and two weeks (A) after surgery. MRI 3.5 months after surgery revealed cystic formation (B) which remained unchanged after one month (C). No neurologic deficit was observed. MRI at one year showed decreasing size of cyst (D), without lead removal.

Case 2 MRI Series



CASE 3:

A 68-year-old female with essential tremor underwent bilateral VIM DBS surgery. Initial post-operative MRIs revealed no edema or cyst. She developed dysarthria and balance problems 3.5 months after left DBS surgery and MRI showed edema around left electrode. Two week follow-up MRI revealed edema (A) and cystic formation (B) around left electrode. MRI two weeks later revealed increase in cyst size (C). Given persistent neurologic deficit, left lead was removed. MRI one month later demonstrated resolution of the cyst (D).

Case 3 MRI Series