

## THALAMIC BRAIN ABSCESS CAUSED BY FUSOBACTERIUM NUCLEATUM

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Received 17<sup>th</sup> May 2023; Accepted 24<sup>th</sup> June 2023; Published online 30<sup>th</sup> July 2023**Abstract**

*Fusobacterium nucleatum* (FN) is an opportunistic, gram-negative bacillus that can rarely cause a brain abscess. Thalamic localization of brain abscesses is much rarer than abscesses in other locations of the brain. We present a case of a left-sided thalamic abscess caused by FN in a 59-year-old male patient who debuted with right-side hemiparesis. The patient was successfully treated by repeated navigated aspiration and antibiotherapy.

**Keywords:** Abscess, thalamus, fusobacterium

**INTRODUCTION**

*Fusobacterium nucleatum* is an opportunistic pathogen causing different infectious diseases in the oropharynx and other parts of the oral cavity. FN is an obligate anaerobic gram-negative bacillus, it exists in the human oral cavity, gastrointestinal tract, and another body parts. According to some authors it can cause appendicitis, pericarditis, bacterial brain abscess (BBA), osteomyelitis, and chorioamnionitis, is associated with oral and extra-oral malignancies, including colorectal cancer, breast cancer, esophageal squamous cell carcinoma, and gastric cancer [1]. Periodontally healthy individuals and patients with chronic periodontitis commonly experience FN infection and is more abundant in patients with chronic periodontitis [2]. A study reviewed 122 patients with culture-proven BBA over a period of 20 years and identified that *Fusobacterium* accounted for 6% of the implicated pathogens of monomicrobial BBA [3]. Brain abscess has a rare incidence of 2% of all space occupying lesions and the deep-seated thalamus as a location is reported in 1.3% to 6% of all brain abscesses [4]. Thalamic abscess mortality rate is about 9%-14% when rupture into the ventricles does not happen [4,5], and the mortality approaches 80% if the rupture does happen [6]. The most common reported causative microbes are anaerobes and *Streptococci*, although 28% of thalamic abscess cases reported are culture-negative [7].

Odontogenic sources are increasingly being reported as the origin of brain abscesses and three criteria were proposed that must be satisfied to establish the diagnosis of a brain abscess with odontogenic origin:

1. An alternative source of bacteremia has not been found;
2. Microbiological findings are consistent with oral microflora;
3. There must be clinical or radiographic evidence of dental pathology [8].

Thalamic BBA is described in literature through sporadic cases, the following case reports articles having been found [9,10,11].

**CASE REPORT**

A 59 years old man was admitted to our department with right-side hemiparesis with several days of evolution. Previously healthy, with no history of oral cavity pathology. MRI revealed left thalamus mass pointing on infection etiology (Figure 1). He was selected for navigated puncture and drainage. During the surgery, about 20cc of yellow, dense, with strong unpleasant smell pus was drained. Laboratory analysis found FN. After 9 days of antibiotic treatment with vancomycin, CT scan (Figure 2A) and contrast enhanced CT scan (Figure 2B) were performed and showed abscess cavity expansion. Second navigated drainage was done with subsequent CT scan that confirmed abscess cavity collapse (Figure 2C). The patient completed 6 weeks of antibiotic therapy with good recovery of hemiparesis. We followed up the patient for 4 years, last MRI detects only small sequels of supported abscess.

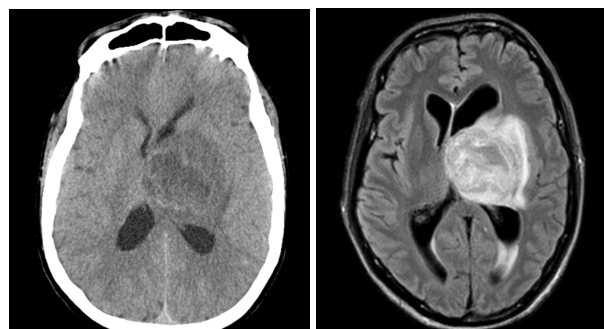


Figure 1. Initial CT scan and MRI pictures of the left side thalamic abscess

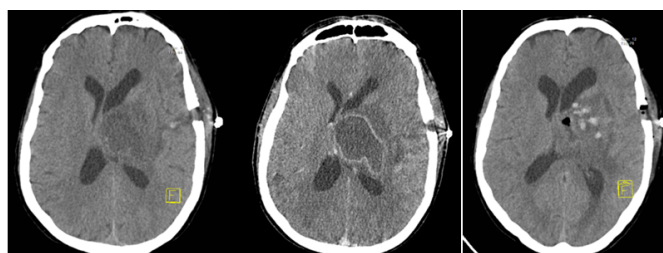


Figure 2. A. Postoperative CT scan, 9 days after first navigated drainage; B. contrast enhanced CT revealed abscess cavity expansion; C. CT scan after second navigated puncture and drainage of pus reveals the collapse of the abscess cavity

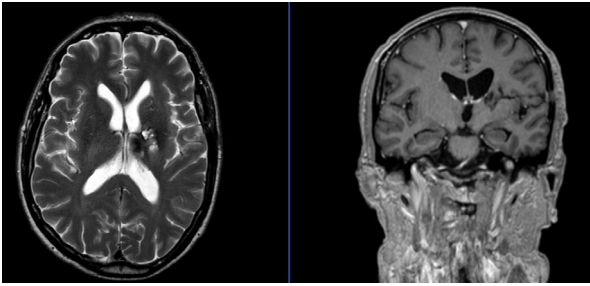


Figure 3. MRI revealing sequels of supported brain abscess

## Conclusion

An abscess localized in the thalamic regions of the brain is a diagnostic and therapeutic challenge even to the most experienced doctors. There is limited experience in this field because of the rarity of such cases and this is another reason for the medical challenge and difficult treatment of thalamic brain abscesses. Navigated or stereotactic drainage is an efficient option for the minimally invasive approach to deep-seated abscesses. Repeated evacuation is needed in order to provide the best possible treatment for the patient. Studies about BBA follow up state that under the appropriate antibacterial treatment, BBA volume decrease by 10%-15% per week, assessed by MRI, during the first 3 months [12]. This emphasizes the importance of MRI follow up as a sign of good medical practice.

**Transparency declaration:** All authors have stated that there are no conflicts of interest. No external funding was received for this work.

**Statement of Ethics:** The authors have no ethical conflicts to disclose.

## Abbreviations

BBA-bacterial brain abscess;  
FN-*Fusobacterium nucleatum*

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