

Frontal Abscess Caused by a Rare Pathogen: *Streptococcus constellatus*

Brahim El Jebbouri^{1*}, Brahim El Mostarchid¹, Miloudi Gazzaz¹

¹Department of Neurosurgery, Mohamed V Military Teaching Hospital, Rabat Morocco

DOI: [10.36348/sjpm.2022.v07i08.001](https://doi.org/10.36348/sjpm.2022.v07i08.001)

| Received: 30.05.2022 | Accepted: 05.07.2022 | Published: 03.08.2022

*Corresponding author: Brahim El Jebbouri

Department of Neurosurgery, Mohamed V Military Teaching Hospital, Rabat Morocco

Abstract

Streptococcus constellatus is a microorganism that lives commensally in the oropharyngeal region, urogenital region, and intestinal tract. However, it can cause infection in patients with certain predisposing factors. We present a rare case of a right-sided frontal abscess caused by *Streptococcus constellatus* in a 47-year-old male with well-controlled type 2 diabetes mellitus patient who was injured by shrapnel pieces in the head and who was malnourished. The patient was successfully treated by surgical evacuation and antibiotherapy. Very few cases of brain abscesses caused by *S. Constellatus* have been reported in the literature. Only four cases in an immunocompetent patient have been reported to date.

Keywords: Frontal abscess, malnourishment, *Streptococcus constellatus*, surgical evacuation.

Copyright © 2022 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Streptococcus constellatus is a member of the Streptococcus family and is part of the normal flora of the oral cavity, urogenital region, and intestinal tract. It can cause purulent infections in patients with cirrhosis, diabetes, malignancy, malnourishment, or conditions that cause immunosuppression [1]. Brain abscesses caused by *Streptococcus constellatus* are reported very rarely in the literature [2, 3]. We present a rare case of a right-sided frontal abscess that was caused by *Streptococcus constellatus* in a 47-year-old malnourished male patient who was wounded in the head by shrapnel. The patient was successfully treated with surgical evacuation and antibiotherapy.

PATIENT AND OBSERVATION

A 47-year-old male was brought to the hospital with a chief complaint of headache associated with vomiting, mild fever, and left-sided paresis. He had been found near a small river, lying on the ground in very bad condition. His history revealed that he had been wounded in the head by pieces of shrapnel during a military exercise in Moroccan Sahara. He had escaped from the military exercise and had not been sufficiently nourished for approximately a month. The patient had

well-controlled type 2 diabetes mellitus but no previous history of alcohol abuse, dental infection, or any other debilitating disease. Physical examination revealed a small scar from the healed wound in the left frontal area. Neurological examination showed that the patient was lethargic and had left sided hemiparesis. Bone windows on computed tomography (CT) revealed small shrapnel pieces in right frontal bone. Gadolinium enhanced magnetic resonance imaging (MRI) of the cranium showed a mass lesion measuring 25 x 20 x 28 mm right frontal region. There was marked ring enhancement, perilesional edema, and a 2 mm shift midline (Figure 1). A Surgical evacuation was performed of the lesion and 15 ml of yellowish-brown purulent material was aspirated. Culture of the pus showed the presence of *Streptococcus constellatus* (Figure 2). The *s. constellatus* was susceptible to meropenem and vancomycin, and appropriate antibiotherapy was started. By the end of the second postoperative week, all symptoms had resolved. Follow-up cranial CT scan after 10 weeks of the intravenous antibiotic regimen showed normalization of abnormal lesions and disappearance of the remaining brain abscess (Figure 3).

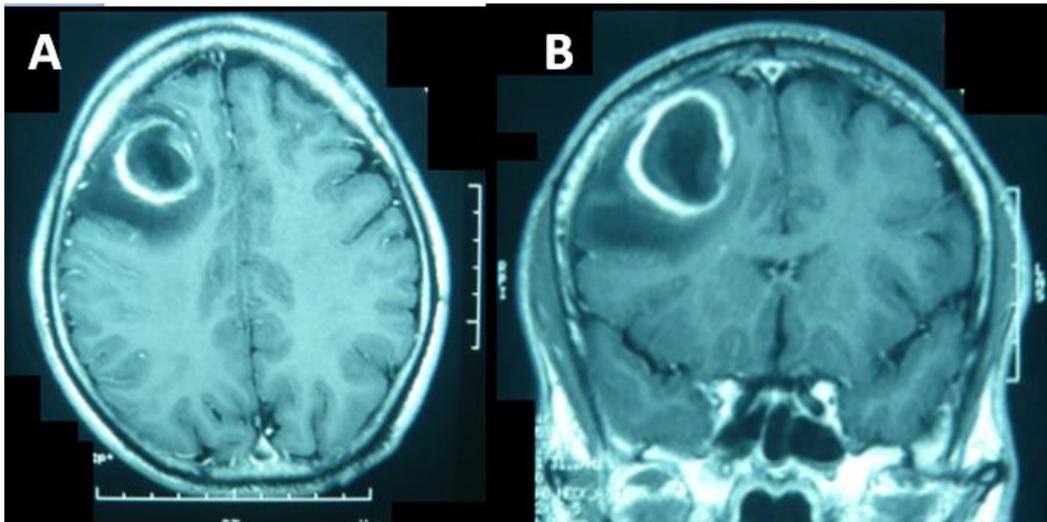


Figure 1 : T1-weighted axial (A) and coronal (B) MR image with contrast showing a frontal ring-enhancing lesion in the right side of the brain

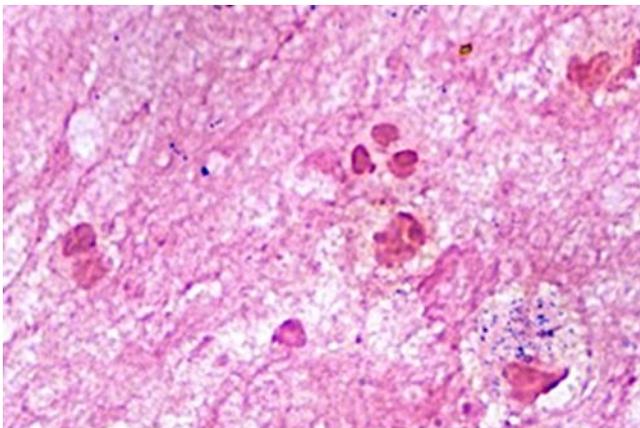


Figure 2 : Gram stain of brain abscess revealing Gram-positive cocci in pairs and chains.

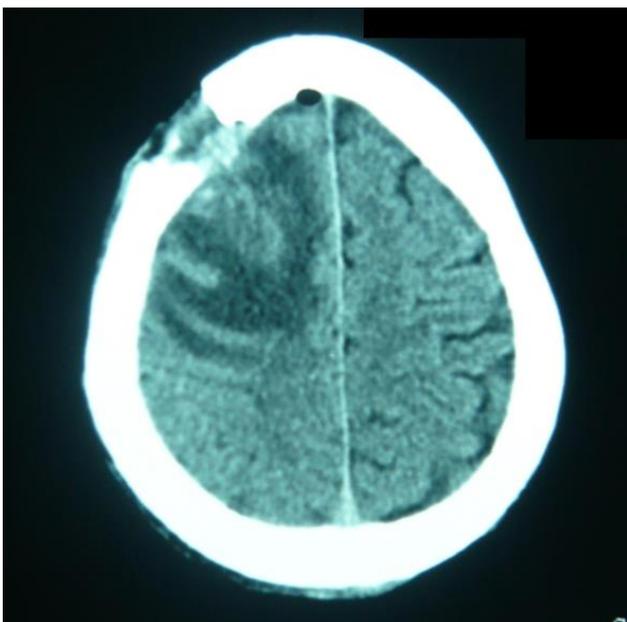


Figure 3 : Axial cranial CT scan showing the evacuation of the abscess

DISCUSSION

Frontal localization of brain abscesses caused by *Streptococcus constellatus* is uncommon [4]. In most cases, underlying sources of infection are found, such as congenital heart disease, intrathoracic and abdominal infection-based sepsis, dental caries, otitis media, or sinusitis [5]. However, in some cases no source of sepsis or any predisposing factors are found. However, the incidence of culture negative cases accounts for 21 percent of reported frontal abscesses [6]. *Streptococcus constellatus* is a member of the normal flora of the mouth, gastrointestinal tract, and genitourinary tract and is often associated with purulent infections. Brain abscess caused by *Streptococcus constellatus* is very rare [2, 3, 6, 7]. In all reported cases of *Streptococcus constellatus* abscess, there was either underlying pathology or a history of immunosuppression [2, 3, 6, 7]. Our case is the fourth reported case in the literature of a single frontal abscess caused by *Streptococcus constellatus*. In our case, there is a history of shrapnel wound in the same side of the head as the frontal abscess. However, we are not sure about the relationship between the shrapnel wound and the frontal abscess on the same side of the head because the shrapnel pieces were located subcutaneously over the frontal bone and did not enter either the bone or the brain parenchyma. The best surgical management of frontal abscesses remains controversial. One of the important goals of frontal abscess surgery is to prevent intra ventricular rupture of the abscess in the operation. Treatment options include stereotactic aspiration, freehand aspiration through a burr hole, stereoscopic aspiration, ultrasound-guided aspiration, surgical trans ventricular approach, and medical management [5, 7, 8]. Stereotactic aspiration remains the preferred treatment as it drains the contents of the abscess, reduces mass effect, carries less risk of intra ventricular rupture preoperatively, and confirms diagnosis. In our case, the abscess was drained

surgically by frontal direct craniotomy. After confirmation of the exact cause, appropriate antibiotic therapy healed the patient with no radiological or neurological sequelae.

CONCLUSION

Frontal abscesses are much rarer than abscesses in other locations of the brain. In the literature, there is very few brain abscess caused by *Streptococcus constellatus*. It may be taken into consideration and is critical that physicians include this condition in differential diagnosis.

COMPETING INTERESTS

The authors declare no competing interests.

REFERENCES

- Salavert, M., Gomez, L., Rodriguez-Carballeira, M., Xercavins, M., Freixas, N., & Garau, J. (1996). Seven-year review of bacteremia caused by *Streptococcus milleri* and other viridans streptococci. *European Journal of Clinical Microbiology and Infectious Diseases*, 15(5), 365-371.
- Chheda, L. V., Sobol, W. M., Buerk, B. M., & Kurz, P. A. (2011). Endogenous endophthalmitis with brain abscesses caused by *Streptococcus constellatus*. *Archives of Ophthalmology*, 129(4), 512-526.
- da Silva, R. M., Caugant, D. A., Josefsen, R., Tronstad, L., & Olsen, I. (2004). Characterization of *Streptococcus constellatus* strains recovered from a brain abscess and periodontal pockets in an immunocompromised patient. *Journal of periodontology*, 75(12), 1720-1723.
- Callovinci, G. M., Bolognini, A., Gammone, V., & Petrella, G. (2009). First-line stereotactic treatment of thalamic abscesses: report of three cases and review of the literature. *Central European Neurosurgery-Zentralblatt für Neurochirurgie*, 70(03), 143-148.
- Lutz, T. W., Landolt, H., Wasner, M., & Gratzl, O. (1994). Diagnosis and management of abscesses in the basal ganglia and thalamus: a survey. *Acta neurochirurgica*, 127(1), 91-98.
- Göbels, K., Teichmann, D., Grobusch, M., Halle, E., & Suttrop, N. (2002). A case of multiple brain abscesses due to *Streptococcus constellatus*. *European Journal of Clinical Microbiology and Infectious Diseases*, 21(2), 156-157.
- Bouziri, A., Khaldi, A., Smaoui, H., Menif, K., & Jaballah, N. B. (2011). Fatal subdural empyema caused by *Streptococcus constellatus* and *Actinomyces viscosus* in a child—case report. *Journal of Microbiology, Immunology and Infection*, 44(5), 394-396.