Rupture of a parietal brain abscess

Kaissar Farah, Kevin Beccaria, Nacer Zakaria Mansouri, Thomas Graillon, Henry Dufour, Stéphane Fuentes

ABSTRACT

Introduction: Ipsilateral hydrocephalus is an unusual complication of brain abscess. It is caused by the rupture of the abscess in the ventricle or thrombosis of the plexus choroid.

Case Report: We report here the case of a 65-year-old male treated from a complicated acute unilateral hydrocephalus secondary to the formation of inflammatory veils and septa. The hydrocephalus was successfully managed by endoscopic technique under neuronavigation.

Conclusion: The strategy adopted in our case is safe, effective, simple and lead to little to no complications. After a review of literature, we discuss the pathological and management aspects of this rare entity.
Rupture of a parietal brain abscess

Kaissar Farah, Kevin Beccaria, Nacer Zakaria Mansouri, Thomas Graillon, Henry Dufour, Stéphane Fuentes

ABSTRACT

Introduction: Ipsilateral hydrocephalus is an unusual complication of brain abscess. It is caused by the rupture of the abscess in the ventricle or thrombosis of the plexus choroid.

Case Report: We report here the case of a 65-year-old male treated from a complicated acute unilateral hydrocephalus secondary to the formation of inflammatory veils and septa. The hydrocephalus was successfully managed by endoscopic technique under neuronavigation.

Conclusion: The strategy adopted in our case is safe, effective, simple and lead to little to no complications. After a review of literature, we discuss the pathological and management aspects of this rare entity.

Keywords: Brain abscess, Hydrocephalus, Temporal Horn entrapment, Ventricle

How to cite this article


INTRODUCTION

Brain abscess is a serious, life-threatening condition. Despite the prompt use of modern antibiotics in its management, it still represents a potential cause of mortality (5–23%) in literature [1–5]. Presentation symptoms are non specific, and many are due to edema surrounding the lesion. Most are due to increased intracranial pressure (headache, nausea/vomiting, lethargy). Hemiparesis and seizures develop in 30–50% of cases. Symptoms tend to progress more rapidly than neoplasms.

The most feared complications of cerebral abscess are herniation secondary to mass effect, intraventricular rupture of brain abscess, hemorrhage into the abscess or hemispheric infarction due to internal carotid artery thrombosis [6].

Unilateral acute hydrocephalus also represents an exceptional complication of cerebral abscess' complications. Few cases about this specific complication are reported in literature [7].

We describe the case of a patient treated from a complicated acute unilateral hydrocephalus secondary to cerebral abscess, successfully managed by endoscopic technique.

CASE REPORT

A 65-year-old male was initially admitted in the department for management of left hemiparesis and headaches, and was found to have a right parietal lesion. The rapid onsets of the symptoms during the week preceding the admission lead us to suspect a brain abscess. At admission, the patient presented with normal consciousness, left hemiplegia and left hemianopia, little concordant with initial brain MRI scan. Neither diffusion nor ADC sequences specific to intracranial infection was...
performed on the first MRI scan. Our initial hypothesis was high grade glioma.

Unfortunately, neurological deterioration with disturbance of consciousness was observed within few hours. We decided then to perform a new MRI scan with diffusion and ADC sequences, which found a typical image of a right parietal brain abscess ruptured into the lateral right ventricle (Figure 1). Cerebral abscess brain drainage was urgently decided and performed. 25 cm³ of foul-smelling pus was aspirated with a trocar. Partial excision of the brain abscess capsule was made. Multiple bacteriological samples were sent to the laboratory.

Empirical antibiotic therapy by cefotaxim and metronidazole was initially prescribed and maintained for a total of six weeks after verification of bacterial samples. Microbiological tests found oral cavity flora: *Streptococcus intermedius* and *Parvimonas micra*. A cardiac transthoracic ultrasound was performed, eliminating infective endocarditis. Under antibiotic therapy, and introduction of corticosteroids two days after the initial surgery, we noticed improvement in general state, with absence of hyperthermia within 4 days. Through his hospitalization, the patient remarked improvement of his left hemiplegia, with reduced strength left hand motricity and beginning of motor recuperation of superior and inferior limbs. The muscle strength was rated 4/5. Biological inflammatory syndrome was normalized within 10 days; the C-reactive protein was 3 mg/L. A specialized dental examination and dental panoramic tomography revealed bad orodental state with six teeth to extract. The patient was then transferred to the neurological department for further treatment.

Eleven weeks after the first surgery, the patient was re-admitted in our department for acute left hemiplegia. The CT scan and MRI scan found a right unilateral hydrocephalus with ipsilateral temporal horn entrapment secondary to secular partition of brain cerebral abscesses (Figure 2). Initial clinical examination reported confusion with left hemiplegia and left homonymous hemianopia.

**Operative Technique**

The obstructive character of the hydrocephalus lead us to manage it by an endoscopic fenestration under neuronavigation. We used a rigid endoscope. The working channel permits introduction of instruments for irrigation, coagulation, and biopsy.

The operation was carried out with the patient in a semi-sitting position under general anesthesia. A left frontal burr-hole was made contralateral to the enlarged temporal horn and the endoscope with its stylet was introduced into the normal left frontal horn. The stylet was then removed and the optical system was inserted to visualize the ventricle. By gently moving the endoscope under neuronavigation control, a window was created in the septum pellucidum (Figure 3). The endoscope was passed through the communication and the contralateral enlarged temporal horn was explored; the cannulation of the compressed right temporal horn was performed successfully through the right atrium. No bleeding was observed. Then the endoscope was withdrawn from the fenestration, allowing immediate backflow of cerebrospinal fluid (CSF) (Figure 4).

Clinical regression of the left hemiplegia with quasi-total motor recuperation was observed within few hours. The 24 hour control CT scan found a collapsed right temporal horn.

The patient was retransferred to the reeducation center for further cares.

At one month, systematic cerebral CT scan found significant decrease of the enlargement of the right temporal horn (Figure 5).

Six months after the second operation, total motor recuperation was observed. The patient was able to walk with a cane. The initial left hemianopia recovered.

**DISCUSSION**

Ipsilateral hydrocephalus is an unusual complication of brain abscess [6].

The two main explanations are: plexus choroid thrombosis [8] or the formation of inflammatory septa [9].

The entity that we describe here was previously defined
by Cairns [10]. It consists of obstruction of the atrium of one lateral ventricle so that the trapped or isolated temporal horn containing choroid plexus expands into a cyst. This gives rise to the symptoms of raised intracranial pressure as well as appropriate features of focal cerebral dysfunction such as homonymous hemianopia and contralateral hemiparesis.

When the infection involves the ventricles, the patient may develop a number of thin veils or septa within the ventricles separating them into a number of compartments. These septa may progress after the infection has been overcome. They consist of thin translucent veils of tissue which are most often situated in the lateral ventricles just behind the foramen of Monro, though there may be multiple septa throughout the ventricular system. Their pathogenesis is uncertain but it has been suggested that they arise from tufts of glial tissue which grow out from areas of the ventricular wall which have been denuded of ependyma by the preceding ventriculitis. This so-called compartmentalized or multiloculated hydrocephalus is difficult to treat [11].

The two primary treatments of monoventricular hydrocephalus are CSF shunts or a neuroendoscopic approach [12].

Neuroendoscopy is a very useful and less invasive technique for treating many types of hydrocephalus, including isolated dilatation of one lateral ventricle or horn [13].

Due to the infectious environment, CSF shunts seem less appropriate, knowing that many complications might be encountered [14–17].
CONCLUSION

Monoventricular hydrocephalus secondary to brain abscess are exceptional in literature. They are the consequence of either choroid plexus thrombosis or formation of inflammatory septa. Neuroendoscopic management is considered the “Gold Standard” in the treatment of obstructive hydrocephalus. The strategy adopted in our case is safe, effective, simple and lead to little to no complications.

**********

Author Contributions

Kaissar Farah – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Kevin Beccaria – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Nacer Zakaria Mansouri – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Thomas Graillon – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Stéphane Fuentes – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

Copyright

© 2015 Kaissar Farah et al. This article is distributed under the terms of Creative Commons Attribution License which allowed unrestricted use, distribution and reproduction in any medium provided the original author(s) and original publisher are properly credited. Please see the copyright policy on the journal website for more information.

REFERENCES

Edorium Journals: An introduction

Edorium Journals Team

About Edorium Journals
Edorium Journals is a publisher of high-quality, open access, international scholarly journals covering subjects in basic sciences and clinical specialties and subspecialties.

Vision of being the best
We have the vision of making our journals the best and the most authoritative journals in their respective specialties. We are working towards this goal every day of every week of every month of every year.

Exceptional services
We care for you, your work and your time. Our efficient, personalized and courteous services are a testimony to this.

Editorial Review
All manuscripts submitted to Edorium Journals undergo pre-processing review, first editorial review, peer review, second editorial review and finally third editorial review.

Peer Review
All manuscripts submitted to Edorium Journals undergo anonymous, double-blind, external peer review.

Early View version
Early View version of your manuscript will be published in the journal within 72 hours of final acceptance.

Manuscript status
From submission to publication of your article you will get regular updates (minimum six times) about status of your manuscripts directly in your email.

Our Commitment

Six weeks
You will get first decision on your manuscript within six weeks (42 days) of submission. If we fail to honor this by even one day, we will publish your manuscript free of charge.

Four weeks
After we receive page proofs, your manuscript will be published in the journal within four weeks (31 days). If we fail to honor this by even one day, we will publish your manuscript free of charge and refund you the full article publication charges you paid for your manuscript.

Most Favored Author program
Join this program and publish any number of articles free of charge for one to five years.

Favored Author program
One email is all it takes to become our favored author. You will not only get fee waivers but also get information and insights about scholarly publishing.

Institutional Membership program
Join our Institutional Memberships program and help scholars from your institute make their research accessible to all and save thousands of dollars in fees make their research accessible to all.

Our presence
We have some of the best designed publication formats. Our websites are very user friendly and enable you to do your work very easily with no hassle.

Something more...
We request you to have a look at our website to know more about us and our services.

We welcome you to interact with us, share with us, join us and of course publish with us.

CONNECT WITH US

Edorium Journals: On Web
Browse Journals

This page is not a part of the published article. This page is an introduction to Edorium Journals and the publication services.