Redundant ventriculomegaly associated with brain abscess

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Summary

Objective: The aim of this clinical retrospective review was to emphasize the recently observed high incidence of ventriculomegaly, a well-known complication of brain abscesses.

Materials and methods: Among twelve brain abscess cases operated on in our institution during five years, the most common surgical procedure was burr-hole aspiration applied in ten of the cases, while in the remaining two a standard craniotomy and total excision was performed. Ventriculomegaly was assessed by the "Evans' Ratio" values calculated using the frontal ventricular horn measurements made on axial tomographic images.

Results: The signs, symptoms, radiological findings and clinical features of the patients were in accordance to the pertinent literature. The only finding worth commenting on was the surprisingly high incidence of ventriculomegaly (5/12) and periventricular edema (4/12). Concerning the outcome, there was only one death.

Conclusions: The "Evans' Ratio" either worsened or remained the same in four out of five cases during the early postoperative period (ranging from one to three months) and it got better in one case in the late postoperative control (1.5 years). Furthermore, periventricular edema persisted just in the same manner in three of the four cases.


Introduction

Although brain abscess had a high mortality rate, improvements in radiologic imaging facilities, bacteriological techniques and antibiotics have resulted in a mortality of about 5%16,17,30. Our aim was to emphasize the recently observed increase in the incidence of ventriculomegaly associated with brain abscess among the patients operated on in our hospital during five years. The causes and management of this well-known complication of brain abscesses was also discussed.

Clinical materials and methods

This study describes 12 cases of brain abscess comprising 5% of all intracranial space-occupying lesions operated on in our hospital from February 1991 to February 1996. The ages ranged from two to 67 year, mean age being 26. Clinical, radiological and laboratory data were retrospectively collected from case notes. Ventriculomegaly was assessed by the "Evans' Ratio" values calculated by using the frontal ventricular horn measurements on tomographic images12. The follow up period of the patients varied between 6 months to 6 years.

Clinical results

Symptoms of the patients were prominent progressive headache, focal neurological deficits, epilepsy, papilledema and systemic infection findings (in decreasing order). These symptoms were often present for less than one week in 42% of the patients and less than two weeks in 83%. Primary source of infection remained obscure in 58% of the patients. Due to the late referral pattern of our patients, all tomographic investigations were conclusive of either the late cerebritis or encapsulation phase. Ventriculomegaly was found in 42% of the cases, periventricular edema in 33%, multiple abscess in 17%, cerebellar abscess in 17% and hemorrhagic abscess only in one case.

The most common surgical procedure was burr-hole aspiration, applied in 83% of the cases, while in the remaining 17% a standard craniotomy and total excision was performed. Recurrent cases have undergone either new burr hole aspiration (50%) or total excision (50%). The pathogen agent could be identified only in 17% of the cases.
Concerning the outcome, there was 8% mortality (one case). On postoperative follow-up radiological studies, a porencephalic cyst was demonstrated in the abscess residual cavity in 33% of the patients and increased ventricular...
size in 33% with radiological signs of active hydrocephalus in only three cases (25%).

Half of the ventriculomegalgy cases were considered to be severe, and half moderate. The preoperative radiological findings either worsened or remained the same in four out of five cases (80%) during the early postoperative period (ranging from one to three months), and improved in one case (20%) in the late postoperative period (1.5 years). Periventricular edema remained the same in three out of four cases (75%). However, since these cases were clinically symptom-free, no specific intervention was performed. In a 15 months-old boy who was considered to have an active and severe hydrocephalus at the first month CT-scan evaluation -the only case in our series- the hydrocephalus resolved after two lumbar punctures, without shunting.

Discussion

While all the above-mentioned signs, symptoms, radiological findings and clinical features were in accordance to the pertinent literature23 5-4,11,15,17,18,25,26,29,31, the only finding worth commenting on was the surprisingly high incidence of ventriculomegaly (42%) and periventricular edema (33%). Ventriculomegaly is reported as a permanent and common (47%)25,27,28 complication of either meningitis -in 11% to 41% of the cases-10,14,23 or brain abscess in childhood. This finding was probably due to the potential arachnoidal or intraventricular extension of the infection, that might have blocked the free circulation of cerebrospinal fluid. However, although the infection had been successfully managed, the associated ventriculomegaly was left back as a redundant finding. Since the patients did not harbor clinical symptoms and signs of chronic hydrocephalus and did not have severe neuropsychological deficits in the long term follow-up, this ventriculomegaly was not considered to be the classical arrested or compensated hydrocephalus. We did not perform hydrodynamic studies or continuous intracranial pressure monitoring, but based the decision not to shunt our patients only on clinical situation of the patient since we thought that the observed redundant ventriculomegaly was only a radiological finding without any clinical significance.

Conclusion

Although our high figures can not be extrapolated to the overall population of patients harboring brain abscesses due to the relatively small number of cases in this series, ventriculomegaly is a permanent and well-known complication of brain abscess. Although ventriculomegaly has a poor prognosis when in the form of pyocephalus in patients under two years of age24,29, in adulthood it is a rare (7%) complication of brain abscess5 reported only in occasional cases4,9,13. We propose that most of these patients can be managed without shunting, the decision based on clinical symptoms.

References


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