RADICAL SURGERY AND PENICILLIN IN BRAIN ABSCESS

A METHOD OF TREATMENT IN ONE STAGE WITH SPECIAL REFERENCE TO THE CURE OF THREE THORACOCENIC CASES

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In most instances the bacteria responsible for brain abscesses are sensitive to penicillin. For this reason a considerable improvement in the prognosis of these lesions is to be assumed. In this, our experience undoubtedly agrees with that of the majority of neurosurgeons. There is, however, a tendency toward the belief that the use of penicillin may either simplify the surgical treatment of brain abscesses or actually do away with such treatment. On the contrary, we believe that, thanks to penicillin, more radical operations can be undertaken successfully for abscesses which otherwise could not have been cured. The method that we advocate, and that we have used in the treatment of every brain abscess encountered during the past fifteen months, may be summed up thus: Complete extirpation of the abscess, no matter what its form, whether acute or chronic, single or multiple, even though this may mean opening up a communication between the abscess and the ventricle.

We have operated upon 17 brain abscesses in this way. In the first 3 cases, when penicillin was not available and when complete extirpation could not be carried out, the patients did not survive. In the following 14 cases (13 with penicillin and 1 without) the patients were all completely and rapidly cured. It should be added that 10 of these 14 cases showed a serious form of abscess, including 3 which were metastatic from the lungs.

We came to adopt the complete extirpation in one stage by utilizing in general the method described by Clovis Vincent, with the addition of penicillin. Vincent's method of dealing with both acute and chronic abscesses may be summarized as follows:

1. Acute abscesses. In order to lower the threatening increased intracranial pressure, the abscess is first tapped. A bone flap is then turned down in front of the abscess without opening the dura. This usually suffices to lower pressure sufficiently so that further procedures may be postponed until the abscess has formed a capsule.

2. Chronic abscesses. This means, as a rule, well encapsulated abscesses. They should be extirpated "en masse," without opening the capsule and without drainage.

While the complete extirpation method proved to be a great improvement in many instances, it was still inadequate in dealing with certain types of abscess, as Vincent pointed out himself. These types were:
1. Acute abscesses in which inflammatory brain oedema and temporal herniation below the tentorium are such that a large decompressive flap is not enough to prevent death from intracranial pressure and disturbance of the brain stem.

2. Acute abscess so near the meninges that a decompression would be likely to cause rupture of the abscess into the subarachnoid space.

3. Chronic abscess too large or too deep to be taken out "en masse" without great risk of damage to the basal ganglia and brain stem.

4. Chronic abscess without well defined capsule. Extirpation "en masse" for this type of abscess would almost certainly involve opening the abscess and often contamination of the ventricle with serious risk of meningitis.

With the advent of penicillin a reduction in the incidence of postoperative meningitis was to be expected. This led us to adopt in all cases of brain abscess, irrespective of type, a much more radical procedure than before. Since the aim was to cure the abscess by a one-stage operation it was felt that the procedure should be complete extirpation even if this involved opening both the abscess and the ventricle. In acute abscesses the chief point is to reduce the temporal herniation. For this purpose, tapping the abscess is usually wholly inadequate. We therefore turn a flap, open the dura and remove not only the abscessed zone but also a large area of contiguous inflammatory and oedematous white matter. This is similar to the operation for an infiltrating glioma. In chronic abscess the important thing is to take out all the capsule walls, however thick or thin they may be, as well as all the abscesses which may be multiple, and in addition, all the fibrous formations so frequently found in the vicinity of abscesses, as these are often the origin of recurrences. Complete extirpation of a large abscess without endangering the brain stem can only be accomplished after deliberately opening the abscess or even taking it out in fragments in a manner similar to that used when dealing with a large basilar meningioma.

In short, we feel more and more that with the use of penicillin, brain abscesses should be dealt with like brain tumors. On the other hand, if fairly simple abscesses are met with, simpler surgery might be sufficient, such as tapping in the case of a mild acute early abscess. As a neurosurgeon I see very few of these.

Let me now give, as examples, the reports of three cases of thoracogenic brain abscesses. One case was acute and the other two were chronic. After these case reports, further details as to how we deal with various forms of brain abscesses will be given.

CASE REPORTS

Case 1. Acute thoracogenic brain abscess.