Acute cerebral edema represents a serious problem, and, although urea (0.5 gm. per kg. i.v. in 12 hours) or Mannitol (2.0 gm. per kg. i.v. in 30 min.) has been advocated for its control, these are not as effective in inflammatory central nervous system disease as they are in cases of acute trauma to the brain. If either of these agents is used, and they may be tried if indicated, electrolytes and blood urea nitrogen should be followed carefully.

Persistent fever is usually due to subdural effusion, the formation and persistence of a brain abscess, lateral sinus thrombosis, sinusitis or mastoiditis, a urinary tract infection, phlebitis with superinfection, pneumonitis, or drug fever. The last of these is, in our experience, the most deceptive and the most frequently overlooked of these several possibilities.

SURGICAL CONSIDERATIONS

If the physician is alert for their symptoms and signs, the common surgical problems associated with central nervous system infections are relatively easily recognized. Approximately 10 per cent of infants have associated symptomatic subdural effusions. Although removal of subdural fluid may not be essential for recovery, we prefer to remove any such accumulation with daily subdural taps and will remove a maximum volume of 15cc. from each side of the fontanel daily. Fluid should be permitted to drip freely; if it reaccumulates without obvious diminution after 2 weeks, surgical intervention is indicated and should be performed approximately 3 weeks after recognition of the effusion. Surgery is required in about 2 per cent of patients. Antimicrobial therapy should be continued until after surgical correction of the lesion, inasmuch as infection may be reactivated when the surgeon enters the walled off subdural cavity.

If brain abscess is suspected, cerebral angiograms are indicated, provided that the patient's condition permits. Occasionally, the echoencephalogram is helpful in lateralizing the lesion. Surgical treatment should be delayed, if possible, until the disease has reached the subacute stage and the abscess has been well localized. Abscess with meningitis secondary to acute mastoiditis should be managed in a similar fashion, and occasionally is associated with lateral sinus thrombosis.

Repeated episodes of meningitis, usually of pneumococcal etiology, suggest a prior skill fracture with spinal fluid leakage. Surgical correction is possible in many cases, but the sinus tract should be identified before correction is attempted.

REHABILITATION

An extremely important, although frequently overlooked, requirement for total therapy for a patient with acute bacterial central nervous system disease lies in planning proper rehabilitation measures during and after convalescence from the acute infection. It is important to note that motor impairment is seen in nearly 20 per cent of patients surviving the acute illness, and intellectual or hearing impairments or both are seen with approximately the same frequency. Also, it is important to remember that these defects occur with much greater frequency among infants than they do in the older child or adult. Fully 50 per cent of neonates recovering from bacterial meningitis may be expected to exhibit either motor or intellectual impairment (1, 8, 10, 11). Even though many of these defects are not severe, or may not even be recognized in the hospital prior to discharge, it is apparent that the patient must be evaluated carefully during convalescence and must have repeated evaluations during the succeeding months or years. This is particularly important in the young infant inasmuch as intellectual impairment may not be apparent or recognized until school entry unless special evaluations are performed. Proper counselling and attention to defects, when they are recognized, will do much to diminish the impact of these defects upon the developing individual and his family.

CONCLUSIONS

Recognition and management of acute bacterial meningitis remain important problems. Prompt administration of an appropriate and specific antimicrobial agent, with attention to supportive measures and potential complications, can substantially reduce mortality and morbidity. Careful evaluation of the patient during convalescence is of utmost important if optimal rehabilitation is to be achieved.