interpreted as the two leaves of the dura enclosing the hematoma.

JOHN L. FOX, M.D.
Zurich, Switzerland

Adhesive Arachnoiditis

To THE EDITOR: I agree thoroughly with the letter from Dr. Michael Scott (Neurosurg 39:274-275, August, 1973), concerning the paradoxical relationship of adhesive arachnoiditis to pain. I have personally seen a number of patients with marked bilateral adhesive arachnoiditis with pain on only one side; in some of these the adhesive arachnoiditis was actually more severe on the painless side. As Dr. Scott intimates, there must be other factors.

EBEN ALEXANDER, JR., M.D.
Winston-Salem, North Carolina

Lumbar Puncture with Brain Abscess

To THE EDITOR: We were distressed to read in the recent review of brain abscess by Morgan, et al. (Morgan H, Wood MW, Murphey F: Experience with 88 consecutive cases of brain abscess. J Neurosurg 38: 698-704, June, 1973) that "lumbar puncture is a definite threat to the patient with a brain abscess." Neither the present paper nor the several cited in support prove that such a blanket indictment of lumbar puncture in all cases of brain abscess is warranted.

In any group of critically ill patients with an overall mortality rate of 36%, it is likely that any procedure, however innocuous, could be interpreted as contributing to a patient's deterioration if performed in the face of a steadily worsening clinical picture. Hence, to state that "seven patients deteriorated within 24 hours following the procedure and six of these died" is meaningless without giving further details of the patients' prior condition and comparing this group to other patients who died without lumbar puncture. It would be just as fallacious to suggest from the data presented (see "mortality," p. 699) that brain surgery has become more hazardous because the operative mortality was higher (57.1%) in the past 10 years than earlier (18.9%).

Continuing along this same line of spacious reasoning, one could argue that the lumbar puncture group did quite well in that only six of 44 patients (approximately 14%) died after spinal tap as opposed to 57.1% who died following surgery! With the information presented, one obviously can make an argument against neither surgery nor lumbar puncture. Further, in their study, a significant number of patients, in fact, presented without focal findings and a clinical picture compatible with a severe meningoencephalitis. To delay lumbar puncture in these patients, or even interdict it completely, is potentially hazardous.

We would like to emphasize that even signs of increased intracranial pressure such as "spread sutures," sixth nerve palsies, and papilledema do not in themselves necessarily constitute a contraindication to spinal puncture, as these findings are common, particularly in children, with diffuse central nervous system infections, toxic encephalopathies, or meningeal leukemia. We believe that each situation must be judged on its own merits and that to proscribe lumbar puncture in all cases of central nervous system infection in which the possibility of brain abscess exists represents as much, if not more, of a potential risk to the critically ill patient as advocating its routine use.

TIMOTHY A. PEDLEY, M.D.
LESLIE J. DORFMAN, M.D.
DAVID A. PRINCE, M.D.
Stanford, California

RESPONSE: In our minds there is no doubt that lumbar puncture poses a risk in any patient with an expanding intracranial mass lesion (such as a brain abscess) and usually contributes to the deaths that occur in these patients within 24 hours after this procedure. In our series of cases of brain abscess, lumbar puncture was only implicated in the death of patients who showed rapid deterioration and died within 24 hours of that procedure. A total of 15 of 44 eventually died (rather than six as stated in the letter of Drs. Pedley, et al.). The findings in our series and others, that lumbar spinal fluid studies in patients with brain abscesses may vary from completely normal to very abnormal, make us question how useful lumbar puncture is as a diagnostic procedure in these cases. We agree with the statement
of Carey, et al., that in brain abscess cases a "lumbar puncture as a diagnostic tool was inaccurate and occasionally fatal" (Carey ME, Chou SN, French LA: Experience with brain abscesses. J Neurosurg 36:1-9, January, 1972).

Certainly, "each situation must be judged on its own merits," but in the case of central nervous system infections in which the possibility of a brain abscess exists, a suitable contrast study and a brain scan should be done prior to considering a lumbar puncture. If an expanding lesion is demonstrated by either or both of these studies, then lumbar puncture is probably not indicated. Furthermore, to do a lumbar puncture "with signs of increased intracranial pressure such as 'spread sutures,' sixth nerve palsies, and papilledema" may or may not be safe in "diffuse central nervous system infections, toxic encephalopathies, or meningeal leukemia;" lumbar puncture in an individual with similar findings due to mass lesion in the brain may be disastrous.

We have reviewed the bibliographies of Drs. Pedley, Dorfman, and Prince and have found no published reports of their experience with brain abscess. It would be interesting to know from what clinical material these authors drew their conclusion regarding the relative safety of doing a lumbar puncture in a patient with a brain abscess.

Howard Morgan, M.D.
Matthew W. Wood, M.D.
Francis Murphey, M.D.
Memphis, Tennessee