Letters to the Editor

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Should Lumbar Puncture Be Part of the Routine Evaluation of Patients with Cerebral Ischemia?

To the Editor:

I read with interest the recommendations of the Cerebral Embolism Study Group on the treatment of stroke due to cardiac emboli (Stroke 15: 779–789, 1984). The authors state that they do not routinely recommend cerebrospinal examination prior to anticoagulation. I disagree. Failure to perform routine lumbar puncture in patients with stroke due to suspected cardiac emboli can result in a missed opportunity to make an early diagnosis of septic embolism from bacterial endocarditis. Stroke is a presenting symptom of bacterial endocarditis in 10–20% of cases.1,2,3 Fever and other peripheral manifestations of septic embolism, although common, are not invariably present.1,2,4 Lumbar puncture performed in patients with cerebral emboli due to bacterial endocarditis is abnormal in three-quarters of cases with pleocytosis present in almost half.2,2 In contrast, cerebrospinal fluid pleocytosis after non-septic embolic infarcts is rare.4 Lumbar puncture is a safe procedure easily performed at the bedside. It provides valuable information and should be part of the routine evaluation of patients with suspected ischemia or infarction.

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References

Dr. Hart submitted the following response to Dr. William Powers:

To the Editor:

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In suspected embolic stroke patients who are deemed anticoagulation candidates, high-quality CT is probably a better test than CSF examination for detection of hemorrhagic infarct. Ruff and Dougherty reported 5% of patients with hemorrhagic infarct on CT with normal CSF.1 Further, a few red blood cells (RBCs) are often present in the CSF of non-hemorrhagic infarcts due to “traumatic taps.” In an autopsy series, Lee et al. reported that 26% (7/27) of hemorrhagic infarcts had more than 50 RBCs/mm³, but that 17% (3/18) of non-hemorrhagic infarcts also had more than 50 RBCs/mm³.2 Thus, the positive predictive value (true positive rate) of more than 50 RBCs/mm³ for hemorrhagic infarct assuming that one in ten of all infarcts are hemorrhagic is only 15%. Higher RBC counts (more than 500/mm³) appear to have greater specificity for hemorrhagic infarct, but the timing of appearance of RBCs in the CSF and comparison with CT has not been studied. If high-quality CT is not available or motion artifact precludes adequate study, we support CSF examination for detection of hemorrhagic infarct in patients with suspected embolic stroke.

CSF pleocytosis regularly occurs in septic brain embolism due to infective endocarditis, but the time relationship of its appearance (>3 hours, >7 days) to embolic event has not, to our knowledge, been studied. Further, 14% of aseptic cerebral infarcts will have between 10 and 100 white cells/cu mm, and the positive predictive value of this degree of pleocytosis for septic embolism would be exceedingly low.3 Brain embolism may certainly be a presenting symptom of infective endocarditis, but it is almost always associated with other evidence of endocarditis at presentation.4 The patient with infective endocarditis who presents with septic brain embolism with no premonitory symptoms, no fever, no cardiac murmur, and no leukocytosis must be rare indeed. Considering that 1% or less of all cerebral hemorrhages is related to infective endocarditis, and the great majority of this one-percent will have other clinical clues, it appears that routine lumbar puncture in all cerebral ischemia patients should not be justified. In selected patients (e.g., those under age 40, known drug abusers, those with prosthetic valves) strong consideration of infective endocarditis should be entertained and the CSF examined.

Most neurologists would agree that “lumbar puncture is a safe procedure.” However, anticoagulation following lumbar puncture has resulted in complications, deemed major in 6% of these series.1 Spinal hematomata with paraparesis occurs in 0.6–1.5% of anticoagulated patients following lumbar puncture.1,3 Although these complications may be minimized by delaying anticoagulation for several hours after lumbar puncture,1 fatal spinal hematoma has been reported following atraumatic lumbar puncture and a four-hour delay in initiating anticoagulation.6

In summary, routine lumbar puncture does not appear to be indicated in unselected patients with brain ischemia. A few RBCs are more likely to be due to traumatic taps than hemorrhagic infarct, and preliminary data suggest that CT is more sensitive in detecting hemorrhagic infarct. Anticoagulation immediately following lumbar puncture carries a small, but definite, risk of major complications. These issues are not settled; prospective studies would be welcomed by clinicians.

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on behalf of the Cerebral Embolism Study Group

References

Ataxic-Hemiparesis

To the Editor:

Huang and Lui discussed clinical differences between their patients with ataxic-hemiparesis with CT confirmed lacunar infarcts in the posterior limb of the internal capsule and a single patient with presumed
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W J Powers

Stroke. 1985;16:737
doi: 10.1161/01.STR.16.4.737.a

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/16/4/737.1.citation