

Spinal Fluid Findings Following Cerebral Angiography

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WITH increasing use of cerebral angiography, the problem arose as to whether the procedure, of itself, produced changes in the cerebrospinal fluid. Forty-eight hours after angiography a spinal fluid examination in a patient suspected of a brain tumor revealed a cloudy fluid with 3,000 white blood cells per cu. mm. Prior to angiography the fluid had been clear, colorless and without any cells. As no information concerning the relationship of pleocytosis to angiography was available, it was decided to study the changes in the spinal fluid by the usual clinical methods.

Spinal fluids from 21 patients were examined prior to and following angiography. Lumbar punctures prior to angiography were done at various intervals, but all punctures following angiography were performed between 12 and 24 hours after the procedure. In each instance the spinal fluid was examined for color, cell count and total protein content.

All angiograms were percutaneous, using 35 per cent Diodrast as the contrast medium. Maximal Diodrast volume was 70 ml. at one procedure. While the majority of patients were subjected to unilateral carotid punctures, bilateral punctures were done in four, and combined bilateral carotid and vertebral punctures in one patient. Either intravenous Pentothal (14 cases) or local procaine (seven cases) anesthesia was used.

RESULTS

Of the 21 subjects, significant changes in the spinal fluid following angiography were seen in only two cases. In one, a patient with a cerebral angiomatous malformation and multiple aneurysms, 5,000 red blood cells per cu. mm. were seen in a pink spinal fluid. In the second, a patient with a chromophobe adenoma of the pituitary gland, the protein content of the spinal fluid changed from 89 to 151 mg. per cent; also, seven lymphocytes per cu. mm. were recorded when previously there had been none.

In all other subjects, changes in color, protein content and cell count were not significant. Three subjects showed transient hemiparesis following an-

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giography, and in none of these were there significant changes in the spinal fluid. Since Diodrast can cause changes in membrane permeability,¹ and the spinal fluid reflects such changes, it could be postulated that a relationship between complications following angiography and changes in the spinal fluid might exist. Such changes were not demonstrated in the present cases. Further investigations with more exacting techniques for protein determination and protein differentiation are indicated.

CONCLUSIONS

Neither a marked pleocytosis nor a marked increase in protein content of the spinal fluid are usual concomitants of Diodrast angiography. It may be concluded that when such spinal fluid changes are found they are unrelated to the procedure.

REFERENCE

1. OLSSON, O.: Cerebral angiography: Tolerance for contrast media of diodrast type, *J. Neurol., Neurosurg., & Psych.*, 12:312, 1949.
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