Case Reports and Technical Notes

Complication Following Intrathecal Injection of Fluorescein

Case Report

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At a recent neurosurgical scientific meeting, a question was posed concerning the incidence of complications associated with the use of intrathecal fluorescein in determining the origin of cerebrospinal fluid rhinorrhea. The apparent infrequency of these complications, indicated by a show of hands, led to our consideration of this case report.

Case Report

A 38-year-old man was first seen at the Duke Hospital Eye Clinic on September 12, 1968, with a 3-week history of headaches, poor vision, and proptosis.

Examination. Ophthalmological examination revealed poor pupillary response to light and severe papilledema bilaterally, a left exotropia; he could count fingers at 2 feet with the right eye and discern only hand movements with the left eye. Bilateral carotid arteriograms revealed an olfactory groove meningoima.

Operation. On September 18, 1965, the meningioma was resected through a bifrontal craniotomy. The tumor was attached to the dura at the cribriform plate.

Postoperative Course. Visual acuity began to improve within 4 days. On the 6th postoperative day, the patient developed cerebrospinal fluid rhinorrhea from the left nostril. An intrathecal injection revealed a pressure of 130 mm. of water with clear fluid, and treatment with chloromycetin, 1 gm./day, was started.

On the 23rd postoperative day, a lumbar puncture was performed at L3–L4; 3 ml. of 5 per cent fluorescein were diluted in a syringe with 20 ml. of cerebrospinal fluid. A cotton pledget was placed in each nostril and the mixture was then reinjected intrathecally for subsequent evaluation of the site and site of rhinorrhea. There was an immediate generalized flushing of the skin, tachycardia, tachypnea, and numbness and weakness of both legs. Neurological examination revealed hypalgesia below the inguinal ligaments plus spasm of the head and the neck. At the time of the examination, the patient complained of severe headache and vomiting.

On the next day, 2 grand mal seizures occurred, each lasting approximately 45 seconds. Examination revealed a poor response to verbal commands, but no focal neurological deficit. The neck was supple. The patient was discharged from the hospital still continuing Dilantin, 100 mg. q.i.d. The patient was readmitted to the hospital on two occasions because of frontal sinusitis and cellulitis relative to a communication between the frontal sinus and the subgaleal area. There has been no permanent neurological deficit save bilateral optic atrophy, relative to the original tumor and severe papilledema. There has been no further rhinorrhea or meningitis.

Discussion

The use of indigo carmine intrathecally for the investigation of cerebrospinal fluid rhinorrhea was described in 1933 by Fox. Since then, methylene blue, sodium-24, fluorescein, and Pantopaque have been suggested as other intrathecal contrast media useful in the search for the site of cerebrospinal fluid rhinorrhea. The dosage of fluorescein used by Kirchner and Proud was 1 ml. of 5% fluorescein injected directly into the lumbar subarachnoid space. Dosages of 6 gm. have been given orally and 5 ml. of 5% solution intravenously for other diagnostic purposes.

In our case, fluorescein was injected via the lumbar subarachnoid route, in anticipation of its recovery on pledgets of cotton placed in both nostrils, which might then delineate the site of rhinorrhea. The immediate toxic reaction that
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occurred was interpreted as a temporary loss of function of the cauda equina followed by the development of a transient aseptic meningitis with generalized central nervous system irritation. It seems possible that the meningeal inflammation associated with this reaction sealed the site of cerebrospinal fluid leak, which had prompted the study. However, the rather alarming circumstances associated with this study serve to emphasize the warning stated by Fox in 1933 relative to indigo carmine: "The danger of stirring up a meningitis should also be kept in mind."

Summary

We have reported a case in which severe neurological complications arose following the intrathecal injection of fluorescein in a search for the site of a postoperative rhinorrhea.

References

1. CROW, H. J., KEOGH, C., and NORTHFIELD, D. W. C.


