Status epilepticus as a complication of intrathecal fluorescein

Case report

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This report describes a case of chemical meningitis with status epilepticus following intrathecal injection of fluorescein to delineate cerebrospinal fluid rhinorrhea. The patient was treated with parenteral steroids and anticonvulsants and recovered without sequelae. The wisdom of using minimal practical dosages of fluorescein is emphasized.

KEY WORDS: intrathecal fluorescein, cerebrospinal fluid rhinorrhea, chemical meningitis, status epilepticus

DELINEATION of the anatomical defect producing cerebrospinal fluid (CSF) rhinorrhea may be an elusive task; various dyes and contrast media and radioactive materials have been injected intrathecally to help locate the defect. These agents must be easily detectable and not toxic for nerve tissue. Because of its relative safety and easy identification, fluorescein is often used.

A review of the literature reveals only one previously published complication of intrathecal fluorescein. That patient experienced local pain with numbness and erythema of the legs almost immediately after injection of 3 cc of 5% fluorescein. Grand mal seizures and aseptic meningitis ensued within hours. Vigorous treatment with anticonvulsants and steroids eventually led to complete recovery.

We are reporting a similar severe reaction to intrathecal fluorescein.

Case Report

This 69-year-old right-handed retired engineer was admitted to Yale-New Haven Hospital for the first time for surgical removal of a recurrent right maxillary tumor. His past history was entirely negative for any neurological symptoms. The neurological examination was essentially normal except for a small patch of anesthesia over the right side of his nose. On the second hospital day, right maxillary and sphenoid sinuses were exenterated and a pathological diagnosis of adenoid cystic carcinoma was made. The patient did well postoperatively.

On the 4th postoperative day, when the nasal packs were removed, CSF rhinorrhea was evident. The leak gradually diminished and was felt to have stopped by the 10th postoperative day. To confirm this, a standard lumbar puncture was performed at L4-5 interspace and 3 cc of 5% fluorescein diluted with CSF injected intrathecally. The patient immediately complained of severe low back pain which within 5 minutes was radiating down the posterior aspects of both legs. Shortly thereafter, his legs felt “tremulous.” Within 30 minutes he developed numbness in the legs and complained of a dull, generalized headache. Three hours after the injection he became disoriented; periods of lethargy alternated with hyperactivity. Rapid swings in blood pressure were then
noted ranging from normotensive to hypertensive levels. Four hours after injection he developed status epilepticus. The seizures began in either arm associated with ipsilateral deviation of the head and eyes and then progressed to become generalized with loss of consciousness. Cheyne-Stokes respiration occurred between seizures; a 15-second period of apnea preceded each seizure. The interictal periods lasted about 10 minutes. The patient was given intravenous steroid therapy, phenobarbital 400 mg, and Decadron 10 mg. The seizures decreased in frequency and severity, but two additional 200 mg doses of phenobarbital were required to stop them completely. The patient was then placed on maintenance doses of phenobarbital, Dilantin, and Decadron. A lumbar puncture performed at this time revealed bright yellow fluid under normal pressure. Two red blood cells and two lymphocytes were seen; the smear was negative for bacteria. The sugar was normal, and the protein content was 2020 mg%; the latter finding was interpreted as an artifact resulting from dye interference with the photometric technique.

During the next 12 hours the patient remained semicomatose and had two focal seizures involving the left arm. Eighteen hours after the last generalized seizure the patient was given vigorous steroid and anticonvulsant therapy and had a favorable recovery. The dangers of intrathecal administration of foreign material are reemphasized and the use of the smallest amount of dye practical is suggested.

**Discussion**

We feel this case represents an idiosyncratic response to fluorescein. Aseptic response, adulterants in the fluorescein, and anoxic brain damage were all considered unlikely.

Good delineation of a CSF leak can be obtained with 0.75 cc of 5% fluorescein. Serious adverse reactions in both of the cases reported followed introduction of 3 cc of 5% fluorescein. While the relationship of large dosage to the startling toxic effects may have been coincidental, we feel that this experience emphasizes the advisability of using the smallest amount of this dye consistent with reliable demonstration of the CSF leak.

**Summary**

This case represents the second documented complication of intrathecal fluorescein injection. After instillation of this dye, immediate local neural irritation developed and was followed within a few hours by status epilepticus. The patient was given vigorous steroid and anticonvulsant therapy and had a favorable recovery. The dangers of intrathecal administration of foreign material are reemphasized and the use of the smallest amount of dye practical is suggested.

**References**


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