Severe Aseptic Meningitis with Hydrocephalus Following Iotrolan Myelography: A Case Report

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— Abstract —

A case of severe aseptic meningitis with communicating hydrocephalus following iotrolan myelography is presented. The patient's condition improved very quickly after corticosteroid therapy. Rapid improvement and absence of pathogenic organisms in the CSF culture strongly favor an aseptic meningitis. This is the first reported case of aseptic meningitis with the secondary development of hydrocephalus caused by iotrolan myelography.

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Aseptic meningitis as a complication of myelography has been reported very rarely (1-3) since metrizamide was replaced with new non-ionic contrast media such as iopamidol, iohexol and iotrolan. Iotrolan is a new contrast medium with a non-ionic dimer of triiodinated benzene ring. Recently we have experienced a severe aseptic meningitis with hydrocephalus developed after iotrolan myelography. Only one case of mild aseptic meningitis associated with iotrolan myelography was reported in 1991 (4). This is the first reported case of aseptic meningitis with the secondary development of hydrocephalus caused by these new non-ionic contrast media.

CASE REPORT

A 49-year-old man, who had a previous cervical spinal operation for C4/C5 dislocation, underwent cervical myelography using lumbar puncture technique because of persistent paresthesia in both upper extremities. Before instillation of 15ml of iotrolan (Isovist, Schering AG, Berlin; 240mg I/ml), the patient did not have any signs or symptoms of meningitis. The cerebrospinal fluid (CSF) obtained during the procedure was clear. After myelography, the patient rested in a supined position with the head elevated 15-30°.

Next morning after myelography, the patient complained of headache, high fever (40°C) and neck stiffness. Over the next several hours he developed loss of bilateral pupillary light reflexes, left hemiparesis and increased deep tendon reflexes in all extremities, and became drowsy. Under the impression of iatrogenic bacterial meningitis or aseptic meningitis, CT examination was performed, which showed a moderate degree
of communicating hydrocephalus with obliteration of the extracerebral subarachnoid spaces (Fig. 1). A lumbar puncture was performed, and the CSF appeared turbid and xanthochromic. The CSF pressure was 200 mm H₂O with non-physiologic Q-test. A WBC count was more than 2000/ml with 95% polymorphonuclear leukocyte, with a protein level of 269 mg/dl, and glucose level of 8 mg/dl. After the cultures of CSF and blood were done, we administered both antibiotics and corticosteroid.

Two days later the patient markedly improved; the mental status became alert, bilateral pupillary reflexes were normalized, and left hemiparesis disappeared. Headache, mild fever and neck stiffness were still persistent. This dramatic clinical improvement led us to strongly consider the possibility of aseptic meningitis, and antibiotics was discontinued.

The results of CSF and blood cultures showed no pathogenic organisms. The patient was completely symptom-free seven days after myelography when the CSF was clear and its pressure was 170 mm H₂O with physiologic Q-test. A WBC count was 42/ml with predominant mononuclear leukocyte. The protein and glucose levels were within normal range. Follow-up CT examination performed seven days after myelography showed markedly decreased hydrocephalus (Fig. 2).

DISCUSSION

Hydrophilicity and osmolality of contrast media are important factors in producing the side effects associated with myelography. Since the advent of new non-ionic myelographic contrast media such as iopamidol, iohexol and iotrolan with high hydrophilicity and low osmolality, side effects after myelography have been decreased. Iotrolan is highly hydrophilic and has nearly the same osmolality as CSF and blood in a concentration up to 30 mg I/ml, that is, approximately half that of iopamidol and iohexol. In regard to aseptic meningitis as a complication of myelography, its exact cause is still unknown although the toxic effect of contrast media itself (6) and contrast media-induced immune mechanism (5, 7) have been suggested. Sand et al mentioned that previously undergone myelography or spinal operation may be risk factors concerning development of aseptic meningitis (6). However, their cases were too small for their concept to be accepted. Kelly et al described that hydrocephalus accompanying aseptic meningitis was probably caused by immunologically mediated generalized arachnoiditis (5). Hydrocephalus is thought to be a result of severe...
Clinical features of aseptic meningitis are similar to those of bacterial meningitis following myelography (8). Although, in general, symptoms of bacterial meningitis often seem to occur later (i.e. 24–96 hours) and persist longer than those of aseptic meningitis (6), the differentiation between these two types of meningitis is difficult both clinically and on the CSF profile. Only the result of CSF and blood cultures can make a differential diagnosis. Therefore, rapid improvement of the patient's condition and absence of pathogenic organisms in the CSF, as in our case, are in favor of aseptic meningitis.

The effect of corticosteroid in treatment of aseptic meningitis is not certain although a few reports have described its effectiveness (5,7). It is usually recommended that all patients with aseptic meningitis following myelography should initially be treated with antibiotics until the result of CSF culture is available (6).

Although the causative mechanism of aseptic meningitis following myelography is not certain, iotrolan may cause severe aseptic meningitis and the possibility of this complication should be kept in mind.

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