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A Case of Chemical Meningitis after Myelography

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—Abstract—

Meningeal irritation signs sometimes develop after myelography due to bacterial infection by contamination during the procedure or chemical irritiation by contrast media itself. CSF profiles of chemical meningitis often mimick those of bacterial meningitis, sometimes causing difficulty in differentiation, but in that case clinical course soon reverse in short time without any complication. Post-myelography chemical meningitis by metrizamide (AmipaqueR) has been well described but iohexol (OmnipaqueR) has rarely been reported to cause chemical meningitis. We experienced a patient of chemical meningitis by iohexol and here descibe the case.

CASE DESCRIPTION

A 49-year-old woman visited emergency room with the chief complaint of bitemporal headache, fever, and vomitting. She was suspected to have lumbar radiculopathy and went through myelo-CT one day ago. About 17hours after the procedure, above chief complaint developed.

Her medical history was unremarkable except chronic cystitis. Fever has risen up to 39°C. Other vital signs were all stable. On physical examination, there was no abnormal finding. On neurologic examination, she had severe neck stiffness but Kernig or Brudzinski sign was not evoked. Other neurologic status including cranial nerve systems, motor and sensory functions revealed nothing particular. Brain CT didn't reveal any abnormal finding. With the impression of meninigitis or subarachnoid hemorrhage, diagnostic lumbar puncture was done and the CSF profiles were as followings. Color was xanthochromatic and turbid. Opening pressure was 17cmH2O, WBC count was 2736/mm3 (segmented neutrophil 43%, lymphocyte 57%), RBC count was 120/mm3, protein content was 521 mg/dl, sugar 76mg/dl. Gram stain, bacterial culture, fungus culture were all negative. Under the assumption of possible bacterial meningitis, antibiotics(ceftriaxone 4.0g) was started empirically.

After then, her clinical course showed rapid improvement and at the third hospital day, she had mild headache only with supple neck, and fever fell down to 37.5°C.

Follow-up CSF study showed clear color, opening pressure of 12cmH2O. WBC count decreased down to 190 (neutrophil 20%, lymphocyte 80%), with RBC 0, protein 68mg/dl, and sugar 59mg/dl. All bacteriologic study was again negative including Gram stain, bacterial culture with sensitivity, and fungus culture.

Based on the course of her clinical illness and the laboratory findings, we diagnosed her condition as chemical meningitis after myelography. We stopped antibiotics and at eighth hospital day, she discharged with improved status.

DISCUSSION

Myelography or Myelo-CT is still frequently used procedure in cases of suspected radiculopathy. So far a few cases of myelography related meningitis have been reported (Backer et al, 1982). Some literature reported pneumococcal meningitis after myelography (Schlesinger et al, 1982; Worthington et al, 1980) and another reported that CSF culture was positive with subsequent identification of Flavobacterium menigosepticum (Bo et al, 1995). The former authors thought it as contamination, in the latter case they concluded that those organism is hardly considered to cause meningitis.

Another type of meningitis by chemical irritation of the contrast media is suggested after myelography, though the exact mechanism of irritation is still poorly understood (Alexiou et al, 1991).

The most commonly used contrast media in myelography has long been the metrizamide (AmipaqueR). It is water-soluble, nonionic contrast agent and contains a glucosamide side chain as a hydrophilic group. It has been thought to be this glucosamide group that are responsible to the chemical irritation (Kieffer et al, 1984). According to Gelmers (1979), post-myelographic meningeal irritation after metrizamide injection occured in 4% of patients. It has been recently suggested that injection of undissolved metrizamide crystals (Legre et al, 1975; Hurd et al, 1982), or glove powder contamination might also contribute to the chemical irritation, but in rabbit models injected with moderate dose of starch glove powder into CSF space didn't evoke chemical meningitis (Williams et al, 1982).

On the contrary, iohexol (OmnipaqueR), recently developed contrast agent which have similar chemical structure with metrizamide, has been known to be relatively safe in the aspect of chemical irritation. Our case is the first reported case of chemical meninigitis induced by iohexol in Korea, and further search and recruitment of cases seems to be mandatory for the accurate characterization of possible chemical irritation by this agent.

The symptoms and signs of chemical meningitis are nothing different with those of other acute meningitides, such as high fever, headache, nausea, vomitting and meningeal irritation signs. Moreover, CSF profiles resembles those of bacterial meningitis, sometimes making it difficult to differentiate (Sand et al, 1986). For example, pleocytosis is usually higher than 5000 WBC/ml and protein level often rises higher than 200mg/dl, though all the bacteriologic cultures & stains should be negative. Considering the low sensitivity of CSF smear and culture, it is often very difficult to differentiate the acute meningitis after myelography. Even more, bacterial meningitis can be fatal or make serious neurologic deficit if not treated promptly. Therefore it

is suggested that when signs of meningitis after myelography are present, antibiotics should be started immediately. And if the patients condition and CSF profiles soon switches to normal status during careful observation, chemical meningitis can be considered. Careful observation with corticosteroid only can be tried in that situation (Schlesinger et al, 1982). Of course repeated bacteriologic study should be tried to confirm the diagnosis.

In our case, all the signs of meningitis soon disappeared after the first day, and even after we early discontinued all the treatment, she didn't show any sign of relapse during one month's follow-up. Given the clinical course of the patient and the negative bacteriologic studies, we could conclude this case as chemical meningitis induced by iohexol.

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