Chemical meningitis

Chemical meningitis is a subset of aseptic meningitis with meningeal inflammation that is noninfectious in nature. It may be related to the use of certain drugs, including those administered intrathecally, especially with intraventricular delivery (it was reported in 3% of patients given IT methotrexate) including contrast agents.

Some cases of chemical meningitis occur following intracranial operations, particularly posterior fossa surgery or in the presence of intraventricular hemorrhage or debris from certain tumors or cyst contents (classically epidermoid cysts or craniopharyngiomas). It may also occur spontaneously, e.g., from a leaking craniopharyngioma or epidermoid.

Post-operative chemical meningitis: symptom onset is usually 3-7 days following surgery, but can be delayed for weeks.

Clinically, there may be fever and meningeal signs. However, classic signs of meningitis may be lacking.

▶ Evaluation. CSF for analysis is crucial. While CSF leucocyte and CSF glucose values may be similar to infectious meningitis, the WBC: RBC ratio is usually not as high and glucose is not as low.10 In one series, no patient with chemical meningitis had CSF WBC > 7.5K/microliter and CSF glucose < 10 mg/dl.15 Cultures are critical (routine, plus fungal, TB, and viral cultures). Also, send CSF for cytology to look for malignant cells.

▶ Treatment. Removal of the offending tumor when possible is indicated for spontaneous tumor related cases. The condition is usually self-limited, but the use of systemic steroids and CSF removal by serial lumbar punctures or lumbar drain13 has been described for patients with a protracted course. There is no consensus on appropriate steroid dosage, however, since the condition is generally benign, it would be appropriate to find the lowest dose that controls symptoms. Persistent H/A may respond to closure of pseudomeningocele if present.

Case reports

A case who presented with clinico-investigatory profile suggestive of acute bacterial meningitis. Patient showed good response to standard antibiotics and steroids, but deteriorated on stopping steroids. MRI brain showed hyperintense signal in the frontal horns of lateral ventricle on T1 weighted images suggesting presence of fat. MRI spine confirmed presence of ruptured teratoma in lumbo-sacral region which had caused chemical meningitis. Patient responded well to steroid therapy. Tumour histopathology confirmed the diagnosis of mature cystic teratoma [1].

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Garg A, Arora V, Vaishy S, Sinha LK. Chemical meningitis caused by spontaneous rupture of spinal teratoma. J Assoc Physicians India. 2012 Mar;60:54-6. PubMed PMID: 22799119.