

## Images in Clinical Oncology

### METHOTREXATE INDUCED LEUCOENCEPHALOPATHY



Fig:1 MRI scan showing diffuse bilateral symmetric hyperintensity of white matter (T2 image)



Fig:2 MRI scan showing mild atrophic changes (T2 image)



Fig: 3 Repeat MRI scan showing increase in atrophic changes (T2 image)

A four years child was diagnosed to have acute lymphoblastic lymphoma (ALL-LI, CALLA +, WBC count = 92,900/cm) in may 2003 and achieved complete remission following four drug induction therapy. While he was on oral maintenance, he had isolated CNS relapse in march 2005. He was then started on UKALL protocol for relapsed ALL in which he received high does iv and intrathecal methotrexate and cranial RT (24Gy/14#). In November 2005, he developed altered consciousness, irritability and urinary incontinence while on maintenance treatment CSF cytology was negative. An MRI scan revealed bilateral diffuse and symmetrical (hyperintense on T2) abnormality involving the white matter of brain (fig.1). Diagnosis of leukoencephalopathy possibly due to methotrexate was considered. He was treated with intravenous folinic acid 1250 mg. (24 hr continuous infusion) then 205 mg (tds for 3 days), 25 mg (tds for 7 days) followed by 20mg (bd for 4 weeks) along with intravenous aminophylline (75 mg for 7 days). There was slight improvement in cognition and behaviour. A follow up MRI (fig:2) done at 4 months revealed atrophic changes in white matter and MRI scan done one year later in march 2007 (fig:3) revealed an increase in these atrophic changes. Child is alive with neurological deficit, with leukemia in remission.

The incidence of induced leukoencephalopathy is about 40% in patients receiving both intrathecal and intravenous methotrexate (MTX) and 10% with intravenous MTX. Prognosis remains poor.

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