

Successful Treatment of Radiation-Induced Temporal Lobe Cysts with Combined Antibiotics to Mycobacterium

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Description

Temporal lobe necrosis (TLN) after external radiation is one of the most dreaded delayed radiation injury complications in nasopharyngeal carcinoma (NPC) [1,2]. TLN is generally progressive and irreversible, and it has a tremendous negative impact on a patient's quality of life. Cysts represented a late sign of TLN, which frequently became more severe and extensive over time and were associated with poor outcomes [3]. Although the pathophysiological mechanism of TLN remains poorly understood, brain abscess formation [4] in radiation necrosis has been reported in the literature, indicating that TLN might be due to radiation-induced inflammation. In this report, a patient presenting bilateral TLN cysts with worsening conditions demonstrated a successful treatment after anti-mycobacterium therapy. Our patient, a 60 year old Chinese woman, was diagnosed with undifferentiated nasopharyngeal carcinoma confirmed with biopsy in March 2005. She was treated with conventional radiation therapy to 70 Gy. She initially complained of mild headaches, memory loss and fatigue. She presented in October 2009 with seizures and aggravated dysphasia requiring nasal feeding. A subsequent magnetic resonance imaging (MRI) scan demonstrated bilateral temporal lobe cysts (Figure A1, axial T1-weighted MRI; B1, axial T2-weighted MRI; C1, coronal fluid-attenuated inversion-recovery (FLAIR) MRI).

The patient was treated with oral dexamethasone but remained symptomatic with weakness and psychomotor slowing. In addition, she experienced significant toxicity related to corticosteroid treatment that included debilitating insomnia, and abulia. Her clinical status did not improve with combination of dexamethasone and hyperbaric oxygen. She was found subsequently to have latent TB infection, as demonstrated by a strong positive Mantoux test. Given the overall poor response to corticosteroids and the concern to TB infection, anti-mycobacterium therapy (AMT, isoniazid 8 mg/kg, rifampicin 10 mg/kg, and pyrazinamide 25 mg/kg) was performed with discontinuation of corticosteroids. The patient showed marked improvement in her cognitive function, dysphasia, seizure and dizziness within the first week of AMT.

The nasogastric feeding tube was removed after 25 days of AMT, with continued improvement in speaking and swallowing. Her family noted that she was more spontaneous and attentive. She was treated with a three-drug AMT regimen for 9 months, and then treatment with a combination of isoniazid and rifampicin with the same dosages that ceased after 24 months.

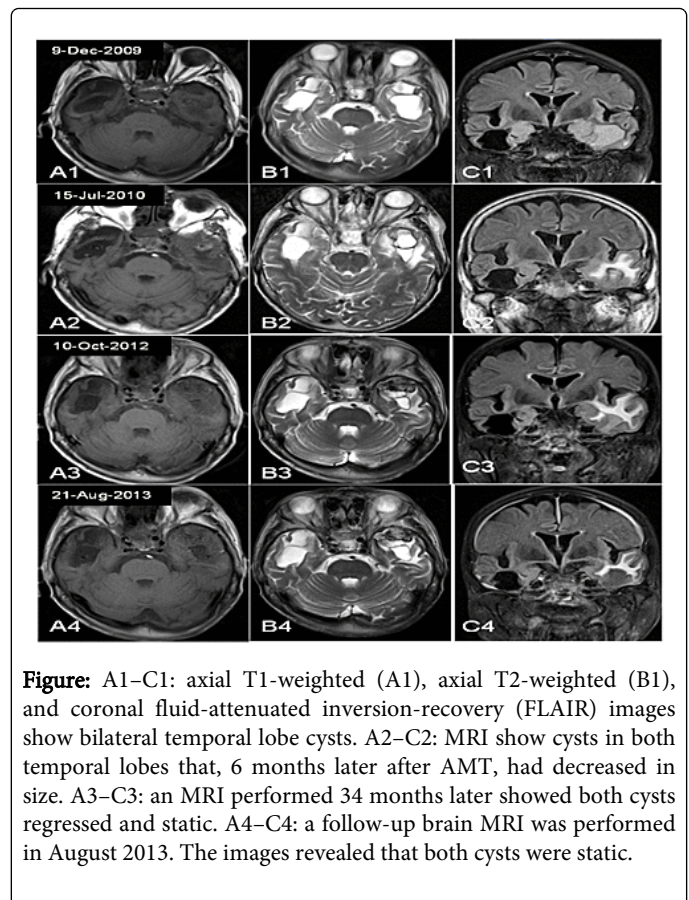


Figure: A1–C1: axial T1-weighted (A1), axial T2-weighted (B1), and coronal fluid-attenuated inversion-recovery (FLAIR) images show bilateral temporal lobe cysts. A2–C2: MRI show cysts in both temporal lobes that, 6 months later after AMT, had decreased in size. A3–C3: an MRI performed 34 months later showed both cysts regressed and static. A4–C4: a follow-up brain MRI was performed in August 2013. The images revealed that both cysts were static.

MRI scans (Figure A2–C2) made 7 months after the patient began receiving AMT showed cysts in both temporal lobes had decreased in size and an MRI (Figure A3–C3) performed 34 months later showed both cysts regressed and static. The patient still discontinuously took isoniazid and rifampicin after 2 years AMT. A follow-up brain MRI (Figure A4–C4) was performed in August 2013. The images revealed that both cysts were static. The imaging findings of temporal changes following irradiation for NPC have been well documented [5]. However, there is no consensus as to the optimal treatment strategy for this disease. There is no evidence in the literature [6] that any treatment could effectively decrease the cysts and relieve these symptoms. However, ATM therapy resulted in regression of cysts upon MRI in this patient, along with the relief of her symptoms. The striking effects indicate mycobacteria infection may be involved in the

pathogenesis of TLN cysts. To the best of our knowledge, AMT has provided the best results ever reported for TLN cysts in humans.

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