Nepal Journal of Neuroscience 9:46-48, 2012

Brain Mass: A Case with Diagnostic and Treatment Dilemma

Prabin Shrestha, MD, PhD
Department of Neurosurgery
Norvic International Hospital
Kathmandu, Nepal

Samantha Tamrakar, MBBS
Department of Neurosurgery
Norvic International Hospital
Kathmandu, Nepal

Manish Kolakshyapati, MBBS
Department of Neurosurgery
Norvic International Hospital
Kathmandu, Nepal

Basant Pant, MD, PhD
Department of Neurosurgery
Norvic International Hospital
Kathmandu, Nepal

Address for correspondence:
Prabin Shrestha, MD, PhD
Department of Neurosurgery
Norvic International Hospital
Kathmandu, Nepal
Email: prabinshrestha@hotmail.com

Received, 23 April, 2012
Accepted, 7 May, 2012

Histopathological evaluation is a must in any case of neoplastic lesion in human body. However, in certain circumstances, histopathological study becomes impossible and further treatment has to be carried out on the basis of other information and yet the plan of treatment may go towards correct direction.

We present a 64 years old male patient presented with vague symptoms including headache, giddiness and generalized weakness. Computerized tomography (CT) showed multiple mass lesions with edema. Primary central nervous system (CNS) infection and secondary metastatic lesions were excluded. Biopsy couldn't be done as refused by patient party. High dose of steroid for few weeks made the lesion disappear totally. Preliminary diagnosis of primary CNS lymphoma was made and planned for "wait and watch". There was recurrence of lesion after about 10 months which was treated with whole brain ratiotherapy. Post radiation radioimages showed complete resolution of the lesion which further proved that the lesion was CNS lymphoma. Again patient was fine for some time and presented again with multiple brain lesions which was again in favor of CNS Lymphoma again.

Diagnosis of brain lesions without biopsy is uncertain. However with careful and appropriate treatment plan, both correct diagnosis and treatment can be achieved even without biopsy.

Key words: brain mass, CNS lymphoma, steroid therapy, radiotherapy, chemotherapy

Multiple intracranial mass lesions are often encountered in daily neurosurgical clinic. Most common differential diagnoses are multicentric glioblstoma multiformes, central nervous system (CNS) infection, CNS lymphoma, multiple sclerosis etc. Definite diagnosis can be made only by biopsy. But sometimes circumstances come across when biopsy can't be obtained and optimum treatment has to be carried out without biopsy. Here we present a case where above circumstances arose and we went on treating the patient step by step by which probable diagnosis was also established and patient also got the best possible treatment. The main objective of reporting this case is to highlight the fact that sometimes good practical and theoretical knowledge even without appropriate investigation can provide the best possible treatment.

Case Report

A 64-year-old male patient presented with vague symptoms including headache, giddiness and generalized weakness. Computerized tomography (CT) showed multiple mass lesions with edema **(Figure 1)**. Magnetic resonance imaging (MRI) confirmed the same pattern of lesions as was seen in CT scan. Primary CNS infection including tuberculosis was ruled out by thorough cerebrospinal fluid infection. HIV and hepatitis B and C were negative. Possibility of secondary metastatic lesions in brain was excluded by CT scan from thyroid to prostate. Biopsy couldn't be done as refused by patient party. Primary treatment with high dose of steroid for few weeks made the lesion disappear totally **(Figure 2)**. Preliminary diagnosis of primary CNS lymphoma was made and planned for

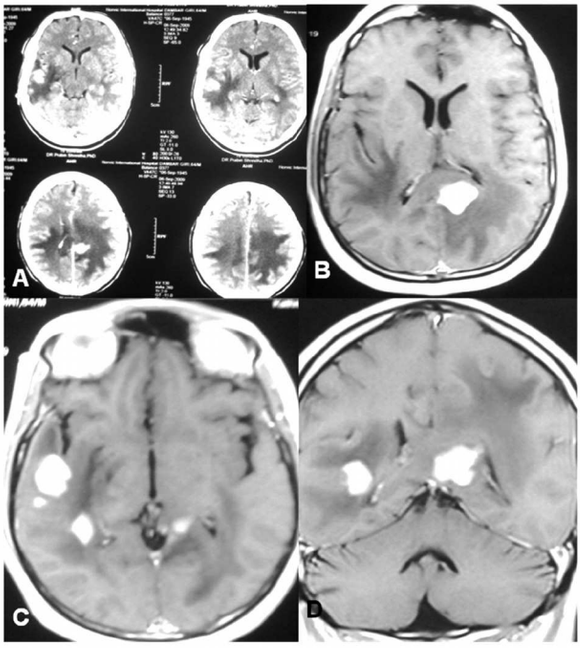

Figure 1: First CT and MRI images showing multiple well enhancing intra axial lesions involving posterior aspect of corpus callosum

"wait and watch". There was recurrence of lesion after about 10 months which raised suspicion of primary CNS lymphoma **(Figure 3)**. Patient was treated with whole brain ratiotherapy with due informed consent from the patient party. Post radiation images showed complete resolution of the lesions **(Figure 4)**. Patient was fine for about one year before he again presented with features of raised intracranial pressure. CT scan revealed multiple mass lesions mainly in posterior with hydrocephalus **(Figure 5)**. The case was then planned for high dose intravenous methotrexate therapy.

Discussion

Since multiple enhancing mass lesions with edema were detected in brain in our case, biopsy was planned but denied by patient party, instead they asked for appropriate treatment without biopsy. Primary CNS lymphoma, multicentric high grade glioma, secondary metastatic lesion and CNS infectious lesions were the main differential diagnoses. Computerized tomography (CT) from neck to prostate was done to screen possible primary neoplastic lesion outside CNS which turned out to be normal. Thorough hemogram excluded HIV infection, hepatitis and other infection. Cerebrospinal fluid (CSF) analysis by polymerase chain reaction (PCR) excluded TORCH infection and tuberculosis. Thus provisional diagnosis of either multicentric GBM or CNS lymphoma was made. Since steroid would be helpful for both the lesions, high dose steroid with dexamethasone was started. Almost complete resolution of lesion after steroid therapy raised the higher possibility of CNS lymphoma than GBM. Moreover, typical MRI pictures of intra-axial homogenous lesions, multiple in number, contrast enhancing, marked surrounding edema and corpus callosum involvement

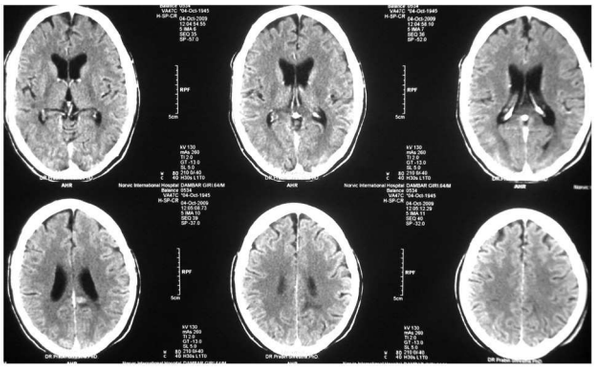

Figure 2: CT scan of brain showing almost complete resolution of the lesions after steroid therapy

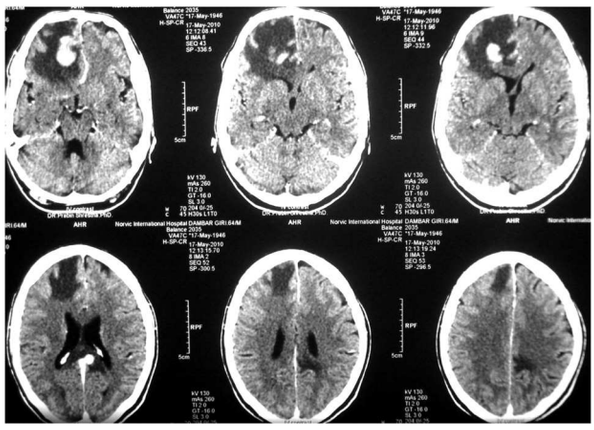

Figure 3: Recurrence of the lesion after about one year of steroid therapy

suggested more in favor of CNS lymphoma in our case as suggested by Yap K K et al. [8] They have explained typical features of CNS lymphoma in MRI. Recurrence of the lesion after several months further raised the possibility of lymphoma. After thoroughly counseling patient party, whole brain radiotherapy was performed. After radiotherapy the lesions again disappeared which further confirmed lymphoma. Reappearance of lesion again after several months almost confirmed lymphoma. Therefore, frequent disappearance and reappearance of the lesions in brain is highly suggestive of CNS lymphoma as suggested by Okita et al.[4] Biopsy was not yet obtained and finally methotrexate chemotherapy was planed.

Primary CNS Lymphoma is a malignant tumor and it is relatively uncommon to have only brain involved. In that sense our case deserves reporting. However, CNS lymphoma can also be low grade which is extremely rare as mentioned by papanicolu et al. [5] Since our case recurred in short duration, it is most likely malignant. Lymphoma is a vanishing tumor as was explained by Okita et al. [4]They showed that CNS lymphoma vanished completely and recurred in 4-45 months. Our case also vanished repeatedly after treatment and recurred in about 1 year every time. Treatment of CNS lymphoma is usually non surgical except for biopsy. Reports have shown that extent of surgery doesn't correlate with cure rate of the disease. Radiotherapy is an effective mode of treatment, but has significant neuro toxic effect due to whole brain radiation. [1]Our case had

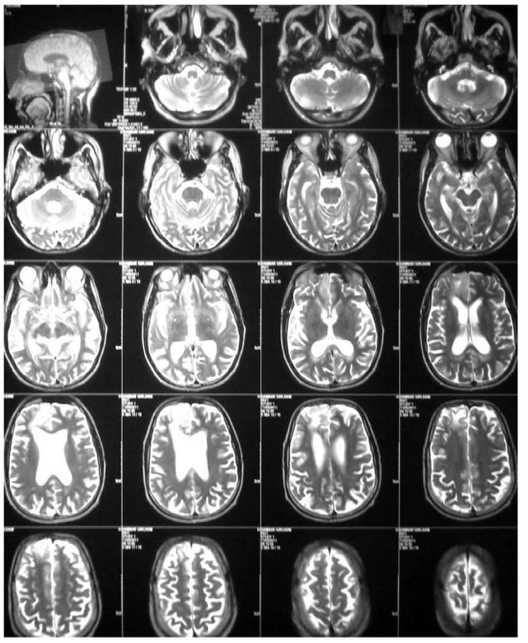

Figure 4: MR images after radiation therapy showing gliosis in right frontal area

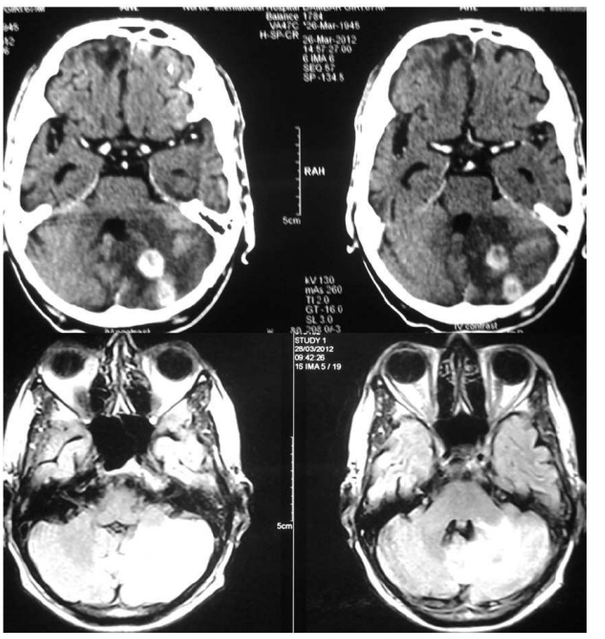

Figure 5: Reappearance of lesion in posterior fossa after about 1 year of radiation therapy

received 40 Gy of radiation in 20 fractions but it didn't show any significant neurotoxic effect. Methotrexate still holds the fact that it is the most effective chemotherapeutic agent for CNS lymphoma. [7] Therefore we also decided for methotrexate therapy as our next plan.

Autologous stem cell transplantation is another very effective mode of treatment and its outcome has been found to be very good. [2] They also showed that age factor is one of the worst prognostic factor.

Besides above mentioned different modes of treatment for CNS lymphoma, temozolamide therapy has also been found to be effective and safe especially for those who have multiple comorbidities.[3] Temozolamide is the chemotherapeutic agent with highest efficacy and least adverse effect.

Reni M et al mentioned that radiotherapy is an option for unirradiated patients and re-treatment with high-dose methotrexate (HD-MTX) can be suggested to relapsing patients who experienced a prolonged lymphoma remission after first-line chemotherapy containing HD-MTX.[6] Salvage monochemotherapy withÊtemozolomideÊor topotecan in patients previously managed with radiotherapy has been found to be helpful as has been shown by prospective trials. Stem cell autotransplant and intrathecal chemotherapy are some other treatment modalities under investigation.

Conclusions

Primary CNS lymphoma involving only brain without other secondaries is relatively rare. Its diagnosis and management is not possible without biopsy. However, it can be provisionally diagnosed and subsequently treated even without biopsy with proper evaluation and planning with the help of radio images. This sort of approach in Nepalese context where people are ignorant and less affording and refuse proper diagnostic procedures, can be of great help.

Reference

1. Ferreri AJ, Marturano E. Primary CNS lymphoma. **Best Pract Res Clin Haematol 25:** 119-130, 2012
2. Kim JE, Yoon DH, Kim S, et al. Relapse pattern and prognostic factors for patients with primary central nervous systemlymphoma. **Korean J Hematol 47:** 60-66, 2012
3. Kurzwelly D, Glas M, Roth P, et al. Primary CNS lymphoma in the elderly: temozolomide therapy and MGMT status. **J Neurooncol 97:** 389-392, 2009
4. Okita Y, Narita Y, Miyakita Y, et al. Long-term follow-up of vanishing tumors in the brain: How should a lesion mimicking primary CNSlymphoma be managed? **Clin Neurol Neurosurg,** 2012
5. Papanicolau-Sengos A, Wang-Rodriguez J, Wang HY, et al. Rare case of a primary non-dural central nervous system low grade B-cell lymphoma and literature review. **Int J Clin Exp Pathol 5:** 89-95, 2012
6. Reni M, Mazza E, Foppoli M, Ferreri AJ. Primary central nervous system lymphomas: salvage treatment after failure to high-dose methotrexate. **Cancer Lett 258:** 165-170, 2007
7. Roth P, Korfel A, Martus P, Weller M. Pathogenesis and management of primary CNS lymphoma. **Expert Rev Anticancer Ther 12:** 623-633, 2012
8. Yap KK, Sutherland T, Liew E, Tartaglia CJ, Pang M, Trost N. Magnetic resonance features of primary central nervous system lymphoma in the immunocompetent patient: a pictorial essay. **J Med Imaging Radiat Oncol 56:** 179-186, 2012