

ROLE OF COMPUTERIZED TOMOGRAPHY GUIDED STEREOTACTIC SURGERY IN THE MANAGEMENT OF INTRACRANIAL TUBERCULOMAS

SHAHZAD SHAMS AND IFTIKHAR ALI RAJA

*Department of Neuro Surgery,
Lahore General Hospital, Lahore.*

SUMMARY

In 7 patients computerized tomography guided stereotactic technique was used in the management of intracranial tuberculomas. Four patients had a definite histological diagnosis of a tuberculoma, 2 showed chronic inflammation and gliosis, in 1 aspiration of pus showed acid fast bacilli. There was temporary increase in weakness in 1 case. There was no procedure related mortality. Computerized tomography guided stereotactic biopsy helps in management of intracranial tuberculomas by confirming diagnosis histologically which can then be treated medically. It avoids empirical treatment of intracranial lesions and avoids complications associated with excision.

INTRODUCTION

In developing countries intracranial tuberculomas are an important differential diagnosis of intracranial masses¹ and incidence of 20% of all intracranial tumours has been reported in India.² Tuberculomas which were rare in Western countries are now on the rise due to tuberculous infection in patients with acquired immunodeficiency syndrome and immigrants from developing countries.³ On the basis of computerized tomography (CT) or magnetic resonance imaging (MRI) appearance diagnosis of intracranial tuberculoma without evidence of active disease can be 80% false-positive.⁴

CT guided stereotactic surgery enables the differentiation of tuberculomas from other brain lesions by histological evidence. This study presents the benefits with risk of CT guided stereotactic surgery in the management of intracranial tuberculomas.

MATERIAL AND METHODS

From November 1994 to May 1996, out of 47 patients on whom CT guided stereotactic surgery was performed in our

department, the diagnosis of tuberculomas was made in 7 patients. The age range was from 15 to 70 years. Stereotactic surgery was performed using the Leksell stereotactic frame compatible with Somatome DR CT scanner, and the technique has been previously described in detail.⁵

The indications for CT guided stereotactic surgery were solitary deep seated lesion in 4 patients, 2 multiple lesions and 1 cystic tuberculous mass.

Patients in whom tuberculoma was confirmed were treated with four anti-tuberculous (ATT) drugs. Two patients were given short course of steroids to control cerebral edema. Follow up CT scans were performed to monitor the response to therapy.

RESULT

The symptoms at presentation are shown in Table-I. Location and number of masses are shown in Table-II. The pathological findings in 4 solid lesions were tuberculoma, 2 diagnosis were chronic inflammation with gliosis and in 1 aspiration

TABLE - I
CLINICAL FEATURES

Symptoms	No. of Cases	Percentage
Headache	4	57
Seizure	3	43
Hemiplegia	2	28
Vomiting	2	28
Visual	1	14

of pus showed acid fast bacilli. The tissue obtained in CT guided stereotactic biopsy was diagnostic in all cases. No patient required a further surgical procedure.

One patient had an increase in weakness which resolved with steroid therapy. There was no CT guided stereotactic procedure related mortality. With a four drug regimen and regular CT monitoring showed shrinkage of tuberculoma in 2 weeks to 4 months. Fig-1a,b and Fig-2a,b Anti tuberculous treated.

DISCUSSION

Tuberculoma are chronic granulomatous lesions which originate as foci of tuberculous infection within the brain by haematogenous spread from other parts of the body.⁵ These lesions may be solitary or multiple. CT and MRI are performed for diagnosis. Both these imaging modalities are very sensitive in detecting intracranial tuberculomas but have a very low specificity. Diagnosis based on CT and MRI are at best presumptive.^{6,8} Practice of empiric antituberculous treatment based on imaging is not acceptable in this day and age.

With the availability of CT guided Stereotactic techniques biopsy of intracranial lesions for verification of histology is mandatory before initiating ATT. This also prevents delay in definitive therapy for a patient with a lesion other than tuberculoma who has started ATT, which has many side effects, hepatotoxicity being the commonest. Patients on empiric ATT need repeated CT

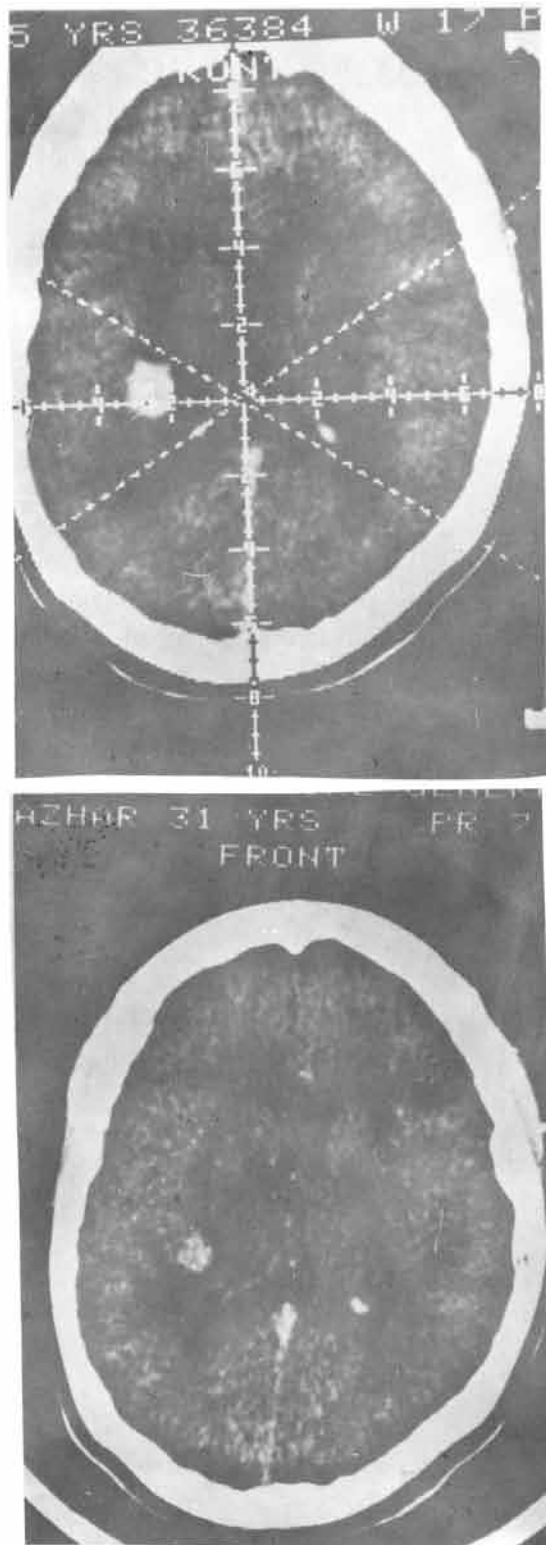


Fig. 1: (a) Contrast enhanced CT shows target localisation of left parietal mass, biopsy revealed tuberculoma.
(b) Contrast enhanced CT after 3 months of ATT shows marked reduction in size of lesion.

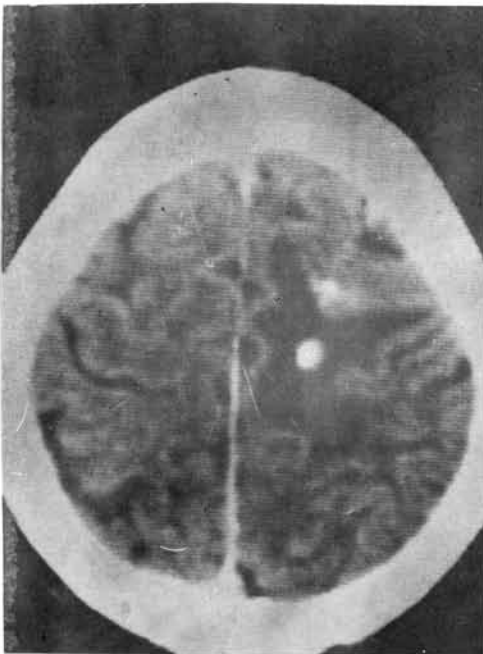
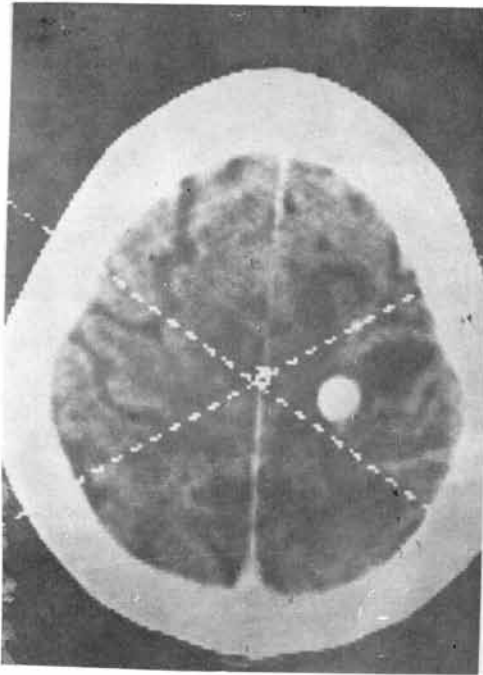


Fig. 2: (a) Right parietal tuberculoma.
 (b) Contrast enhanced CT scan 4 months later shows regression of lesion.

TABLE – II
 LOCATION AND NO. OF MASSES

Case No.	Age/Sex	No. of masses	Location of Target masses
1	18 F	One	Left Parietal
2	23 M	One	Left Parietal
3	26 M	Two	Right Parietal
4	45 F	One	Left Thalamic
5	35 M	Three	Right & Left parietal
6	34 M	Two	Left Parietal
7	52	One	Right Frontal

examinations for monitoring which is also expensive. CT guided stereotactic surgery is reliable with low morbidity and mortality associated with this procedure.^{9,10} It is alternative to open surgery as medical treatment has been shown to be superior to gross surgical excision of tuberculoma.¹¹

In conclusion, information from a CT guided Stereotactic biopsy about histological diagnosis and initiation of antituberculous therapy is probably the management of choice for intracranial tuberculomas.

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