STEREOTACTIC MANAGEMENT OF COLLOID CYSTS OF 3RD VENTRICLE

Shahzad Shams, Rizwan Masood Butt and Nazir Ahmed

Stereotactic aspiration is a valuable surgical alternative for colloid cysts. From Oct 1994 to Oct 1995, 5 patients had computerized tomography-guided stereotactic removal of colloid cysts. Leksell CT compatible stereotactic frame was used with complete removal in 2 and partial removal in 3 cases. Volume of colloid material removed ranged from 3-6 ml. Average time spent in hospital was 7 days. No mortality and minimal morbidity was seen. There is no evidence of recurrence in average follow up of 8 months. Stereotactic removal of colloid cysts is safe and provides a new option for management of colloid cysts.

KEY WORDS: *Colloid Cyst-Third Ventricle-Stereotactic Aspiration.*

INTRODUCTION

Colloid cysts are a rare group of tumours that involve die anterior 3rd ventricle and comprise 1% of tumours of the central nervous system. The relative infrequency of this lesion has made most series small.

The best management strategy for these patients with colloid cysts remains controversial. To date, neurosurgeons have relied on variations of three basic techniques: transcallosal approach, transcortical approach and computed tomography- assisted stereotactic aspiration which has also been advocated for total or subtotal aspiration of colloid cysts[2].

In this article we report a retrospective survey of 5 patients diagnosed with colloid cyst who were the first group of patients managed by stereotactic aspiration in Unit-I of Neurosurgery' Department, Lahore General Hospital.

From: Department of Neurosurgery, Lahore General Hospital, Lahore, Pakistan.
Dr SHAHNAZ SHAMS, FRCS, Senior Registrar.
Dr RIZWAN MASOOD BUTT, FRCS, FCPS, Assistant Professor.
DR NAZIR AHMED, MS, Associate Professor.
Corresponding Author: Dr SHAHZAD SHAMS

MATERIALS AND METHODS

CT guided stereotactic surgery' for colloid cysts of 3rd ventricle was performed in 5 consecutive symptomatic patients diagnosed as having colloid cysts on performing computerized tomography scans between Oct 1994 to Oct 1995.

Presenting symptoms included headache, nausea & vomiting in all 5 patients, change in mental status and ataxia in 3, and syncope in 1.

In all 5 patients, papilloedema was present, plain CT scans revealed hyperdense colloid cysts and also documented hydrocephalus (Figure 1).

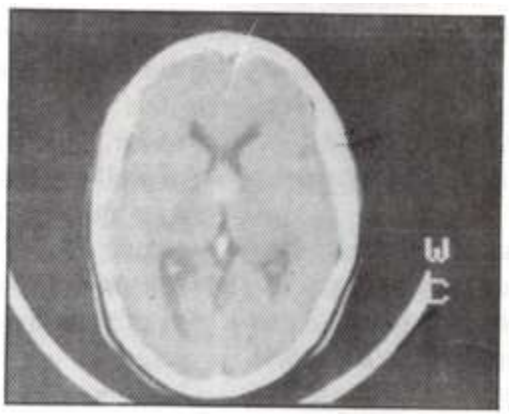

Fig 1. Axial contrast enhanced CT scan showing colloid cyst at the level of Foramen of Monro with hydrocephalus

Leksell stereotactic frame was used and alter application of frame under local anaesthesia, contrast enhanced CT scan was done using Siemens Somatom DR computerized tomographic scanner with 8mm axial slices.

STEREOTACTIC FRAME APPLICATION AND BIOPSY TECHNIQUE:

Coordinate square frame is fixed to skull with carbon pins. Side bars are fitted on both sides and CT indicator plates are fixed on these side bars. Patient is taken to CT room where head is fixed with CT adapter and contrast enhanced CT scan is done. X, Y & Z coordinates are calculated with the help of software installed in computerized tomography scanner (Fig 2).

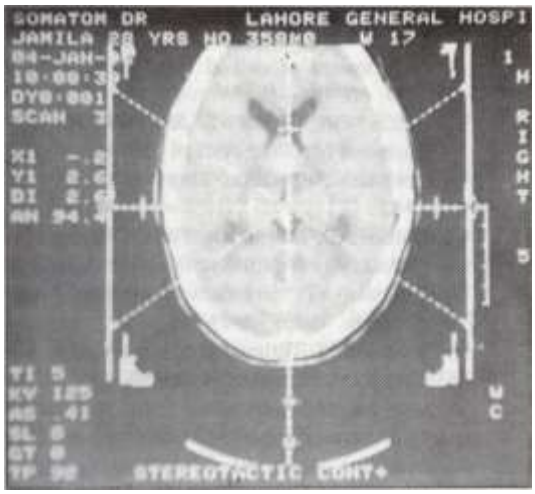

Fig 2: Target localization and calculation of coordinates assisted by CT after application of Leksell frame.

Patient is returned to operation theatre, semicircular arc is fixed on side bars and X, Y & Z coordinates are set on the Leksell frame (Fig 3).

Fig 3. Coordinates on Leksell frame are fixed accordingly.

A burr hole is made under local anaesthesia with patient sitting in a chair at a site chosen to give probe trajectory which would avoid vessels, eloquent areas and important neuronal structures. A 2.5mm aspiration probe is advanced after incising dura. Colloid material is aspirated using 10 cc syringe with negative suction. Lastly wound is closed in layers.

RESULTS

In all 5 patients computerized tomography guided aspiration was done under local anaesthesia. Post-operative CT scan confirmed complete removal in 2 cases and partial removal in other 3 cases (Fig 4).

Fig 4. Postoperative CT scan showing complete evacuation of colloid cyst.

Complete resolution of hydrocephalus was seen in 2 patients, with 50% decrease in size of ventricles in 3 patients, but improvement in symptoms was present in all with average follow up duration of 8 months.

Four average aspirations were done for each patient at each sitting. Volume of colloid removed ranged from 3-6 ml with average of 4.4 ml.

Average time spent in hospital was 7 days and total cost of each operation ranged from Rs.1200-1500/-.

Based on follow up, all 5 patients are in stable neurological condition without the need for shunt placement or residual cyst removal.

One patient developed mild aseptic meningitis which resolved in 72 hours. There was no mortality. The results of surgery compare favorably with most other series quoted and show the technique to be safe, quick and cost-effective.

DISCUSSION

Colloid cysts have remained of interest to the neurosurgeon due to their controversial etiology, benign histology, often dramatic clinical presentation and variety of possible treatment methods. Primary' treatment of colloid cysts has been cyst resection via a transcallosal or transcortical approach. The risks associated with these two approaches include seizures, arterial and venous infarcts, memory deficits, meningitis and death[2].

The first stereotactic aspiration without resection as a therapeutic technique for colloid cyst management was described by Bosch et al J in patients of all ages to achieve a definitive treatment result.
Donauer et al [4] reported successful aspiration of 10 colloid cysts using stereotactic technique with failure in 1.

Mohadjer et al [5] reported stereotactic drainage of 12 colloid cysts with 3 incompletely aspirated cysts.

Musolino et al [6] reported stereotactic aspiration of 6 colloid cysts completely and 5 subtotally.

The success of stereotactic cyst aspiration is dependent upon accurate localization and liquid consistency of the cyst contents [7,8]. In our study we were successful in completely aspirating 2 cases and subtotally aspirating 3 cases.

The potential exists for injury to columns of fornix and for uncontrollable haemorrhage from inadvertent biopsy of the choroid plexus, septal vein, thalamostriate vein[9] or formation of traumatic aneurysms [10]. In our study of 5 patients, 1 developed aseptic meningitis which resolved in 3 days. There was no mortality.

Due to its simplicity and negligible rate of morbidity and mortality, stereotactic aspiration is the first choice therapeutic modality for colloid cyst management.

REFERENCES

1. Camacho A, Abernathy CD, Kelly PJ, et al. Colloid cysts: Experience with the management of 84 cases since the introduction of computed tomography. Neurosurgery, 1989: 24: 693-700.

2. Hall WA & Lunsford LD. Changing concepts in treatment of colloid cysts. J Neurosurg, 1987; 66: 186-91.

3. Bosch DA, Rahn T & Backlund EO. Treatment of colloid cysts of third ventricle by stereotactic aspiration. Surg Neurol, 1978; 9: 15-18.

4. Donauer E, Moringlane JR & Ostertag CB. Colloid cysts of third ventricle. Open operative approach or stereotactic aspiration? Acta Neurochi, 1986; 30: 24-30.

5. Mohadjer M. Teshmar E & Mundinger F. CT stereotactic drainage of colloid cysts in the foramen of Monro and third ventricle. J Neurosurg, 1987; 67: 220-23.

6. Musolino A, Fossa S, Munari C, et al. Diagnosis and treatment of colloid cysts of the third ventricle by stereotactic drainage. Surg Neurol, 1989; 32: 294-99.

7. Kondziolka D & Lunsford LD. Stereotactic management of colloid cysts: Factors predicting success. J Neurosurgery, 1991; 75: 45-51.

8. Kondizolka D & Lunsford LD. Factors predicting successful stereotactic aspiration of colloid cysts. Stereotactic and Functional Neurosurgery, 1992; 59: 135-38.

9. Bernstein M & Parrent AG. Complications of CT guided stereotactic biopsy of ultra-axial brain lesions. J Neurosurg. 1994; 81: 165-68.

10. Sahrakar K, Boggan JE & Salamat MS. Traumatic aneurysm: a complication of stereotactic brain biopsy. Neurosurgery, 1995; 36: 842-46.