Large Arachnoid Cyst

T. Mondal
K. Jagdish Kumar
R. Anand
N.K. Dubey
D. Sharma

Arachnoid cysts are benign, non genetic developmental intra-arachnoid collection of cerebrospinal fluid(l-3). They account for about 1% of all atraumatic intracranial mass lesions(4). They cause neurological deficit through expansion that compresses normal neural tissue and obstructs CSF flow. Most arachnoid cysts become symptomatic in early childhood. Between 60% to 90% of patients in most mixed series are in the pediatric age group(5) and the majority develop signs and symptoms before 6 months of age(6). Arachnoid cysts can be found at any location—middle cranial fossa, posterior fossa, suprasellar areas being the usual sites(l,7,8). We report a case of intracranial arachnoid cyst for its large size, rare anatomical site and atypical presentation.

Case Report

An 8-years-old girl was admitted with a history of moderate fever for 4 days, vomiting and altered sensorium for 1 day. There was no history of trauma, ear discharge, exanthematous fever, recent vaccination. This child had been admitted *2Vi* yrs back with fever and seizures; a diagnosis of encephalitis was made and the child improved with treatment. After 2 months the child was readmitted with pneumonia for 10 days and then discharged. During the subsequent $2^{1/2}$ years period, the child was going to school with acceptable scholastic, and motor performances.

On examination, she was a well nourished girl weighing 27 kg with normal vital signs. Examination of the nervous system revealed slight hypertonia, slightly brisk jerks and withdrawal planters, without any meningeal signs. Pupils were normally reacting and fundus was. normal. The next day, the child's sensorium deteriorated. She developed abnormal eye movements, variable muscle tone, low volume pulse and the blood pressure was not recordable. The hemogram, urine examination, serum biochemistry and CSF examination were normal. The child improved with supportive management.

Plain CT Scan head was done, which revealed a large uniformly hypodense lesion in the left temporoparietal region with displacement and pressure on the ipsilateral lateral ventricle and some degree of thinning of the overlying bone *(Figs. 1 a&b).* In addition, subarachnoid spaces and ventricles appeared dilated suggestive of atrophic changes. There was evidence of interhemispheric bleed. A diagnosis of left temporoparietal arachnoid cyst with cerebral atrophy and interhemispheric bleed was given.

From the Department of Pediatrics and Radiology, Kalawati Saran Children's Hosiptal, New Delhi 110 001.

Reprint requests: Dr. T. Mondal, 24, New Registrar Block, Lady Hardige Medical College, New Delhi 110 001.

Received for publication: March 12,1994; Accepted: November 1,1994

The child regained normal sensorium and has undergone a cyst-peritoneal shunt. She had an uneventful postoperative period and is doing well for the last 4 months.

Discussion

Arachnoid cysts are developmental collections of cerebrospinal fluid contained within a lining lepto-meningeal membrane(12). They can be found intracranially at any location and frequently communicating with the subarachnoid spaces. They are more common in boys and occur on the right side. Middle cranial fossa is the commonest site followed by posterior fossa and suprasellar fossa. Cysts in convexities constitute only 4% of total arachnoid cysts(2). Porencephalic cysts or acquired cysts are to be differentiated from these congenital cysts specially when associated atrophic changes are there as in our case. A midline shift towards opposite side gives a definite diagnosis in favor of developmental or congenital cyst.

Most arachnoid cysts become symptomatic in early childhood and a majority develop signs and symptoms within 6 months(5). Our patient was asymptomatic and the illness episode at *5Vi* years age also did not suggest intracranial mass lesion. These patients are prone to have cerebral bleeds with minor trauma and may produce sudden progressive and non-progressive symptoms(13) but no patient improves spontaneously except a rare case where the cyst had disappeared (possibly a communication developed)(14).

Arachnoid cysts occupy usually less than 10% of brain volume of normal side(10) but in our case, the cyst occupied more than 20% of brain volume. One interesting thing to note is that there may not be loss of any brain tissue, not even when the cysts are very large; it has been demonstrated that there is a proportional increase of affect-

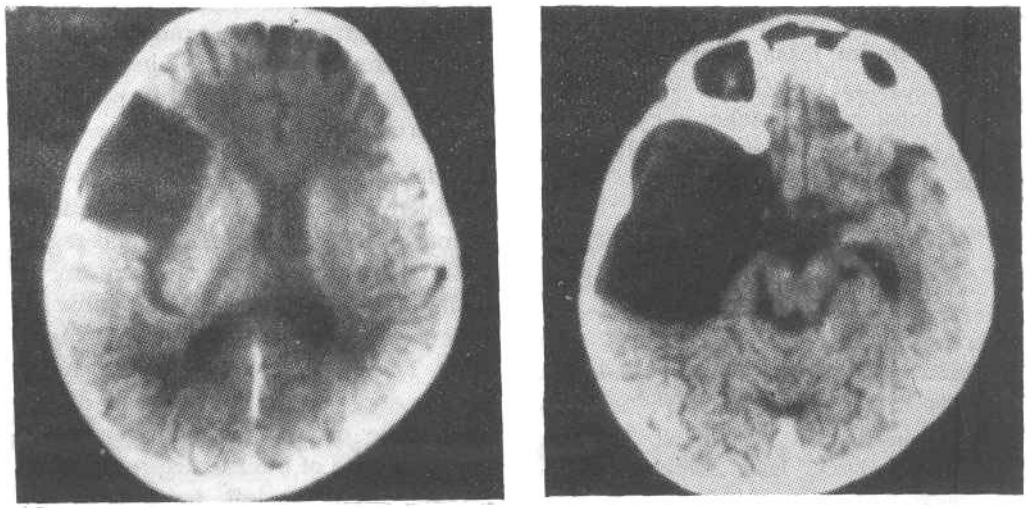

Fig. 1a,b: Large temporoparietal cyst compressing the left lateral ventricle with a shift of the midline to opposite side.

ed hemicranium(lO). This may explain why, in a majority of cases, no motor deficit or intellectual deficit has been found in different series(3,4,10).

Most authors believe that asymptomatic cases discovered fortuitously or those producing only minor cosmetic defects do not require surgical intervention(10,ll). However, others believe that cysts have potential for hindering the function of adjacent brain, cyst rupture, intracystic hemorrhage or subdural hemorrhage leading to sudden severe neurological deterioration. This outweighs the risk of operative treatment(4,12). In view of the large size and associated intracranial bleed, neurosurgical opinion favoured surgical intervention. A cyst-peritoneal shunt is the procedure of choice today(l).

REFERENCES

1. Krawchenko J, Collins GH. Pathology of an arachnoid cyst. J Neurosurg 1979, 50: 224-228.
2. Rangacharya SS, Watanabe I, Brackett CE. Pathogenesis of intracranial arachnoid cysts. Surg Neurol 1978, 9: 139-144.
3. Rangachary SS. Parasagittal arachnoid cyst: A case report. Neurosurgery 1981, 9: 70-75.
4. Robinson RG. Congenital cysts of the brain and arachnoid malformations. Prog Neurol Surg 1971, 4:133-174.
5. Anderson FM, Segall HD, Caton WL. Use of computerized scanning in supratentorial arachnoid cysts. A report on 20 children and four adults. J Neurosurg 1979, 50: 333-338.
6. Plana JC, Clara JMC, Fernandez AE. Quistes arachnoides intracranicales en el nino. Revision de 34 observations. Ann Esp Pediatr 1983,10: 459-470.
7. Cralass E, Tognett F, Gaist G, *et at.* CT scan and metrizamide CT cisternography in arachnoid cysts of the middle cranial fossa. Classification and pathophysiological aspects. Surg Neurol 1982,17: 363-369.
8. Rangachary SS, Watanabe I. Ultrastructures and pathogenesis of intracranial arachnoid cysts. J Neuropath Exp Neurol 1981, 40: 61-83.
9. Galass E, Tognett F, Fronk F, *et al.* Infratentorial arachnoid cysts. J Neurosurg 1985, 63: 210-217.
10. Vahdermeache FGA, Braakman RJ. Arachnoid cysts in the middle cranial fossa: Causes and treatment of progressive and non-progressive symptoms. J Neurol Neurosurg Psychiatry 1983,46:1102-1107.
11. Hanich A, Simpson DA, North JB. Arachnoid cysts: A critical review of 41 cases. Child's Nerv Syst 1988, 4: 92-96.
12. Leo LS, Pinto RS, Hulvat GF, *et al.* Computed tomography of arachnoid cysts. Radiology 1979,130: 675-680.