

Original Research Article

Study of intra-cranial space occupying lesion in children at tertiary care centre, Ahmedabad, Gujarat, India

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ABSTRACT

Background: ICSOL is some common children and leads to morbidity and mortality in the absence of early diagnosis and treatment². Due to advance in diagnostic technique, the prognosis for children with ICSOL is more hopeful because of the development of newer therapeutic modalities. Objective of present study was to investigate the incidence, etiology, clinical manifestations, clinico-radiological correlation, evaluate the therapeutic modalities and outcome of patients of ICSOL

Methods: This prospective study was done among all 40 confirmed cases of space occupying lesion out of total 935 central nervous system related cases & 64 suspected cases admitted at department of pediatrics in NHL medical college, Ahmedabad during July 2002 to October 2004.

Results: Out of total CNS cases, 64 (6.8%) cases clinically diagnosed as SOLs cases and 40 (62.5%) were confirmed by radiological imaging technique. Study observed >50% cases in 5-9 age group and 57.5% male SOL. Tuberculoma covered highest (45.0%) cases and convulsion, headache, vomiting and altered sensorium were the main sign/symptoms. According to radiological findings, supratentorial SOL seen in 75.0% cases and mortality seen in 7.5% cases.

Conclusions: Study observed higher incidence of SOL in the age group of 5 to 9 years. Total CNS cases were about 20.9% out of total admission and incidence of SOL was about 4.28% in total CNS cases. Highest incidence of tuberculoma which was most common etiology observed among both the gender. Study observed clinic-radiological correlation in SOL was about 62.5%. overall mortality in present in SOL was 7.5.

Keywords: Intra-cranial space occupying lesion, Convulsion, Supratentorial, Tuberculoma

INTRODUCTION

The intra-cranial space occupying lesion (ICSOL) defined as any lesion, whether vascular, neoplastic, or inflammatory in origin, which raise the size of the intra cranial contents and accelerate the intra cranial pressure.^{1,2} ICSOL is common among children and leads to morbidity and mortality in the absence of early diagnosis and treatment.³

Brain tumors are the most common malignancy in Childhood just after the leukemia, out of which 2/3

intracranial tumors seen in children between the ages of 2 and 12 years. In adolescents and children under the age of two years, tumor occur with equal frequencies in infratentorial and supratentorial regions. Infratentorial tuberculomas were more common in children, 60% were located in cerebellum and the rest in cerebrum. In cerebrum frontoparietal region

is the commonest site. Solitary lesions are more common compared to multiple lesions which are seen in 6-10% of cases only.⁴⁻⁷

Brain abscess mostly seen in the age group of 4 to 8 years and main causes of brain abscess are embolization due to congenital heart disease with right to left shunt, meningitis, chronic otitis media and mastoiditis, soft tissue infection of the face or scalp, orbital cellulitis, dental infections, penetrating head injuries, immunodeficiency states, and infection of ventriculo-peritoneal shunts. So, this study was conducted with objectives to study the incidence, etiology, clinical manifestations, clinico-radiological correlation, evaluate the therapeutic modalities and outcome of patients of ICSOL.⁴

METHODS

This prospective study was done among all 40 confirmed cases of space occupying lesion out of total 935 central nervous system related cases and 64 suspected cases admitted at Department of Pediatrics in NHL medical college, Ahmedabad during July 2002 to October 2004. Data collection was done after ethical permission from institutional ethical committee and informed consent of guardians of patients. Inclusion criteria for present study was patients presented with convulsion, vomiting, headache, fever, altered sensorium, irritability, enlargement of head, disturbance of vision and exclusion criteria was infarction, hemorrhage, simple calcification. Detailed history and clinical examination was carried out in each patient according to pre-tested questionnaire. Specific investigation was done in the form of fundus examination, skull X-ray, USG cranium, electroencephalogram, CT scan, MRI and other relevant investigations.

RESULTS

There were total 4461 patients admitted in pediatric department during study period, out of that 935 (20.9%) patients were screened for CNS diseases. Out of total CNS cases, 64 (6.8%) cases clinically diagnosed as SOLs and 40 (62.5%) were confirmed by radiological imaging technique.

Table 1 shows that more than 50% cases were belonged to 5 to 9 age group and 27.5% belonged to less than 5 years age group. study included 57.5% male and 42.5% female cases of SOL. According to type of SOL, tuberculoma covered highest (45.0%) cases followed by neurocysticercosis, subdural hematoma, subdural hygroma, cerebral abscess, brain tumor and porecephalic cyst respectively. Convulsion, headache, vomiting and altered sensorium were the main sign/symptoms seen in SOL patients which was followed by fever, irritability, facial palsy, disturbances of vision and enlargement of head respectively. In respect of radiological findings, supratentorial SOL seen in 75.0% cases followed by infratentorial SOL (15.0%) and multiple SOL (10.0%). Overall mortality seen in 7.5% cases during study period.

Table 1: Socio-clinical parameters of participants (N=40).

| Variable | Number (%) |
|--------------------------------------|------------|
| Age | |
| <5 | 11 (27.5) |
| 5-9 | 21 (52.5) |
| 10-14 | 8 (20.0) |
| Gender | |
| Male | 23 (57.5) |
| Female | 17 (42.5) |
| Etiology of SOL | |
| Tuberculoma | 18 (45.0) |
| Neurocysticercosis | 9 (22.5) |
| Subdural Hematoma | 5 (12.5) |
| Subdural Hygroma | 3 (7.5) |
| Cerebral Abscess | 2 (5.0) |
| Brain Tumor | 2 (5.0) |
| Porecephalic Cyst | 1 (2.5) |
| Distribution of sign/symptoms | |
| Convulsion | 30 (75.0) |
| Headache | 22 (55.0) |
| Vomiting | 18 (45.0) |
| Altered Sensorium | 7 (17.5) |
| Fever | 5 (12.5) |
| Irritability | 2 (5.0) |
| Facial Palsy | 2 (5.0) |
| Disturbances of vision | 2 (5.0) |
| Enlargement of head | 3 (7.5) |
| Radiological findings of SOL | |
| Supratentorial | 30 (75.0) |
| Infratentorial | 6 (15.0) |
| Multiple | 4 (10.0) |
| Mortality | |
| Live | 37 (32.3) |
| Death | 3 (7.5) |

Figure 1 shows that 64 cases were clinically diagnosed for SOL, out of that 40 cases were confirmed by radiological imaging techniques.

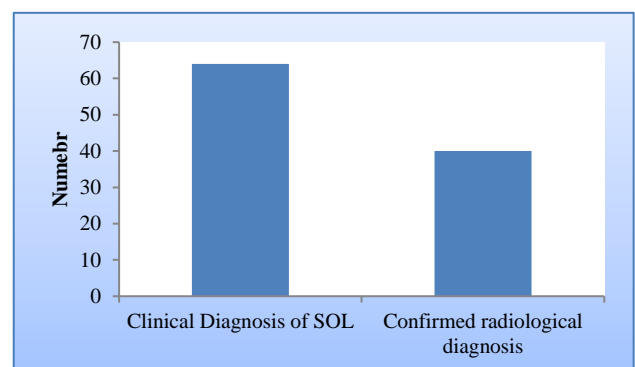


Figure 1: Clinico-radiological correlation for diagnosis of SOL (N=40).

According to treatment modality, all the 18 patients of tuberculoma were given specific treatment in form of

anti-tubercular drug, 2 HRZE + 10 HRE. Tab. Prednisolon (6 to 8 week) given immediately on diagnosis. All the 9 confirmed cases of neurocysticercosis were started with Tab. Albendazole (15 mg/kg/day) in divided dose with tab. Prednisolone for 7 days. Repeat CT scan were done in all patients. All other confirmed cases were treated conservatively and all were recovered.

DISCUSSION

In infancy and childhood, one of the most important problem is SOL. When malignancies are considered in children, brain tumors rank only second to leukaemia.³

Present study found incidence of SOL was 4.3% which is comparable with the similar study done by Tadmor R et al.⁸ Highest cases observed in our study in age group of 5 to 9 years (52.5%). This finding is quite similar with the findings of similar study done by Malik GK et al, Yashodhara P et al and Matson D et al but this finding is not comparable with the similar study done by Tondon PN et al.^{3,9-11} Male: female ration in present study was 1.3:1 but this observation is not similar with the similar study done by Malik GK et al where it was 2.3:1 but not comparable with study done by Yashodhara P et al where more cases seen among female participations.^{3,9} In present study, tuberculoma was the main etiology for SOL which was followed by neurocysticercosis, subdural hematoma, subdural hygroma, cerebral abscess, brain tumor and porecephalic cyst respectively. This finding is comparable with the similar study done by Tadmor R et al but not with the study done by Malik GK et al and Yasodhara P et al where brain tumor was the mail cause for SOL.^{3,8,9} In our study, Convulsion, headache, vomiting and altered sensorium were the main sign/symptoms seen in SOL patients which is similar with study done by Malik GK et al and Tadmor R et al.^{8,9} in present study, out of total 18 cases of tuberculoma, 13 were supratentorial, 3 were multiple and 2 were infratentorial. All the 9 cases of NCC occur supratentorial and 2 were infratentorial. Congenital cysts cases were supratentorial.

CONCLUSION

Study observed higher incidence of SOL in the age group of 5 to 9 years and low in age group of below 5 years. Total CNS cases were about 20.9% out of total admission and incidence of SOL was about 4.28% in total CNS cases. More cases seen among male participants and highest incidence of tuberculoma which was most common etiology observed among both the gender. Convulsion, headache and vomiting were the most common presenting symptoms in patients. Supratentorial lesions were the more common than infratentorial lesions and tuberculoma and neurocysticercosis occur commonly at supratentorial region. Study observed clinic-

radiological correlation in SOL was about 62.5%. overall mortality in present in SOL was 7.5.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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