DOI: https://doi.org/10.53350/pjmhs211592278

ORIGINAL ARTICLE

Frequency of Common CT Scan Findings in Children with Tuberculous Meningitis

SAID AYAZ[1], SYED SAJID MUNIR[2], SAMIULLAH[3], MAIMOONA SAEED[4]
[1]*Consultant Paediatrician Polyclinic Hospital Peshawar, ESSI KP.*
[2]*Associate professor, pediatric deptt. Khyber medical university institute of medical sciences, Kohat*
[3]*Associate professor, Pediatric deptt. Bannu medical college, Bannu*
[4]*Medical officer at LMH kohat*
Correspondence to Dr. Syed Sajid Munir, Associate Professor

ABSTRACT

Aim: To determine the frequency of common CT scan findings in children with Tuberculous meningitis
Setting: Department of Pediatrics, Khyber Teaching Hospital, Peshawar.
Study design: descriptive cross-sectional study.
Duration: 6 months (3/7/2015 to 3/1/2016)
Methodology: In this study, 178 patients were selected. Non probability sampling technique was used for sample collection.
Results: In this study, mean age was 9 years with SD ± 2.54. 55% patients were male and 45% patients were female. Common CT scan findings among 178 patients were analyzed. 40% patients had hydrocephalous, 72% patients had meningeal enhancement, 3% patients had infraction, 5% patients had tuberculoma.
Conclusion: Most common CT scan findings of Tuberculosis meningitis in children were meningeal enhancement 72% followed by hydrocephalous 40%.
Keywords: hyponatremia, tuberculous meningitis

INTRODUCTION

Tuberculous meningitis (TBM) also known as meningeal tuberculosis is common presentation of neuro-tuberculosis and it is a serious disease worldwide. The mortality rate of untreated TBM is almost 100% and a delay in treatment may lead to permanent neurological deficit. Early diagnosis is necessary for start of anti-tuberculosis therapy[1]. Tuberculous meningitis (TBM) is severe type of tuberculosis[2]. The WHO estimated that 30% of the population is infected by Mycobacterium tuberculosis. Infection is more in African, Asian and Latin America[3]. Incidence of TBM is low in high-income countries[4]. CNS involvement is around 1% with active tuberculosis[5].

The objective of the study was to determine the frequency of common CT scan findings in children with Tuberculous meningitis

METHODOLOGY

This cross sectional (descriptive) study was conducted in the Department of Pediatrics Khyber Teaching Hospital Peshawar for a period of 6 months from 03-07-2015 to 03-01-2016 after approval from IRB. The sample size was 178 patients. Sampling technique used was non probability consecutive sampling
Inclusion Criteria: Children of age 1-14 year, with either sex and having H/o TBM
Exclusion Criteria: Children having other diseases with meningitis e.g. pyogenic meningitis, encephalitis, brain abscess, subdural hematoma
Data Collection Procedure: All admitted patients with TBM in pediatric unit were included in this study. Purpose of study was explained to the parents and written consent was obtained. All children were subjected to detailed history and examination. 5ml blood was obtained and sent to laboratory for baseline investigations. CT scan is done with contrast. The demographic details were recorded on a Performa. The data collected was analyzed in SPSS for windows.

Received on 14-04-2021
Accepted on 24-08-2021

RESULTS

The detail of results is given in tables 1,2,3,4

Table 1: Age Distribution

Age	n	%age
1-7 years	55	31%
8-14 years	123	69%
Total	178	100%

Mean age was 9 years with SD± 2.54

Table 2: Common CT Scan Findings

Common CT Findings	n	%age
Hydrocephalous	71	40%
Meningeal enhacement	128	72%
Infraction	5	3%
Tuberculoma	9	5%

Table 3: CT Scan Findings W.R.T Age Distribution

Common CT Scan		1-7 years	8-14 years	Total	P Value
Hydrocephalous	Present	22	49	71	0.230
	Absent	33	74	107	
Total		55	123	178	
Meningeal enhacement	Present	40	88	128	0.381
	Absent	15	35	50	
Total		55	123	178	
Infraction	Present	2	3	5	0.281
	Absent	53	120	173	
Total		55	123	178	
Tuberculoma	Present	3	6	9	0.197
	Absent	52	117	169	
Total		55	123	178	

Table 4: CT Scan Findings W.R.T Gender Distribution

Common CT Scan		Male	Female	Total	P Value
Hydro-cephalous	Present	39	32	71	0.346
	Absent	59	48	107	
Total		98	80	178	
Meningeal enhancement	Present	70	58	128	0.372
	Absent	28	22	50	
Total		98	80	178	
Infraction	Present	3	2	5	0.212
	Absent	95	78	173	
Total		98	80	178	
Tuberculoma	Present	5	4	9	0.179
	Absent	93	76	169	
Total		98	80	178	

DISCUSSION

In this study, CT scan findings among 178 patients were analyzed as 40% patients had hydrocephalous, 72% patients had meningeal enhancement, 3% patients had infraction, 5% patients had tuberculoma. These results are consistent with the results of Peter et al[7] who also observed same results. In another study, CT scan findings in children with TBM show basal exudate in 25(55.6%) cases followed by hydrocephalus in 15(33.3%) cases. Infarcts were seen in 8(17.8%), tuberculoma in 6(13.3%)[6]. In other study, conducted by Qamar FN et al[8] showed Hydrocephalous 3-33%, Meningeal enhancement 13-18%, Infraction 0.5-8%, Tuberculoma 0.5-13%.

Alva R et al[9] in his study showed that hydrocephalus is the most frequent complication of TBM and is prominent in the pediatric age group. In the study by Piennar et al[11], 70% of the patients had infarcts on CT. Most infarcts in our study were in the MCA territory and it is same as reported by Bhargava et al[10].

CONCLUSION

CT scan findings of Tuberculosis meningitis in children was meningeal enhancement 72% followed by hydrocephalous 40%, infraction 3% and tuberculoma 5%.

Conflict of interest: Nil

REFERENCES

1. Clark CRA. Neurological diseases.In Kumar P, Clark M, editors.Kumar and Clarks clinical medicine.7th ed Philadelphia ;Elsevier;2009.p.1153-4.
2. Lozano R, Naghavi M, Foreman K et al. (2012 Dec 15). Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study Lancet. 2010; 380(9859):2095–128.
3. Garg RK. Tuberculous meningitis. Acta Neurol Scand. 2009;122:75-90.
4. Barclay L, Nainggolan L. New European guidelines address hyponatremia management. Medscape medical news (online).(cited on march1,2014) Available at http://www.medscape.com/viewarticle/821130.
5. Pelkonen T, Roine I, Monteiro et al. Risk factors for death and severe neurological sequelae in childhood bacterial meningitis in sub-Saharan Africa. Clin Infect Dis. 2009;48:1107-10.
6. Mahbub M, Azam AZ, khan NZ. Hyponatremia in children admitted with acute bacterial meningitis.DS (Child) HJ 2011; 27(1):31-4.
7. Peter V, Chin-hong, Joseph G. Common problems in infectious diseases and Antimicrobial therapy. In: Maxine A, Stephen J, Mcphee, Papadakis, editors. Current medical diagnosis and treatment. 5th ed. New York: Mc Graw Hill;2013.p.1286
8. Qamar FN, Arshalooz JR, Sania Iqbal et al.Comparison of clinical and CSF profiles in children with tuberculous and pyogenic meningitis; role of CSF protein: glucose ratio as diagnostic marker of tuberculous. Meningitis. Vol. 63, No.2, February 2013
9. Alva R, Alva P. A Study of CT Findings in Children with Neurotuberculosis. IJBR (2014) 05 (11) :1-3
10. Bhargava S, Gupta AK, Tandon PN. Tuberculous meningitis-A CT study. Br J Radiol 1982; 55:189-96.
11. Pienaar M, Andronikou S, van Toorn R. MRI to demonstrate diagnostic features and complications of TBM not seen with CT. Childs Nerv Syst 2009; 25:941–47.