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Sequelae of Bacterial Meningitis Acute Complications and Its Mortality Rate in Services Hospital Lahore

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ABSTRACT

BACKGROUND: Bacterial meningitis results in a major acute complications causing mortality and morbidity in infants.

Objective: This study was performed on the acute complication to obtain data on mortality frequency in children associated with bacterial meningitis.

Study Design: An observational study.

Place and duration: This study was performed in the Department of Pediatrics Services Hospital, Lahore for the period of one year from January 2016 to January 2017.

Patients and Methods:. All patients with possible bacterial meningitis ranging from 1 month to 10 years were included in the study. The data was collected in a proforma which was pre-designed and the data was analyzed with SPSS 14 version.

Results: 50 of the total patients were included in the study. 40(80%) were males and females were 10 (20%) with an M: F ratio of 4: 1. Approximately three-quarters of patients (76.67%) were younger than 1 year (46/60). 21 (35%) patients complained during admission to the hospital. Most common complication were seizures (21.7%) followed by hydrocephalus (10%), subdural effusion (11.9%), hemiplegia (7%), cranial nerve palsy (8%)). In ten patients more than one complications were noted. Only 1 death (1.67%) occurs and refusal was from one patient from medical treatment. In this study, a longer period of time in the hospital than in the 7 days was associated significantly with the ratio of meningitis complications.

Conclusion: In this study, seizures and hydrocephaly is the acute complications of meningitis. Long symptomatic symptoms in patients have an increased risk of acute complications.

Key words: Pyomeningitis, Convulsions, Bacterial meningitis.

INTRODUCTION

In pediatric practice bacterial meningitis is a major issue this is characterized by severe morbidity and mortality despite proper cure. Pathogens responsible in children for most of the cases of meningitis in developing countries are Haemophilus influenza type b (Hib) and Streptococcus pneumoniae. Bacterial meningitis is serious disease only when the antibiotics were not discover. The underlying cause of death in bacterial meningitis are complications of intracranium that occur during the disease in acute phase and cause 2ndry damage of brain. The most common acute complications include seizures, increased intracranial pressure (ICP), subdural effusion, hydrocephalus, hemiplegia and cranial nerve paralysis. Complications in developing countries are sometimes caused by parental ignorance or postponement of treatment to the hospital for appropriate treatment. The entire clinical spectrum knowledge and early complications detection is a requirement for better disease management. Bacterial meningitis is divided into three groups according to the World Health Organization (WHO) case definition:

Suspicion: neck stiffness, consciousness or other brainstem signs, sudden attack and anyone with one of the following signs. Second Possible cerebrospinal fluid (CSF) is a suspicious condition with at least one of the following being examined: cloudy; (100 cells / mm3 leukocytosis); (10-100 cells / mm3 leukocytosis) and (> 100 mg / dl high protein) decreased. Confirmation: In a laboratory confirmed case of a bacterial pathogenesis (Hib, pneumococcal, and

meningococcal) CSF or a bacterial meningitis-compatible clinical syndrome in the Kidneys (ie, variant) or detection (ie, antigens with Gram stain or detection methods). Bacterial meningitis most common cause in developed countries is reduced infection of Hib vaccine. This is now included in the vaccination program by the extended immunization program (PAI) in Pakistan. Pneumococcal meningitis, theoretically is also a preventable disease by vaccine. Pneumococcal vaccine universal use in recovery (PCV) has resulted in a reduction in pneumococcal invasive disease significantly. Hib and pneumococcus can be reduced by over 60%, with a significant reduction in the financial and emotional burden of infant acute bacterial meningitis caused by infants becoming part of universal vaccination. The purpose of this study was to know the frequency and acute complications types related to meningitis. In addition, we identified higher incidence related factors of meningitis complications.

PATIENTS AND METHODS

This study was performed at Department of Pediatrics Services Hospital, Lahore for the period of one year from January 2016 to January 2017. The WHO case description ranged from 30days to ten years, covering all possible bacterial meningitis criteria according to all patients included in the study. A suspected CSF examination of meningitis is defined as a condition showing one at least of the following: blurred; leukocytosis (& gt; 100 cells / mm3); Note the demographics of these patients with 10-100 cells / mm3 leukocytosis and > 100 mg / dl high protein or glucose reduction <40 mg / dl. The duration of the episode and treatment before or during the hospital, either oral or intravenous treatment was also observed. Ultrasonography and CT Scan of the head were performed when necessary. In this study, other laboratory parameters such as CSF cultures were not analyzed. After diagnosis, patients were treated with antibiotic age dependent:

(i) 1 and 3 months of age children: amikacin with cefotaxime or ceftriaxone; (Li)> every 6 months: benzyl penicillin ceftriaxone or cefotaxim . Dexamethasone was administered Intravenously at 0.15 mg / kg / dose for two days, every 6 hours (or the first dose administered before the first dose of antibiotics). Antibiotics CSF examination, clinical response or permanent infection (if necessary) is changed. The second-line antibiotics were meropenem or vancomycin . These patients had bacterial meningitis and associated mortality followed by any acute complication during the hospital stay. All data were recorded in pre-determined forms and the results were analyzed as a percentage using the SPSS 16 version. statistical analysis was done with chi square chart.

RESULTS

Of the 50 included patients in this study, 40 (80%) were male and 10 (20%) were M: F 4: 1. 1-3 months of age include Nine patients (15%). Between 3-6 months of the patients were 10 (25.0%) , Between 6 months and 1 year include 20 (36.7%), 7 (16.7%) between 1 and 5 years and 4 (6.7%) were over 5 years old. . All the kids went to the lumber puncture on the first day of entry. TLC varies from 65 to 6000 /, 65% was mean neutrophil count, protein in CSF was between 49-550 mg / dl (mean = 148 mg / dl).) and 10 to 360 mg / dl (mean = 67 mg / dl) is the CSF sugar range. The 2nd and 3rd lumbar puncture were done in 7 (12%) and 18 (30%) patients, respectively, according to clinical indications. 21 (35%) patients complained during admission to the hospital. Hydrocephaly and Subdural effusion after four days were the most common complications. With more than one complications shown in (Table 1) there were ten patients, as shown in Figure-1.

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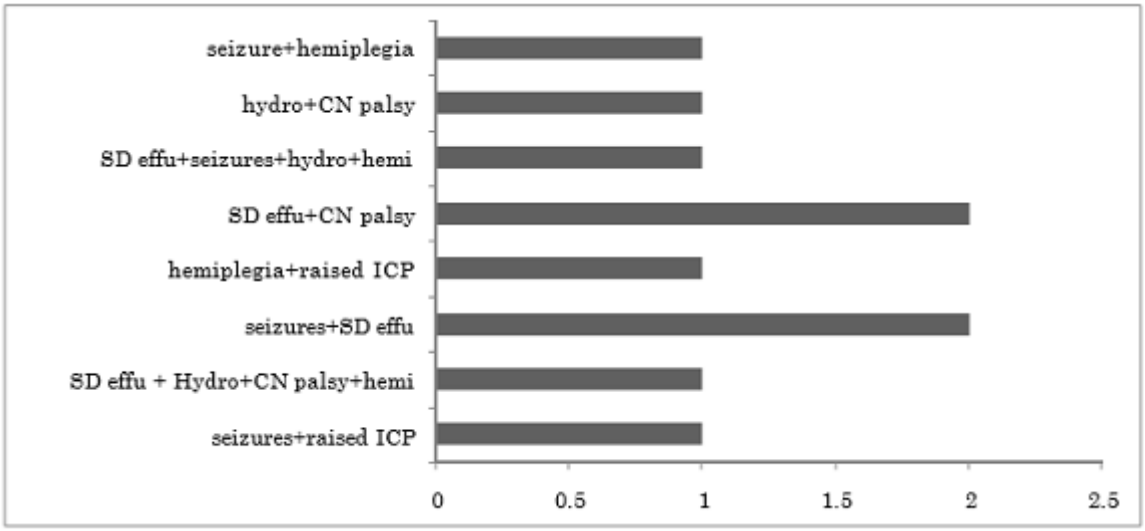
TABLE 1: Frequency of acute complications in bacterial meningitis. (n=60)

Complications	Number	%tage
Subdural effusion	07	11.7
Seizures after four days	11	18.3
Hemiplegia	04	06.7
Hydrocephalus	06	10.0
Cranial nerve palsies	05	08.3
Raised intracranial pressure	02	03.3



The duration of the visit before the hospital visit was 50% (n = 30), 23% (n = 14) within 3 to 7 days and 1 to 3% within 7 days (n = 17). 50% of the patients were treated before going to the hospital. Seven of these patients received intravenous and 23 received oral treatment. Cranial ultrasonography revealed the meningitis in 8 patients (16%) in 50 patients (83.3%), described above is a complication. Similarly, 39 (63.3%) patients underwent computerized tomography and 14 (38.8%) of them had some complications. There was a linear relationship in our study between the complications frequency and the duration of the story before going to the hospital.(Table 2).

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TABLE-2. Relationship of acute complications with various parameters

	Complications		P value
	Yes	No	
Age			
1-3 months	3	6	
3-6 months	6	9	
6-12 months	9	13	0.522
1-5 years	2	8	
>5 years	1	3	
Sex			
Male	16	32	0.412
Female	5	7	
Duration of history before hospitalization			
1-3 days	5	25	0.002
3-7 days	5	9	
>7 days	11	5	
Cerebrospinal fluid cell count			
10-500	19	33	0.759
500-100	1	4	
>1000	1	2	
Treatment before hospitalization			
Oral	10	13	
Intravenous	4	3	0.133
No treatment	7	23	

During the treatment, 23 (38.3%) children were given second line antibiotics according to the clinical indication. One patient with fifty patients (1.67%) had come to an end and one went to get medical advice.

DISCUSSION

Acute bacterial meningitis causes many deaths and long-term morbidity worldwide. In countries with low resources, the this disease incidence is about 10 times higher than in countries with good resources. In our study, 80% of sixty patients were male. This could mean male sovereignty and gender discrimination in Southeast Asia. Approximately 75% of our patients (n = 46) were under 1 year of age. In a study by Chinchankar and colleagues in India, 77.7% of children showed that they were under 1 year old. A study from the same continent showed that subdural effusion is the most common complication of meningitis. This study suggests that delayed onset of effective treatment due to delayed admission is a predictor of a fatal outcome (p value = 0.002). This has been supported by several studies at the lower level. The cause of the delay in presentation was the late diagnosis of the primary care physician, which probably caused common complications. In a study from India, 18.5% of patients needed second-line antibiotics according to the protocol. In our study, second-line antibiotics were added to 23 (38.3%) children during treatment, the majority of which were clinically modified prior to antibiotic culture results and CSF sensitization. In India and other developing countries, the case-fatality rate was recorded as 16 to 30%. Even in developed countries, the mortality rate for bacterial meningitis in early childhood is 10%, despite the presence of all facilities. Only one (1.6%) patients die in our study. One of the limitations of our work is the recording of patients who are stable enough to have a lumbar puncture only on the first registration day.

CONCLUSION

Bacterial meningitis is a serious disease associated with significant morbidity and mortality despite improvements in antibiotics. Complications are more common under one year of age. Subdural effusion and hydrocephalus are the most common complications after four days on top. The long history of seven days is associated with a higher incidence of acute complications. Acute complications are at increased risk for late-onset patients. Early referral, timely diagnosis and appropriate treatment reduce morbidity and mortality associated with bacterial meningitis.

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