

Clinical Response With Antibiotics of 37 Cases of Acute Pyogenic Meningitis in Paediatrics (From 3- 12 Years)

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Over a period of one year 37 confirmed cases of acute pyogenic meningitis by latex agglutination method were admitted in department of paediatrics, Liaquat Medical College Hospitals (LMCH) Jamshoro Hydrabad, Sindh. These patients were treated with various antibiotics with the result that ampicillin plus chloromycetin is in combination as is effective as cephalosporin up to the age of 4 years and up to 12 years ampicillin as ampicillin plus chloromycetin which is standard treatment.

Key words: Antibiotics, acute Pyogenic, meningitis, paediatrics

Prior to the introduction of antibacterial drugs in late 1930s, meningitis was almost uniformly fatal. The era of antimicrobial treatment begins in 1932. First clinical study was reported by Foster, who gave sulfonamide prontosil to a 10 months old infant with septicemia, meningitis and obtained a dramatic cure. Alexander Fleming discovered penicillin in 1928 and introduced in clinical medicine in 1941 by Florey (Gradyo Garvid, 1971). The third generation cephalosporins were introduced in early 1980's. The treatment of acute Pyogenic Meningitis includes antibacterial therapy and supportive care in this paper only antibacterial therapy will be discussed.

The fundamental goal of therapy is to permit normal growth, development and prevention of the complication is the first and most dramatic step in allowing the patients to achieve his potential.

In acute pyogenic meningitis there is no justification for not applying optimal therapy and those antibiotics are to be used which cross blood brain barrier easily. Now a days attitude differs from one hospital to an other, even in the same city. So it is necessary to compare the randomized clinical response of various antimicrobials and to find out the most effective drug. As most of the cases are partially treated and the sensitivity results were available in limited cases.

The antibiotic therapy started at once after the lumbar puncture is performed for diagnostic purposes. Usually sensitivity reports is obtained after 36 to 48 hours, after which prompt antibiotic is given (HR et al, 1987). Every moment of delay increases the chance of unfavorable outcome. In our series the treatment was started soon after performing the lumbar puncture, in cases where the sensitivity results were available the treatment was changed according to the sensitivity.

Material and methods:

This study was conducted for a period of one year. The total number of patients ranging from 1-3 years to 12 years of age was 37. All 37 patients were having acute pyogenic meningitis confirmed by Latex agglutination test and in some cases by culture and sensitivity tests as well.

For initial 24 hours we put the patients on intravenous antibiotic and reviewed the case after 48 hours by performing a repeat lumbar punctures, to see the change in protein, sugar level and cell count. The sugar level settled first and the cells in the last. At the same time the samples were also sent for culture, but it came to be negative in all cases after 48 hours of treatment, which could have been due to poor laboratories facilities. We observed clinically the response of the patient to the treatment as, level of consciousness, convulsions and fever which settle down gradually. These were our parameters to see the clinical response to the treatment.

In those cases where clinical response and C.S.F cytochemical changes were well, the treatment was continued according to our protocol and the third lumbar puncture was repeated before the patient was discharged or on the 9th day of therapy what ever was convenient : whereas the cases not responding clinically or in C.S.F cytochemistry, the treatment were changed. The results of the therapy are as follows:

Results:

From 3 years to 12 years age total number of 37 patients were treated, out of which 12(32.43%) with cephalosporin, 10(27.02%) with ampicillin plus chloromycetin and 15 (40.45%), with ampicillin alone.

Consciousness was regained in one patient on 2nd day treated with cephalosporin, in one on third day who received ampicillin plus chloromycetin and in another one also on 3rd day treated with ampicillin alone.

Convulsions settled within 24 hour in 3 cases, in 2 cases on 3rd day and in one case on 7th day treated with cephalosporin. The patients who received ampicillin alone convulsion settled in 2 cases with in 24 hours, in 2 cases on 3rd day and in one case on 7th day. The patients who received ampicillin plus chloromycetin, convulsions settled in 2 cases with in 24 hours, in one case on 3rd day and in another one case on 7th day.

In patients treated with cephalosporin C.S.F responded with in 48 hours in 11 cases and in one case between 3rd and 7th day. Among the patients treated with

ampicillin plus chloromycetin 9 responded with in 48 hours and one between 3rd and 7th day. Whereas patients treated with ampicillin alone, 12 responded within 48 hours and 3 between 3rd and 7th day and one between 1 7th and 10th day, who also responded but slowly.

Fever settled down in 4 cases on 2nd day in 7 cases between 2nd and 7th day and became prolonged in one case treated with cephalosporin. Among patients treated with ampicillin plus chloromycetin 4 responded on 2nd day, 4 cases between 3rd and 7th day, one case on 10th day and in one case it was prolonged. Out of the patients who received ampicillin alone fever settled on 2nd day in 7

cases, in 3 cases between 3rd and 7th day and in one case on 10th day, whereas in 2 cases it became prolonged.

The patients treated with cephalosporin did not die but 2 (16.66%) cases had complications and 10 (83.33%) were improved. In cases treated with ampicillin plus chloromycetin there was no death but 2 (20%) had complications and 8 (80%), were improved. The cases treated with ampicillin alone 1 (6.66%) a 4 years old boy with history of 5 days suggestive of meningitis had pneumococcal meningitis and died on the first day of admission.

Table 1: Response of chemotherapy in patients of acute pyogenic meningitis aging from 3 years up to 12 years.

Antibiotic Given	Nos of Cases	Consciousness Regained in Days				Convulsions Settled in Days			
		2 nd	3 rd	5 th	7 th	1 st	3 rd	5 th	7 th
Cephalosporin (3 rd Generation)	12	01	-	-	-	03	02	-	-
Ampicillin plus chloromycetin.	10	-	01	-	-	02	01	-	01
Ampicillin.	15	-	01	-	-	02	02	-	01

Antibiotic Given	No. of Cases	C.S.F Response in Days				Fever settled in Days.			
		2 nd	7 th	10 th	14 th	2 nd	7 th	10 th	Prolong
Cephalosporin	12	11	01	-	-	04	05	-	01
Ampicillin plus chloromycetin.	10	09	01	-	-	04	04	01	01
Ampicillin.	15	12	02	01	-	07	03	01	02

Antibiotic Given	No of Cases	Cured	%age	Complications	%age	deaths	%age	Total Fatality %age
Cephalosporin	12	10	83.33	02	16.66	-	0	16.66
Ampicillin plus chloromycetin.	10	08	80.0	02	20.0	-	0	20.0
Ampicillin.	15	12	80.0	02	13.33	01	06.66	20.0

Discussion:

Acute Pyogenic Meningitis first recognized in 1805 is still a fatal disease, although the antibiotics have reduced the mortality, the most recent clinical trails in sepsis and meningitis have been directed at the most inflammatory response in an attempt to improve the outcome (Khichi, Qasim Ghulam et al). The patients ageing from 3 years to 12 years were treated with cephalosporin, ampicillin plus chloromycetin and ampicillin alone. The cephalosporin were given to (12/37) 32.43% of patients with fatality rate 16.66% and ampicillin plus chloromycetin to (10/37) 27.02% of cases with fatality rate of 20% in which one case was of H. influenzae meningitis, who developed fits and also had tuberculosis, otherwise it was as effective as cephalosporin alone. In cases of cephalosporin missing a dose in 24 hours is very dangerous, whereas in case of ampicillin plus chloromycetin to miss a dose have little effect. Majority of our population belongs to low socio-economic group and cephalosporins are cost effective as compare to ampicillin plus chloromycetin. Steele RW at al, 1983 Peltolia H et al, 1989 showed neither clinical

difference nor laboratory values that might indicate superiority of cephalosporin over ampicillin plus chloromycetin.

Ampicillin was given to (15/37) 40.54% of the cases with a fatality rate of 20% with death of a 4 year old boy with pneumococcal meningitis, who came in very late stage of illness for hospitalization otherwise no other death occurred. The cytochemical response of the C.S.F was slow as compared to ampicillin plus chloromycetin and cephalosporins therapy and the problem of resistance the H. influenzae is present. Otherwise it is as effective as ampicillin plus chloromycetin after the age of 4 years of patients. The Peltola H et al, 1989 summarized that ampicillin is still effective, but with the only drawback of resistance of H. influenzae. Schulkind ML et al, 1971 showed that the results of ampicillin versus chloromycetin were same and some pediatricians observed that the ampicillin does not induce a rapid clinical response as with chloromycetin, but his study does not favour this impression.

Benzyle Penicillin was not included in the regimen decided before the start of study due to the resistance in some cases of *S. Pneumonia* to Benzyle Penicillin by (Klein JC et al, 1987) and because the treatment recommendation for Community Physicians who do not have facilities for isolation and sensitivity of organism. However in future trails of B. Penicillin may also be tried to ascertain its efficacy.

Conclusion:

The drug of choice in patients age 3 years onward is combination of ampicillin, plus chloromycetin which is cheap and as effective as 3rd generation cephalosporins, and after the age of 4 years ampicillin is also as effective as ampicillin plus chloromycetin.

The antibiotics alone do not cure the acute pyogenic meningitis completely, the importance of intensive care of patients during hospitalization, generally to improve the public awareness , case hospital referral, better nutritional status with breast feeding and immunization of children

will all jointly reduce the fatality rate in meningitis (Kachi Qasim Ghulam et al, 2003). It is also necessary to follow up the patients after proper treatment of meningitis for a prolonged period.

References

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