Brief Communication

The Use of Long-Acting Chloramphenicol in the Treatment of Acute Bacterial Meningitis in North Darfur State, Sudan - 1999

Abdelrahim Osman Mohamed[1], **Nasir Abdel Aziz**[2],
[1] Department of Biochemistry, Faculty of Medicine, University of Khartoum, P.O Box: 102, Sudan, [2] Faculty of Medicine, University of Elfashir, Sudan.

Acute bacterial meningitis or cerebrospinal meningitis (CSM) continues to be a threat in epidemic forms for the area known as the meningitis belt in Africa extending from Ethiopia in the east to Senegal in the west(1,2). Sudan experienced an epidemic in Khartoum in the period from February to June 1988 with more than 10 thousand patients(1). The epidemic ended with the rainy season but started again during the dry season of 1989. In December 1998 a wave of a new epidemic started in North Darfur State, western Sudan and gradually extended to the neighboring states, the Capital State and the states on the route to the harbor on the Red Sea. The course of the epidemic was expected from the report of an expert joint mission to North Darfur in January 1999 (experts from WHO, UNICEF, MSF France, IFRC, the Federal Ministry of Health and the State Ministry of Health). A total number of 1480 cases were recorded in 22 weeks in North Darfur with a case fatality rate of 10.1%. Out of which 788 patients were males and 692 were females. The majority of patient were below 30 years with only 122 patients (8%) above 30 years of age. Clinical features of fever, neck stiffness and a lumber puncture producing turbid cerebrospinal fluid (CSF) were the major findings. Examination of the CSF by latex test kit (Slidex, Bio-Merieux. Charbonnicrcs-les-Bains, France) and culture on chocolate and blood agars showed that the pathogen was *Neisseria meningitides* type A. Subtyping in the National Health Laboratory in Khartoum and laboratories in Europe showed that it was *Neisseria meningitides* type A, serotype 4 and ST-7 that was responsible for epidemic in the Sudan in 1999 (3).

The treatment used in the beginning was aqueous chloramphenicol, benzyl penicillin given intravenously or both. In the end of January 1999 we received a donation of long acting oily chloramphenicol from MSF-France. It was the first time to use it in Sudan. It was used as a single dose of deep intramuscular injections (100 mg/kg and not exceeding 3 grams) divided in the two buttocks. In the literature, oily chloramphenicol was used since 1979 in epidemics of meningitis in West Africa(4,5,6). There was no report of adverse side effects from the treatment, however, the samples tested were relatively small(2). A report from the Sudan in 2002 showed that oily chloramphenicol was superior to the 5 day treatment with benzyl penicillin(7). In this study, 219 patients were followed up for 4-12 weeks after recovery. 113 patients were treated with oily chloramphenicol and 106 patients were treated with penicillin and powder chloramphenicol. The two groups were compared in respect to treatment time, stay in the treatment center and complications. The patients had age range of 1.5 to 42 years only 16 patients (7.3%) exceeded 30 years of age. Males were 121 and females were 98. Patients treated with oily chloramphenicol had 2.3 days mean time for recovery, significantly different from the mean time needed for the treatment with benzyl penicillin and powder chloramphenicol which was 6 days (Table1).

Table 1: Comparison of patients treated with oily chloramphenicol (treatment A) with those treated with penicillin and powder chloramphenicol (treatment B)

Treatment Modalities	Age by years ± SD	Treatment duration	Duration of stay	Complications
Treatment A N=113	14.0 ± 10.6	2.3*** ± 1.0	4.7*** ± 2.0	1
Treatment B N=106	12.5 ± 10.5	6.0 ± 1.9	6.0 ± 2	4
Total n=219	13.3 ± 10.6	4.1± 2.4	5.3 ± 2.1	5

***p<0.001

However, due to the fact that most patients were from rural areas (n=182), they stayed longer in the treatment centers. Mean duration of stay was 4.7 days still significantly lower than the time spent when treated with penicillin. The recorded complications were all due to the disease ranging from visual to hearing problem to ataxia, 4 patients with complications were treated with penicillin compared to one who was treated with oily chloramphenicol. Seven patients treated with oily chloramphenicol had non painful swellings at the sites of injections.

We conclude from this short report that oily chloramphenicol is more suitable for epidemic meningitis in Sudan because of the reduced cost and time of treatment with no observable complications. It ensures compliance and reduction of sequalae in young age groups of patients.

References

1. Salih, M.A.M (1990). Childhood acute bacterial meningitis in the Sudan: An epidemiological, clinical and laboratory study. Scandinavian Journal of Infections Diseases, supplement 66, 1-103.
2. Greenwood,B. (1999) Meningococcal meningitis in Africa. Transactions of the Royal Society of Tropical Medicine and Hygiene, 93, 341-353.
3. Jacobsson S, Issa M, Unemo M, Backman A, Sulaiman N, Olcen P (2003). Molecular characterization of group A Neisseria meningitides isolated in Sudan 1985-2001. APMIS, 111(11), 1060-1066.
4. Wali, S.S, Macfarlane, J. T, Weir, W. R. C. Gleland, P. G., Ball, P. A. J., Hassan-King. M., Whittle, H.C & Greenwood, B.M. (1979). Single injection treatment of meningococcal meningitis with Long-acting chloramphenicol. Transactions of the Royal Society of Tropical Medicine and Hygiene, 73, 698-702
5. Puddicombc,J. B, Wali S.S & Grecnwood B.M (1984). A field trial of a single intramuscular injection of long-acting chloramphenicol in the treatment of meningococcal meningitis. Transactions of the Royal Society of Tropical Medicine and Hygiene, 78,399-403.
6. Pecoul, B, Varaine, F, Keita, M, Soga, G, Djibo, A, Soula, G, Abdou, A, Etienne. J, & Rey, M, (1991). Long-acting chloramphenicol versus intravenous ampicillin for treatment of bacterial meningitis. Lancet, 338, 862-866.
7. Hussein AA, Abdel Rahman SI (2002). Meningigoccal meningitis epidemic. A new role for single-dose oily chloramphenicol. Saudi Medical Journal, 23(7), 797-80