

Ceftriaxone for Treatment of Severe Infections in Peripheral Health Centers in Africa

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INTRODUCTION

The choice of antibiotics in Africa must be related to their cost/effectiveness: this is particularly true in developing countries where resources are scarce for individuals and health units as well.

The goal of this study is to examine the problems of infectious diseases in Africa and therapeutic advantages of ceftriaxone.

IMPORTANCE OF INFECTIOUS DISEASE IN AFRICA

Infections and parasitic diseases amount to 45% of inpatient and 33% of outpatient treatment in 3 major peripheral hospitals of the Ivory Coast.

If true parasitic diseases were excluded, and if meningitis and pneumonia were counted, the infectious diseases amount to about 45% of all consultations in hospitals.

About 4 million registered diagnoses are made each year in the peripheral health centers in this country: 25% of them for infectious diseases. Their

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high lethal outcome leads to an important death rate in hospitals (Table 1).

AVAILABLE FACILITIES

Personnel is scarce and outnumbered; during seasonal epidemics of meningitis or respiratory diseases, bed occupation exceeds 100%. The average medical staff is as follows: 1 physician for 35 beds, 1 nurse for 12 beds, and 1 nurse-assistant for 6 beds.

Parasitological or bacteriological examinations are performed in only 5-10% of the cases and hematological examinations in 2-65% of cases.

Shortage of medical material and drugs oblige patients to buy most of them themselves.

Health conditions of inpatients are usually bad: hospital attendance is often delayed for psychological or financial reasons.

In health centers the average stay is 2 days for malaria, 5 days for measles and 13 days for pneumopathias; for hospitalization it is twice or 3 times that long.

ADVANTAGE OF CEFTRIAXONE

Ceftriaxone, a third-generation cephalosporin, can be particularly beneficial for the following reasons: a) One single dose a day relieves the staff workload; b) high efficacy of the drug can quickly improve the clinical status of patients; c) a broad-spectrum antibiotic is of advantage when bacteriological results are lacking.

In the treatment of meningitis, a cure rate of 90% was observed within 6 days in Niamey (Niger).

TABLE 1 - Importance of infectious diseases in Ivory Coast (1983-84)

	% Cases. (WHO Listing) overall ID	Pneumonia % of cases	Meningitis % of cases	Number of patients	Death rate due to infectious diseases
<i>Korbogo (North)</i>					
Méd. Hosp	48.5	16.6	12.7	1055	42.8
<i>Bouake (Center)</i>					
Méd. Hosp.	43.9	7.5	2.1	1279	46.8
Méd. Consult.	33.7	9.4	1.5	1425	—
<i>Aboisso (South)</i>					
Méd. Hosp.	23	17.8	0	443	37.5
Méd. Consult.	21.6	7.2	0.2	1324	—
Pédiatries	31.4	12.9	3.6	365	40
Pédiatries Consult.	42.5	13.7	0.3	1045	—
<i>Health Centers</i>					
1983	26.6	8.2	—	5,418,000	—
1984	25.1	7.7	—	3,956,000	—

TABLE 2 - Cure rates obtained with Ceftriaxone

Author (Year)	Pathology	Number of patients	Dosage	% Cure rate	CFTX treatment (in days)	Other drug treatment (in days)
Mezger et al. (1981)	Meningitis (Meningococcal, H. influenzae, Listeria m.)	20 children and adults	75 mg/kg	90	6	12
Wunderlin et al. (1985)	Meningitis (H. influenzae, Meningococcal, Pneumococcal)	30 children	100 mg/kg	87	4	20
Yon et al. (1986)	Meningitis (H. influenzae, Streptococcus, Pneumococcus)	15 children	100 mg/kg	80	5	9
Mezger et al. (1981)	Pneumonia	10 adults and children	75 mg/kg	100	12	—
Lamarque (1985)	Pneumonia	10 adults	2 g	100	7	13

ilar results were recorded in Dabou (Ivory Coast) where cure was obtained in 5-7 days for pneumococcal or hemophilus meningitis in children. Comparative results were also stated by NGU et al. in Yaoundé, Cameroon (personal communication).

In severe respiratory tract infections we obtained excellent results, especially in pneumonias resistant to β -lactam antibiotics. Equivalent results were observed by LAMARQUE et al. in Abidjan (Table 2). Several other clinical studies were performed in Africa in the treatment of various infectious diseases such as septicemia in newborns, typhoid fever, endocarditis, osteomyelitis, peritonitis following obstetric complications, acute abdominal, ORL infections and ophthalmias.

In most cases, promising results were obtained which are similar to those observed in clinical trials in Europe and North America¹⁻⁴. (However, its use might be limited to acute pneumonia when pneumococcus can be incriminated or in the cases of meningococcal meningitis epidemic).

This is of particular importance for African patients if necessary transfer from remote rural areas to hospitals or shorter periods of hospitalization are required.

CONCLUSION

Ceftriaxone, third-generation cephalosporin, is of great interest in the treatment of infectious diseases which often appear under threatening conditions in Africa.

Its rapid activity and its good penetration into

tissues have a positive effect on the clinical status of patients which is often compromised by concomitant or pre-existent diseases.

Ceftriaxone, on account of its long half-life, its broad spectrum and its peak plasma levels far in excess of the MIC of many pathogens, has a clear-cut advantage especially when accurate etiology of diseases is unknown.

Its efficacy allows considerable shortening of the duration of treatment. Thus, in some indications, cure can be expected within half of the time or even less than with other drugs, curtailing hospitalization costs. The single daily dose reduces nursing time and enhances safety of administration, since under those circumstances midday and evening injections are often omitted.

Parenteral administration furthermore avoids intestinal absorption problems frequently occurring in the tropics.

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