Infant and child mortality and malaria in the Congo. The trend in the suburbs of Brazzaville between 1981 and 1988

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Abstract

This survey was carried out on a cohort of children born between 1st January 1981 and 30th June 1987 in the maternity department of the hospital in Linzolo, a village situated 25 km south-west of Brazzaville, the capital of the Congo. The mothers of the children resided in the suburbs of Brazzaville at the time of delivery. In this region, the rate of transmission of *Plasmodium falciparum* malaria is high without marked seasonable variations. The mothers and children were traced in the second quarter of 1989 in order to assess the rates and, where possible, the causes of mortality. Information on 75 % of the recorded births (2424 children) was obtained directly by interviewing the mothers in the home. Between 1981 and 1988, the infant mortality rate varied overall between 33 and 52 per thousand, and in the 1–2 year age group, between 7 and 25 per thousand (1981 to 1987). The number of deaths attributable to malaria was relatively low although resistance to amino-4-quinolone is well established since 1985. During this period, no particular

situation in suburban areas, we carried out a retrospective study on a co- hort of children residing in the south-west suburbs of Brazzaville.

Methods

Study region

The survey was conducted in an area along the River Congo, extending from the western outskirts of Brazzaville (after the River Djoué) to the village of Gangalingolo (15 km from Brazzaville) which marks the limit of the city of Brazzaville (Fig. 1). The village of Linzolo, linked to Brazzaville by an all-weather road is situated 10 km further south. The maternity department of the Linzolo hospital has a good reputation which accounts for the fact that half the women who give birth there live in the south-west suburb of Brazzaville. In this region, although the housing is relatively dense, the dwellings are not of urban construction. The density of the malaria vectors, mainly *Anopheles gambiae*, is high. The rates of transmission are also high, varying from 200 to 1,000 infective bites per person-year, without marked seasonal variations (Carnevale, 1979; Trape et al., 1987a). No concerted measures of vector control or systematic chemoprophylaxis have been carried out for over twenty years. As in the whole of the

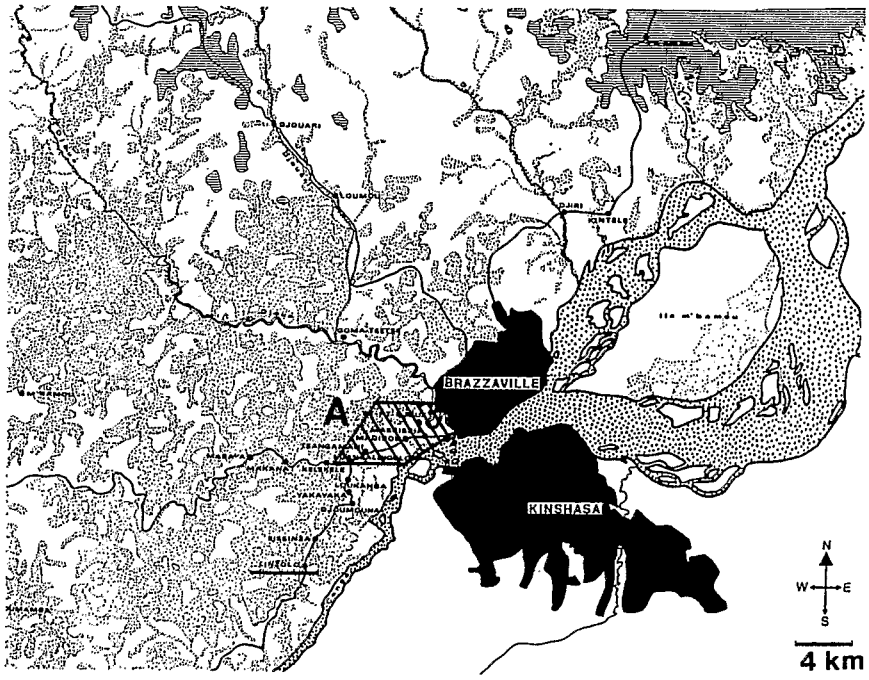

Fig. 1 Map of the region of Brazzaville showing the study area (A).

The families who were not found had either emigrated or their address was incorrect. The proportion of such families do not vary significantly from year to year (21 to 29%). No objective factor suggested that the mortality of this population was different from that of the children whose families were interviewed.

Data analysis

The data were analyzed on a micro-computer with the 1988 version of Epidémio Software (B. Duflo).

Results

The rates of infant mortality (Fig. 2) were relatively low, varying with no particular trend between 33 and 52 per thousand for children born between 1981 and 1987. Similar rates were observed for the mortality at 1–2 years and in general for the child mortality (0–5 years), although for this age range the results apply to children born before 1985 (Fig. 3). Given the method used, it is not possible to indicate absolute or relative rates of exact causes of death.

However, the low number of deaths attributable to malaria in this study is consistent with the low mortality due to malaria in the region. In addition, for mortality at 0–2 years no particular trend was noted between 1982 and 1988. The (Carme et al., 1984). The results of the present study showing even lower rates are consistent with these data, and place the Congo, at least these urban and suburban zones, in a privileged position for a sub-Saharan African country.

In general, there is a non-linear relationship between the gross national product of a country and the rates of infant mortality (Tabutin, 1987). However, there may be a considerable differences within a given country. This is the case in Zaïre, where particulary high general and malaria-related mortality rates have been reported recently in the mountanous Kivu province where the socio-economic standard is low (Delacolette et al., 1989).

Since 1984 in the Congo, besides drug resistance of malaria, two new factors with opposing effects may modify the rates of infant and child mortality. These are the emergence of paediatric AIDS (Senga et al., 1988) and the decrease in the number of measles cases due to improved vaccination cover.

The pernicious anaemic forms of malaria – less frequent and/or less well-documented than cerebral malaria in sub-Saharan Africa – cannot be assessed by the type of survey chosen. In any event, we intended to assess the trend corre-

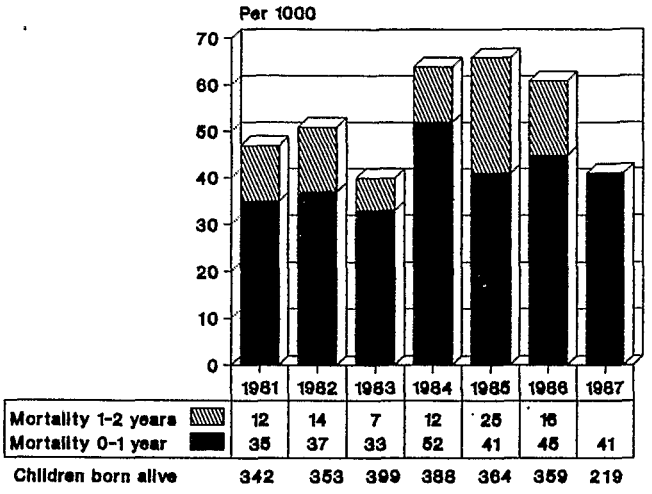

Fig. 2 Mortality at 0–2 years (children born alive between 1981 and 1987 residing in the suburbs of Brazzaville).

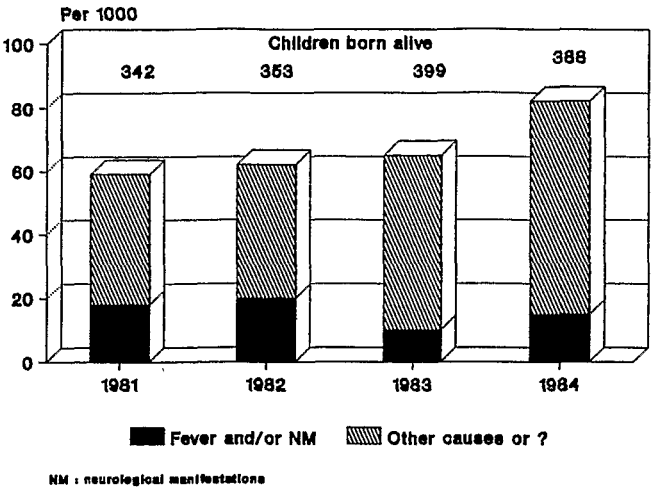

Fig. 3 Mortality at 0–5 years (children born alive between 1981 and 1984 residing in the suburbs of Brazzaville).

Table 1 Questionnaire used for the longitudinal study.

Data of interview:		Interviewer:
Village:		
Information for children born at the maternity ward of Linzolo Hospital		
Year or birth: 19__	Village of origin (mother):	
Name:	First name: Sex: M:	F:
Date of birth: __/__/19__	N° birth certificate.	
Name of mother:		
Name of father:		
Information obtained from: mother:	father: aunt:	autres:
Child known:	Child unknown:	
Child living:	Child dead:	
Child moved:	details:	
Information in case of deaths		
Date of death: __/__/19__		Age of death:
< 24 hours:	1–2 yr:	
Day 1–7:	2–3 yr:	
Day 8–28:	3–4 yr:	
1–6 months:	4–5 yr:	
6 months–1 yr:	5 yr:	
Circumstances and symptoms proceding death		
Accident (trauma)?	yes:	No:
Poisoning?	yes:	No:
Measles?	yes:	No:
Other:		
Symptoms		
Fever	yes:	No:
Convulsions	yes:	No:
Unconsciousness	yes:	No:
Cough	yes:	No:
Respiratory difficulties	yes:	No:
Vomiting	yes:	No:
Diarrhoea	yes:	No:
Weight loss	yes:	No:
Oedema – face	yes:	No:
– limbs	yes:	No:
Skin disorders	yes:	No:
Pain	yes:	No:
– Site of pain:		
Other symptoms:		

ity from malaria has also been observed in the rural forest region in the south of the country (Mayombe mountains) (Richard et al., 1987). This is thought to be due to the fact that parents rapidly carry out presumptive treatment in children with fever by giving an amino-4-quinoleine, since chloroquine and amodiaquine are widely available in the country (Carme et al., 1990). However, the advantage of this practice (Baudon et al., 1986) is not universally recognized (Spencer et al., 1987; Greenwood et al., 1988; Delacolette, 1989).

A recent study in Brazzaville found a slight increase in mortality from malaria (Carme et al., 1992). This trend, although less marked, is consistent with that observed in Kinshasa, the capital of Zaïre situated on the other side of the River Congo (Greenberg et al., 1989). It does not seem to be related to the AIDS epidemic since HIV infection has not been found to contribute to the occurrence of severe malaria (Greenberg et al., 1988), but rather to the lower drug sensitivity of local strains of *P. falciparum*.

However, type R1 R2 resistances only have a slight effect on mortality (Hoffmann et al., 1984; Sudre et al., 1990). Apyrexia and clinical cure are common in spite of the persistance of low parasitaemia (Brandling-Benett et al., 1988). These data moderate somewhat the current pessimism related to malaria, as do recent results indicating the stabilization of amino-4-quinoleine resistance (Carme et al., 1991).

In conclusion, our results show that by 1988 there had not been an obvious increase in malaria mortality in the suburban areas of Brazzaville where malaria transmission remains intense. Early treatment of fever still seems sufficiently effective to prevent the occurrence of severe malaria in this population who have a good level of malaria immunity. In regions of lower transmission such as the cities of Brazzaville or Kinshasa, however, this might not be the case.

Acknowledgement

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