

The Central African Journal of Medicine

Volume 5

MAY, 1959

No. 5

Poliomyelitis: Southern Rhodesia, 1958

BY

D. M. BLAIR, O.B.E., M.D., D.P.H.
Federal Secretary for Health, Salisbury.

In a previous issue of this *Journal* (Blair, 1958) an account was given of the natural history of poliomyelitis in Southern Rhodesia since the end of the 1939-45 war. This showed that in earlier years the incidence of the disease in the African population had not been high, and in fact not until 1957 had the African notifications exceeded those in non-Africans, a very much smaller population group. It was also clear that notification of non-paralytic cases was very rare in Africans and that it was better to compare the race incidence on paralytic cases only. During 1957 an extensive poliomyelitis vaccination campaign was carried out during both the height of the epidemic and while it was on the wane.

The epidemic in 1957 reached its peak in March and April, and the number of cases reported in each of the age-groups 0-4 years, 5-14 years and 15 years and over was much the same in the non-African population. However, in the African group the number of cases was far greater in the age group under 5 years.

POLIOMYELITIS IN THE FEDERATION

The 1957 epidemic was most severe in Southern Rhodesia, but it also affected both Northern Rhodesia and Nyasaland, although somewhat later than was the case in Southern Rhodesia. Table I shows the comparative incidence in the three territories in 1957 and 1958. These figures show that in 1958 Southern Rhodesia only had about one-tenth of the 1957 cases, Northern Rhodesia had about a quarter and Nyasaland a half. Many of the notifications during the year in Northern Rhodesia and Nyasaland were in rural areas, and this would

seem to indicate that the 1957 outbreak did not extend to the more remote areas until 1958. There is little change in the notified case mortality rate in non-Africans in the two years, but in the Africans the mortality rate per cent. has increased from 4 to 7 per cent. and more nearly approaches the non-African rate, which has averaged at about 10 per cent. since 1951.

POLIOMYELITIS IN SOUTHERN RHODESIA

Table II is constructed in the same manner as Table IV of Blair's (1958) paper. The distribution of notification of cases showed an irregular distribution with no epidemic peak, but nevertheless almost half the cases occurred in the four months February to May, whereas in 1957 almost half the notified cases occurred in the three months March to May. In 1957 the notifications in each month of the year ran into double figures; in 1958 only one month, February, showed double figures; 14 notifications. It is interesting to note, however, that the proportion of cases as between non-African and African, 1:2, was the same in 1958 as in 1957. The sex ratio of cases in 1958 was, however, much more even than in the epidemic year, when there was a definite preponderance of male cases in both racial groups. The provincial distribution of cases shows little significant variation, except that Western and Eastern were less affected and South-eastern was more affected.

Table III gives the age grouping of notified cases and the deaths experienced in each group, and is comparable with the information shown in the total figures of Table IV of the previous paper.

Table IV compares the actual age group case incidence in 1958 compared with the expected case incidence which would have occurred had the distribution of cases in the age groups conformed to the pattern experienced in the 1957 epidemic year. To construct this hypothetical distribution the total non-African cases in 1957 is divided into the total for 1958. This index

Table I
POLIOMYELITIS NOTIFICATIONS AND DEATHS, 1957-58

Region	1957					
	Non-African		African		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
S. Rhodesia	207	19	456	24	663	43
N. Rhodesia	58	9	244	6	302	15
Nyasaland	10	0	81	1	91	1
Federation Total	275	28	781	31	1,056	59

Region	1958					
	Non-African		African		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
S. Rhodesia	22	2	39	7	61	9
N. Rhodesia	9	2	67	2	76	4
Nyasaland	4	0	41	2	45	2
Federation Total	35	4	147	11	182	15

NOTIFIED CASE INCIDENCE PER 100,000

		1957	1958
Non-Africans—Federation		90.2	10.9
Non-Africans—S. Rhodesia		100.0	9.9
Africans —S. Rhodesia		21.1	1.5
Africans —N. Rhodesia		11.3	3.0
Africans —Nyasaland		3.1	1.5

Table II
POLIOMYELITIS, S. RHODESIA, 1958
MONTHLY NOTIFICATIONS, SEX RATIO AND PROVINCES

Month	Non-African		African		Total	Provinces				
	Male	Female	Male	Female		North	West	Midlands	East	S. East
January	0	0	1	2	3	2	0	0	1	0
February	6	1	4	3	14	4	0	6	1	3
March	1	1	2	2	6	2	0	1	1	2
April	0	0	1	4	5	3	0	1	1	0
May	0	1	2	2	5	0	2	2	0	1
June	0	1	0	1	2	1	1	0	0	0
July	1	1	4	1	7	3	1	2	0	1
August	0	0	1	0	1	0	0	1	0	0
September	0	1	2	0	3	1	0	1	0	1
October	2	1	0	3	6	4	1	1	0	0
November	0	3	1	0	4	0	3	0	0	1
December	1	1	1	2	5	3	2	0	0	0
TOTAL	11	11	19	20	61	23	10	15	4	9

Table III

POLIOMYELITIS, S. RHODESIA, 1958
AGE GROUPING OF CASES

	Age Group in Years						Total
	0—	1—	5—	10—	15—	20+	
Non-African	0	5 (1)	4	4	3 (1)	6	22 (2)
African	7 (1)	18 (4)	6	3	2	3 (1)	39 (6)
Total	7 (1)	23 (5)	10	7	5 (1)	9 (1)	61 (8)

Deaths recorded in brackets.

Table IV

POLIOMYELITIS, S. RHODESIA, 1958
APPLICATION OF 1957 AGE GROUP INCIDENCE TO 1958 REPORTED CASES

Age in Years	Non-African Cases		African Cases	
	1958 (Actual)	1958 (Expected)	1958 (Actual)	1958 (Expected)
0—	0	1	7	8
1—	5	6	18	26
5—	4	5	6	} 3
10—	4	2	3	
15—	3	2	2	} 2
20+	6	6	3	
TOTAL	22	22	39	39

Table V

POLIOMYELITIS, S. RHODESIA, 1957-58
PARALYTIC AND NON-PARALYTIC CASES NOTIFIED

	1957		1958	
	Cases	Deaths	Cases	Deaths
Non-African— Paralytic	113	16	17	2
Non-Paralytic	94	3	5	0
African— Paralytic	443	24	39	6
Non-Paralytic	13	0	0	0

Table VI

POLIOMYELITIS, S. RHODESIA, 1958
CASES IN VACCINATED PERSONS

Name	Sex	Age	Vaccination History			Onset, 1958	Type
			1	2	3		
1. A.P.	M	5	9/56	4/57	5/57	Feb.	Non-Paralytic
2. D.D.	M	11	9/57	10/57	—	Feb.	Paralytic
3. J.B.	M	11	5/57	6/57	—	Feb.	Paralytic
4. I.P.	F	15	4/58	5/58	—	May	Paralytic
5. A.M.	F	6	9/56	10/56	—	May	Paralytic
6. S.J.T.	M	32	10/57	11/57	—	Oct.	Paralytic
7. R.E.F.	F	4	4/57	5/57	—	Nov.	Paralytic
8. I.R.	F	2	4/57	5/57	11/57	Dec.	Paralytic

is applied to the 1958 distribution by age group figures, which then gives the "expected distribution." A similar exercise is carried out in the African figures. It will be seen that the non-African case incidence actually recorded is remarkably consistent with the expected incidence if the 1957 experience had applied. From this it would seem that the large scale poliomyelitis vaccination of non-African children during 1956-57 seems to have had little effect on the 1958 incidence in the age groups up to 15 years of age.

In the African group, however, there would appear to have been quite an appreciable shift of cases from the age groups under five years to the age groups five years and over. The amount of vaccination of African children from one to four years inclusive carried out in 1957 and 1958 could not have made any real contribution to this shift. It may be that the disease in its paralytic form in Africans is approaching more and more the age distribution and pattern seen in non-Africans.

Table V sets out the numbers of paralytic and non-paralytic cases seen in each racial group. It will be seen that diagnosis of non-paralytic poliomyelitis in Africans is rare in epidemic years, but even rarer in non-epidemic years, and it would seem advisable, therefore, that comparisons of incidence and mortality would be better made on paralytic cases only.

VACCINATION AND POLIOMYELITIS

As the previous paper set out, an extensive vaccination campaign was launched in 1957 and pursued in the face of the prevailing epidemic

of poliomyelitis. From the amount of vaccine imported and distributed for use in the protection of European children from one to 15 years of age, it would seem that this group to a very complete extent was given at least two inoculations with vaccine. During 1958 supplies of vaccine in the Federation and Southern Rhodesia were freely available from commercial sources without limit on the number of doses which could be given nor limit on age groups which could be immunised. It is thought, however, that despite the free availability of vaccine and the much lower cost compared with the previous year, there has been in fact a very poor response. Nevertheless it was felt that most of the children up to 15 years of age had received at least two inoculations of vaccine.

Table VI provides details of the reported cases of poliomyelitis in vaccinated persons, eight in all, two of whom had had three inoculations, the remainder two each. Two of the vaccinated cases were 15 years or over, so that of the total 13 reported cases in non-Africans under 15 years of age, six were in vaccinated children, two of whom had received three inoculations. Only one girl (I.P.), aged 15 years, had received inoculations in 1958, and in her case the onset of disease occurred 14 days after the second injection of vaccine. The number of paralytic attacks in vaccinated persons is high; the general ratio in non-Africans in 1958 was 3.4 paralytic cases to one non-paralytic, while the ratio in vaccinated was 7 to 1.

The clinical reports seem to indicate fairly definitely that in vaccinated cases the recovery from paralysis was much quicker than in the

unvaccinated case and probably more complete. During 1958 there was no reported occurrence of a case of poliomyelitis in an African who had been vaccinated.

SUMMARY

The following are the general conclusions of the study of the incidence of poliomyelitis in Southern Rhodesia during 1958:

- (1) The monthly incidence during 1958 did not resemble the experience of previous post-epidemic years, and the scatter of cases throughout the year seems to indicate that the disease was still fairly active and had not settled down to the usual inter-epidemic state.
- (2) The higher proportion of cases in Africans seems to have come to stay, although the heavier attack rate of children under the age of five years remains a feature in this racial group.
- (3) Despite the extensive vaccination on non-Africans of under 15 years of age, the 1958

experience of incidence by age groups lends no support to the view that vaccination of this group protects it, at least from paralytic accidents of poliomyelitis.

(4) More than a third of the reported cases in non-Africans occurred in persons who had had two inoculations of vaccine. The proportion of paralytic attacks in the vaccinated group was higher than in the non-African cases who had not been vaccinated.

(5) There was, however, some clinical evidence that the paralytic attacks in vaccinated persons were recovered from more speedily than would have been expected from general experience.

Acknowledgment

My grateful thanks are again due to Mr. V. F. Woodiwiss, Chief Health Inspector, Southern Rhodesia, for his careful and painstaking records of notifications and reports on each case.

REFERENCE

- BLAIR, D. M. (1928). *C. Afr. J. Med.*, 4, 49.