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DISTRIBUTION AND PREVALENCE OF ONCHOCERCIASIS AND ITS OCULAR COMPLICATIONS IN ZAIRE AND BURUNDI

by

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CONTENTS

1. INTRODUCTION

In 1985, an assessment was made of the distribution and prevalence of human onchocerciasis and its ocular complications in Zaire, Burundi and Rwanda. This assessment was based on data found in the literature or obtained by personal investigations. These data have not as yet been published, except for the global figures for infected or blind people which were given in the report of a WHO Expert Committee on Onchocerciasis (WHO, 1987).

Onchocerciasis is still a major public health problem in Zaire and it therefore seemed important to determine exactly the prevailing situation of this disease in the different regions of the country. The main object of this paper is to report this information as well as that collected on Burundi.

Investigations were also carried out in Rwanda but no onchocerciasis has been observed in this country.

2. THE SITUATION IN ZAIRE

2.1 The population

Total population. According to the last census taken in Zaire in 1955-1958, the total population was 12 769 000 (Romaniuk, 1968). In 1980, the total population of the country was re-estimated at 28 504 000 on the basis of the above 1955-1958 census (Kurian, 1982).

Population of the provinces and districts of Zaire. The respective populations of the then six and today eight provinces and of their districts were estimated by Romaniuk (1968). These figures have been adjusted using the new estimations of Kurian (1982) and by multiplying the previous figures by approximately 2.25 (see Table).

Age groups. In the 1955-1958 census, it was calculated that children aged 0-14 years constituted 37.7% of the total population. In the Table, a percentage of 40% was adopted for the 0-14 year age group (children - CH) and of 60% for the 15-55+ year age group (adults - A).

2.2 Prevalence of onchocerciasis in the districts

It is only in the Tshuapa district (Central Basin - Cuvette Centrale) that a systematic investigation has been performed by taking representative samples in various areas. In this district onchocerciasis is uniformly distributed and the number of cases can be estimated at about 500 000 (including children).

In the other districts, the precise limits of the infected areas are not known, thereby making it difficult to calculate the respective total prevalences and percentages. The estimations given in the Table are therefore merely a tentative indication of the situation and can in no way be considered definitive.

Map 1 shows the distribution of onchocerciasis and its vectors in Zaire, and also in Burundi as well as in Rwanda (where only the vectors have been observed). This map is the one published by Fain & Hallot (1965) which has been completed with the new data obtained since that date.

2.3 Infection per age group

In the villages where both children (0-14 years) and adults (15+ years) were examined, the prevalence of infection in children was found to be about four to five times that in adults. Therefore, in the areas where only adults were examined, the estimated prevalence in children was calculated to be as follows:

77% in adults would correspond to 20% in children
40% in adults would correspond to 10% in children
30% in adults would correspond to 8% in children
25% in adults would correspond to 6% in children
20% in adults would correspond to 5% in children
10% in adults would correspond to 2% in children
5% in adults would correspond to 1% in children.

2.4 Blindness

In the Tshuapa district (Central Basin) of Equateur Province, onchocerciasis is uniformly distributed in all the villages, the average prevalence rate in adults being 77%. This region is a swampy forest area with large, slow running rivers. Simulium albivirgulatum, the only observed vector, is omnipresent in the villages. Blind people were seen in all the villages visited. In Baringa village, 25 of the 200 inhabitants were observed to be blind. In this district which counts 881 192 inhabitants, it was estimated that among the infected adult population (i.e. 407 110) 1-2% were blind, making a total of 4000 to 8000 blind people.

In the Sankuru district of Kasai Oriental Province, the distribution of onchocerciasis is less uniform, the disease being concentrated in certain areas, mainly along the Sankuru-Lubilash river. The overall prevalence rate of 40% for onchocerciasis in Sankuru is therefore not representative of the severity of the disease in this district. The Sankuru-Lubilash focus is considered to be the most important in Zaire with respect to the severity of eye lesions, and in some villages about 30% of the adults are blind. It can be estimated that the number of adults living in this heavily infected area is about 200 000, with a prevalence of infection of 70-100%; probably 2-3% of the infected adults are blind, giving a total of 4000 to 6000 blind persons.

In the Lower-Uélé (Bas-Uélé) district no important ocular lesions have been recorded up to now, but recent observations (not published) have shown that blindness is probably more common than previously suspected. Infection with Onchocerca volvulus affects 80-95% of adults along most of the main rivers. As in the Sankuru district, the overall prevalence rate of 40% for onchocerciasis in the Lower-Uélé district does not reflect the real situation in the infected areas. It seems important to stress this point because ocular lesions develop mainly or only in heavily infected people whose skin is hyperinfected with microfilariae. Such hyperinfection occurs in villages where the prevalence in adults reaches 80-100%. There appears to be a direct relationship between the number of microfilariae in the upper part of the body and the severity of the ocular lesions. Dujardin et al. (1982) reported that in Bwamanda, Ubangi district, more than 30% of the persons showing 200 or more microfilariae in their shoulder skin-snip were blind.

In the infected districts other than Tshuapa and Sankuru, the percentage of blind persons among a total of 2 262 948 infected adults can be estimated at 0.5-1%, or a total number 11 311 to 22 629 blind adults. The general total of blind persons for all of Zaire, including the Tshuapa and Sankuru districts, could be estimated at somewhere between 19 311 and 26 629.

2.5 Severe ocular lesions (excluding blindness)

In foci where systematic ocular investigations have been carried out by specialists, the number of persons with severe eye infections (iritis, glaucoma, sclerosing keratitis, chorioretinitis as described by Hissette and Ridley, atrophy of the optic nerve) was higher than that of completely blind persons.

3. THE SITUATION IN BURUNDI

The population of Burundi according to the census held in 1970-1971 was 3 350 000; a new estimation made in 1980 (Kurian, 1982) gave it as 4 366 000. The population is concentrated in the central uplands whereas the lowlands (Ruzizi valley, shore of lake Tanganyika) and the forested southeast are less populated.

In Burundi, the cases of onchocerciasis are confined to the more southern and less populated parts of the country (i.e. Ruzizi valley and the shore of lake Tanganyika). The infection rate is low and ocular lesions have not been recorded.

The vector, S. kilibanum, breeds in the small rivers originating in the mountains and flowing into the Ruzizi river or into lake Tanganyika.

4. SUMMARY

An assessment of the distribution and prevalence of human onchocerciasis in Zaire and Burundi is presented, with special reference to the Tshuapa, Sankuru and Lower-Uélé districts in Zaire and to the southern parts of Burundi. The importance of blindness caused by this disease is also evaluated.

RESUME

LA DISTRIBUTION ET LA PREVALENCE DE L'ONCHOCERCOSE ET DE SES COMPLICATIONS OCULAIRES AU ZAIRE ET AU BURUNDI

Une évaluation de la distribution et de la prévalence de l'onchocercose humaine au Zaïre et au Burundi est proposée, en faisant référence particulièrement aux districts de Tshuapa, Sankuru and Bas-Uélé au Zaïre et aux zones méridionales du Burundi. L'importance de la cécité causée par cette maladie est aussi evaluée.

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TABLE. ONCHOCERCIASIS IN ZAIRE

PROVINCE(S) District	Total population		Population infected by O. volvulus			
	Census of 1955-1958*	Estimation in 1980**	Age groups (1980) CH = 0 - 14 yrs A = 15 - 55+ yrs	Estimated cases of onchocerciasis	% of infections	Total number of cases (CH + A)
BANDUNDU and BAS-ZAIRE	3 050 420	6 808 436	CH 2 723 374 A 4 085 061			
Kinshasa	318 317	710 994		?		?
Lake Mayi Ndombe	271 330	606 530	-	?		?
Kwilu	1 143 456	2 556 900	CH 1 022 760 A 1 534 140	10 227 76 700	1% 5%	86 827
Kwango	466 054	1 038 180	CH 415 272 A 622 908	8 304 62 290	2% 10%	70 594
Bas Zaire	411 804	916 530	-			
Cataractes	439 459	978 900	CH 391 560 A 587 340	7 830 58 734	2% 10%	66 564
EQUATEUR	1 756 190	3 922 307	CH 1 568 922 A 2 353 384			
Equateur	302 162	673 821	CH 269 528 A 404 292	5 390 40 429	2% 10%	45 819
Mongala	519 488	1 158 470	CH 463 388 A 695 082	46 348 278 032	10% 40%	324 370
Ubangi	539 060	1 209 103	CH 483 641 A 725 461	48 364 290 184	10% 40%	338 548
Tshuapa	395 480	881 192	CH 352 476 A 528 715	70 495 407 110	20% 77%	477 405
HAUT-ZAIRE	2 335 585	5 213 354	CH 2 085 441 A 3 128 012			
Kisangani	634 948	1 415 934	CH 566 373 A 849 560	28 318 169 912	5% 20%	198 230
Ituri	651 044	1 456 828	CH 582 731 A 874 096	29 955 174 819	5% 20%	204 774
Bas-Uélé	467 632	1 042 819	CH 417 127 A 625 691	41 712 250 276	10% 40%	291 988
Haut-Uélé	581 961	1 297 773	CH 519 109 A 778 663	31 146 311 465	6% 25%	342 611
KIVU	2 012 508	4 491 892	CH 1 796 756 A 2 695 135			
Sud Kivu	831 353	1 857 917	CH 743 166 A 1 114 750	7 431 55 735	1% 5%	63 168
Nord Kivu	734 633	1 638 231	CH 655 292 A 982 938	?		?
Maniema	446 522	995 744	CH 398 297 A 597 446	7 964 59 744	2% 10%	67 708
KASAI OCCIDENTAL and KASAI ORIENTAL	2 121 276	4 735 445	CH 1 894 178 A 2 841 267			
Lulua	654 486	1 462 503	CH 585 001 A 877 501	29 250 175 500	5% 20%	204 750
Sankuru	493 549	1 100 614	CH 440 245 A 660 368	44 245 264 147	10% 40%	308 392
Kabinda	480 379	1 073 245	CH 429 298 A 643 947	34 343 193 184	8% 30%	227 520
Kasai	492 862	1 099 082	CH 439 635 A 659 449	8 792 65 944	2% 10%	74 736

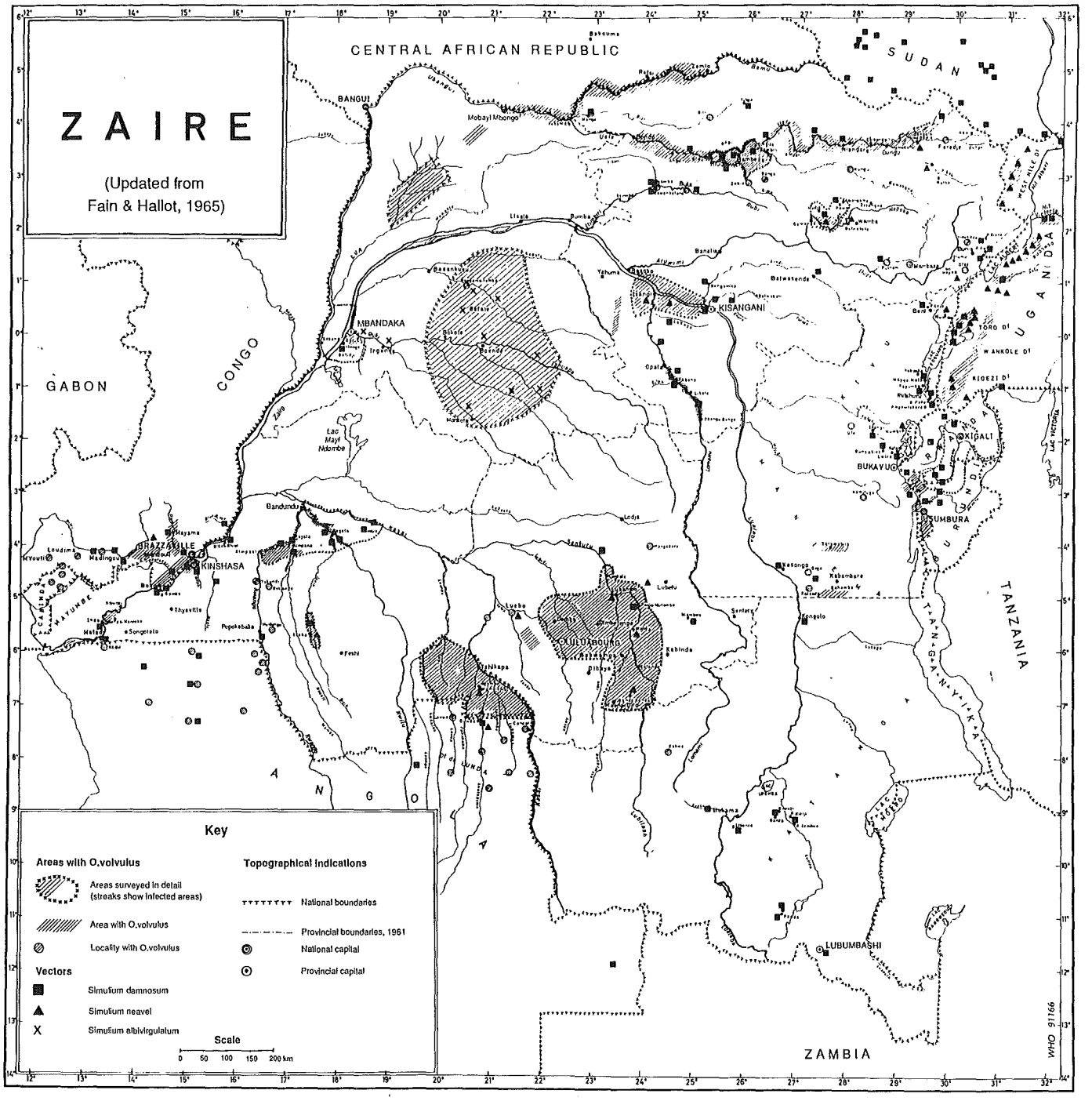
TABLE. ONCHOCERCIASIS IN ZAIRE (continued)

PROVINCE(S) District	Total population		Population infected by O. volvulus			
	Census of 1955-1958*	Estimation in 1980**	Age groups (1980) CH = 0 - 14 yrs A = 15 - 55+ yrs	Estimated cases of onchocerciasis	Estimated % of infections	Total number of cases (CH + A)
SHABA	1 493 021	3 329 436				
Lubumbashi				?		?
Tanganyika				?		?
Lualaba				?		?
Haut-Lomami				?		?
Luapula-Moero				?		?
TOTAL POPULATION OF ZAIRE	12 769 000	±28 500 000		CH 459 885 A 2 934 219		3 394 104

* Romaniuk (1968).

** The total population of Zaire (28 504 000) was estimated in 1980 by Kurian (1982). The numbers per district have been calculated by multiplying the numbers of column 1 by approximately 2.25.

Map 1. Distribution of Onchocerciasis and its vectors



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