Rapid assessment method for prevalence and intensity of *Loa loa* infection

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Objective To assess the validity of observations on eye worm and Calabar swellings for the rapid assessment of the prevalence and intensity of loiasis at the community level.

Method A total of 12 895 individuals over the age of 15 years living in 102 communities in Cameroon and Nigeria took part in the study. A standardized questionnaire was administered to participants from whom finger-prick blood samples were collected and examined for *Loa loa* microfilariae. Rapid assessments of the prevalence and intensity of loiasis were made on the basis of a history of eye worm or Calabar swellings.

Findings There was a strong correlation between the indices of the rapid assessment procedures and the parasitological indices of *L. loa* endemicity. The rapid assessment indices were effective in diagnosing high-risk communities (sensitivity 94–100%; specificity 66–92%). The highest sensitivity (100%) and specificity (92%) were obtained with a rapid assessment procedure based on a history of eye worm lasting 1–7 days together with confirmation by the guided recognition of a photograph of adult *L. loa* in the eye.

Conclusion Rapid assessment of the prevalence and intensity of loiasis at the community level can be achieved using a procedure based on the history of eye worm lasting 1–7 days together with confirmation by the guided recognition of a photograph of an adult *L. loa* in the eye.

Keywords Loiasis/diagnosis/parasitology/epidemiology; Loa/growth and development; Eye foreign bodies/parasitology; Inflammation/parasitology; Endemic diseases/epidemiology; Ivermectin/adverse effects; Sensitivity and specificity; Reproducibility of results; Cameroon; Nigeria (*source: MeSH, NLM*).

Mots clés Loase/diagnostic/parasitologie/épidémiologie; Loa/croissance et développement; Corps étranger oculaire/parasitologie; Inflammation/parasitologie; Maladie endémique/épidémiologie; Ivermectine/effets indésirables; Sensibilité et spécificité (Epidémiologie); Reproductibilité des résultats; Cameroun; Nigéria (*source: MeSH, INSERM*).

Palabras clave Loiasis/diagnóstico/parasitología/epidemiología; Loa/crecimiento y desarrollo; Cuerpos extraños en el ojo/parasitología; Inflamación/parasitología; Enfermedades endémicas/epidemiología; Ivermectina/efectos adversos; Sensibilidad y especificidad; Reproducibilidad de resultados; Camerún; Nigeria (*fuente: DeCS, BIREME*).

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Voir page 857 le résumé en français. En la página 858 figura un resumen en español.

Introduction

Onchocerciasis is a debilitating disease affecting 20-40 million people in 34 countries of sub-Saharan Africa, the Arabian Peninsula and South America, causing blindness and disfiguring skin changes. In recent years, the prospects for its control have been improved with the development of community-directed treatment with ivermectin, a safe, effective, and affordable drug. However, encephalopathies with occasional fatal outcomes have been reported following its use to treat persons coinfected with *Onchocerca volvulus* and *Loa loa* (*1–4*). These adverse outcomes are an obstacle to the sustainability of large-scale ivermectin treatment for the control of onchocerciasis and lymphatic filariasis in areas of Africa where there is a potential for coendemicity with *L. loa*. The incidence of severe adverse events, notably of a neuropathological nature, is related to the intensity of infection with *L. loa* (*1*).

A linear relationship between the prevalence and intensity of *L. loa* infection in communities has been reported (*5*); thus a high level of *L. loa* prevalence indicates a high intensity of infection, with a concomitant high risk of severe

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adverse events. An operational threshold for *L. loa* endemicity has been established above which the risk of severe reactions is too high for routine community-directed treatment with ivermectin to be carried out, i.e. a prevalence of microfilaraemiae in thick blood film >20%, corresponding to a prevalence of high intensity of infection (>8000 microfilariae/ml) above 5% (*3*) or a prevalence of very high intensity of infection (>30 000 microfilariae/ml) above 2% (*2*).

The collection, processing and examination of blood samples using the thick blood smear method for the determination of individuals and communities with high and very high intensities of infection is costly, time-consuming, cumbersome, unsustainable in communities where the disease is endemic and not feasible for the implementation of community-directed treatment with ivermectin. A rapid assessment procedure (RAP) whereby a threshold for the safe implementation of such treatment could be identified would be a valuable tool for onchocerciasis control programmes in areas where *O. volvulus* and *L. loa* coexist. A model using satellite mapping of key environmental factors affecting the development of the vector (*Chrysops* sp.) has been proposed (*6*). Still undergoing development, the model may prove useful for rapidly identifying potential high-risk zones.

Other investigators have suggested the use of clinical signs and symptoms of *L. loa* infection as indicators of the prevalence of infection with this parasite at the individual (*7*) and community level (*8*), i.e. migratory angioedemas known as Calabar swellings and worm migration through the conjunctiva. Conflicting results were obtained when attempts were made to apply this approach (*9*) perhaps because of non-standardized interview methodologies, small sample sizes, and the inclusion of only a limited number of communities.

The present study was designed to resolve this uncertainty by using a carefully designed, standardized methodology and involving a large sample of communities covering a wide range of *L. loa* endemicities and different ethnic groups. The objective was to develop a RAP to be used in the identification of villages at high risk for severe adverse events, i.e. villages with a prevalence of *L. loa* microfilaraemia >20% and a prevalence of high intensity of *L. loa* infection above 5% or a prevalence of very high intensity of *L. loa* infection above 2%.

Methods

The investigation was conducted by three research teams based in Buea and Yaoundé, both in Cameroon, and in Calabar, Nigeria. Field investigations were carried out from April to June 2001. The processing and microscopic analysis of blood samples took place between July and August 2001. The three research teams comprised epidemiologists, parasitologists, social scientists and clinicians. Clearance for the protocol was obtained from institutional and national ethical committees.

Study sites

The Buea study sites were in South-West and North-West Provinces of Cameroon. Study sites for the Yaoundé team were located in the East Province of Cameroon and those of the Calabar team in south-eastern Nigeria (Cross River State).

The annual rainfall ranged from 1500 mm to 3000 mm at the Yaoundé and Calabar study sites and from 2000 mm to 4000 mm at the Buea sites. The vegetation ranged from tropical rain forest to savannah.

Sampling

Selection of villages

At each of the study sites, 30 or more villages were selected in areas where, on the basis of epidemiological and biogeographical data, it was thought that *L. loa* infection ranged from non-endemic to hyperendemic. Villages receiving mass ivermectin treatment were excluded. Altogether, 102 villages were selected. Collective informed consent for participation was obtained from traditional authorities and opinion leaders in each participating village.

Selection of households and subjects

A minimum of 96 participants were required in each village in order that the prevalence of loiasis could be estimated with a precision of 10% at the 95% confidence level ; however, we aimed to include125 participants per village to compensate for the cluster effect. Households were selected at random and numbered.

In each household, all individuals aged >15 years who had resided in the village for at least 5 years were selected for inclusion. Individuals who had received ivermectin treatment were excluded. All selected individuals were informed of the objective of the study and of their right to refuse to participate. Each person who consented to participate was assigned a code number and interviewed. A blood sample for parasitological analysis was collected from each participant.

Rapid assessment methods

During a workshop attended by the research teams, questionnaires on histories of eye worm and Calabar swellings were developed for application at the community and individual levels. Subsequently they were pretested in the three study areas. Staff were trained how to create a rapport with participants, conduct interviews and record data. The interview data were checked by field supervisors during the process of data collection and at the central field station.

Community questionnaire

The leaders in each participating village were briefed on the objectives and expected outcomes of the study. The local names for eye worm and Calabar swellings were ascertained by conducting interviews with key informants, e.g. village heads, headmasters, schoolteachers, health workers, patent medicine dealers, traditional healers and leaders of women's groups. Where required, interpreters from the communities assisted in the interviewing process.

Individual questionnaire

Individual questionnaires were designed to elicit responses on experience of eye worm and Calabar swellings. The conditions were described to each respondent and local names were used in order to aid understanding.

The key question on experience of eye worm was: "Have you ever experienced or noticed worms moving along the white of the lower part of your eye?". The interviewer then presented a photograph of an adult *L. loa* worm under the conjunctiva, guided the respondent to recognize the worm in the eye and asked: "Have you ever had the condition in this picture?". If a positive response was given, the following question was asked: "How many days passed before the worm disappeared?".

The questions on Calabar swellings concerned the duration of the symptom and its tendency to cause itching. The key question was: "Have you ever experienced swellings under the skin which changed position or disappeared?". If the answer was in the affirmative, the respondent was asked: "How many days passed before the swellings disappeared?" and "Did the swellings itch?".

Parasitological methods

Qualified and trained health personnel collected a 50-µl sample of finger-prick blood from each study participant between 10:00 and 16:00 using a 75-µl non-heparinized capillary tube. Safety measures for the prevention of the transmission of human immunodeficiency virus and hepatitis B virus included the use of one sterile lancet per participant and the decontamination of used capillary tubes and lancets.

Standard procedures were used for the processing and analysis of the blood samples. Slides were examined under an optical microscope with a x10 objective and *L. loa* microfilariae were identified and counted (*10*). The results were expressed as microfilariae per ml of blood.

Data analysis

The data were entered in EpiInfo (version 6) and exported into SPSS (version 10) for analysis. The intensity and prevalence of *L. loa* microfilaraemia were calculated for each community using the following parasitological indices: prevalence of microfilaraemia in thick blood film; prevalence of high intensity of infection (>8000 microfilariae/ml); prevalence of very high intensity of infection (>30 000 microfilariae/ml); and community microfilarial load, i.e. the geometric mean microfilarial load in persons aged >15 years, including microfilarial negatives (*11*).

The following RAP indices were calculated for each community: a) percentage of people who reported past experience of eye worm; b) percentage of people who were positive for a restricted definition of eye worm, i.e. those who reported past experience of eye worm, confirmed by means of a photograph of adult *L. loa* in the eye and that it lasted 1–7 days; c) percentage of people who reported past experience of Calabar swellings; d) percentage of people who reported past experience of Calabar swellings with itching that lasted 1–7 days; e) percentage of people with past experience of eye worm and Calabar swellings; and f) percentage of people with past experience of eye worm or Calabar swellings.

Spearman's rank order correlation coefficient was used to determine the relationship between each of the RAP indices and the parasitological indices. Scatter plots were used to define cut-off points and determine thresholds. Determinations were made of the sensitivity, specificity and predictive value of the RAP for the diagnosis of communities at risk of severe adverse events following community-directed treatment with ivermectin.

Results

Local names for eye worm and Calabar swellings

The study involved 102 villages, of which 28 were in the Calabar study sites, 42 were in the Buea study sites and 32 were in the Yaoundé study sites (*12*). The study sites covered a wide range of prevalence and intensity of *L. loa* infection. Of the 12 895 participants, 55% were female and all were aged >15 years. The average age of those examined was 36.5 years.

Local terms for eye worm were reported from all the villages in the Yaoundé study sites. For the Baya tribe, "peng" = worm, "li" = eye, "peng li" = worm of the eye, "yolo" = worm and "yolo li" = worm of the eye. A few communities used the term "filère", a corruption of the French word "filaire". Other ethnic groups used non-descriptive terminology.

Local terms for eye worm were reported from 33 of the localities visited in the Buea study sites. One of the descriptive terms for eye worm was "damole nyi" ("damole" = worm, "nyi" = eye; "damole nyi" = worm of the eye). Other terms used in two villages were not descriptive of the condition. No local terms were identified for eye worm in seven village communities.

The majority of the localities visited by the Calabar team had local terms for both eye worm and Calabar swellings. The term "etung enyin" used by the Efik and Ibibio ethnic groups translated into eye worm and was used consistently to describe the condition.

Experience of eye worm lasting 1–7 days was reported by 45% of the respondents. Calabar swellings had been experienced by 51% of the respondents, most of whom reported a duration of 1–7 days. Of the respondents who reported experiencing Calabar swellings, 91% indicated that the swellings itched. The locations most commonly mentioned for the swellings were the hands, arms and legs. Reports of Calabar swellings were less consistent than those of eye worm.

Prevalence and intensity of *Loa loa* infection

The prevalence of microfilaraemia varied considerably between the study sites. Cross River State in Nigeria had the lowest prevalence (range = 0–18%, median = 2%) . In Cameroon's East Province it was much higher (range = 8–48%, median = 30%). The Buea study sites showed the widest range of endemicity: most villages had a prevalence of less than 10% but there were seven villages with very high prevalences.

The prevalence of high intensity of *L. loa* infection (>8000 microfilariae/ml) increased with the prevalence of *L. loa* microfilaraemia at the community level. The 20% threshold prevalence of *L. loa* in thick smears at the community level corresponded to a 5% prevalence of high intensity of infection. There was a very clear relationship between the two indices and the pattern was similar at all study sites (Fig. 1).

The community microfilarial load increased with prevalence (Fig. 2), slowly at first but accelerating rapidly when a prevalence of 20% was attained. The relationship between the community microfilarial load and prevalence appeared to have a hyperbolic form, suggesting an upper limit for the prevalence of microfilaraemia of around 60%.

Correlation between rapid assessment procedure indices based on eye worm and prevalence of *Loa loa* microfilaraemia

All the RAP indices showed a statistically significant relationship with the parasitological indices (Table 1). There was a better correlation for RAP indices based on eye worm than for those based on Calabar swellings. The correlation coefficients for indices that combined eye worm and Calabar swellings

Fig. 1. **Relationship between the prevalence of high microfilarial loads (>8000 microfilariae/ml) and prevalence of microfilaraemia at the community level**

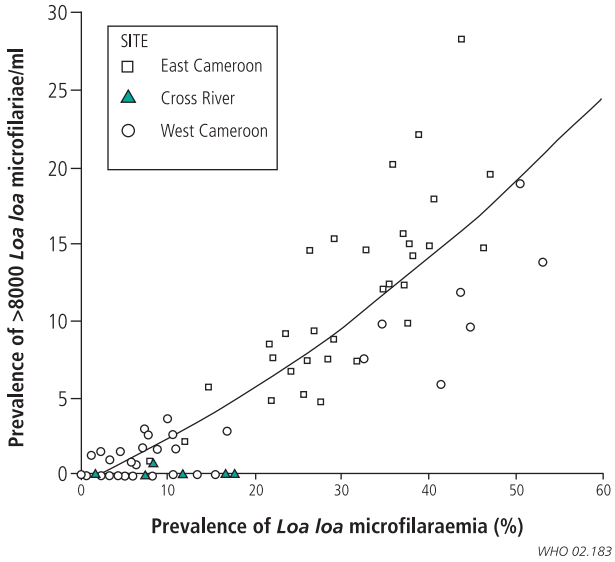
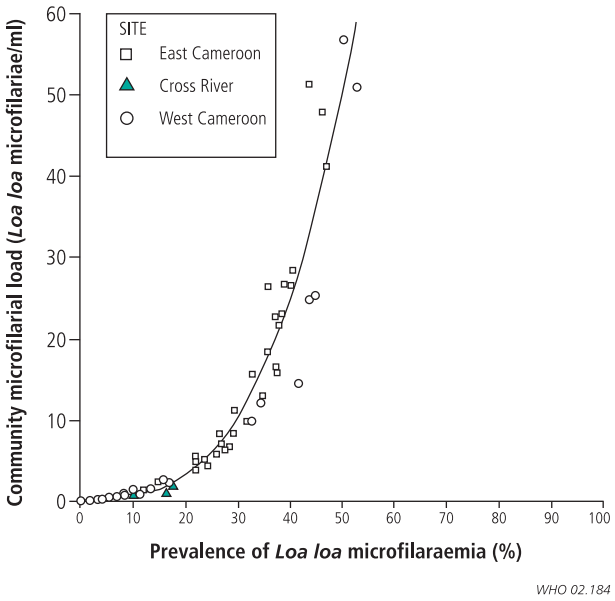


Fig. 2. **Relationship between the community microfilarial load and the prevalence of microfilaraemia**



were lower than the correlation coefficients for the restricted definition of eye worm. The prevalence of eye worm according to the restricted definition increased with the prevalence of microfilaraemia. The cut-off point of a 40% prevalence of eye worm according to the restricted definition corresponded to a 20% prevalence of microfilaraemia at the community level.

There was a non-linear relationship between the prevalence of high microfilarial loads (>8000 microfilariae/ml) and the RAP based on the restricted definition of eye worm. The prevalence of high loads rose sharply when more than 40% of interviewees reported a history of eye worm according to the restricted definition. Below the 40% threshold, microfilarial loads of more than 8000 microfilariae/ml were relatively rare (Fig. 3).

There was a non-linear relationship between the prevalence of very high microfilarial loads (>30 000 microfilariae/ml) and the RAP based on the restricted definition of eye worm. The threshold of 40% for a history of eye worm provided a good division between high-risk and low-risk communities. Above this threshold the prevalence of very high microfilarial loads increased rapidly. Very high microfilarial loads were rare below the 40% threshold and even completely absent where fewer than 25% of respondents reported a history of eye worm.

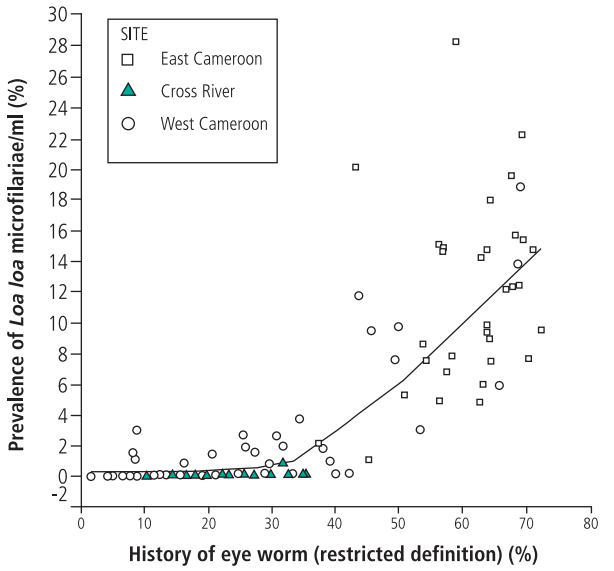
Sensitivity and specificity of the rapid assessment procedures

All the RAPs had a high sensitivity for the diagnosis of high-risk communities (prevalence of microfilariae >20%, prevalence of high microfiliarial loads >5%, prevalence of very high loads >2%). The specificity ranged from 48% to 92% (Table 2), being relatively low for the simple definitions of eye worm and Calabar swellings. For both the simple and restricted definitions, the specificity for eye worm was much better than that for Calabar swellings. The best performance was obtained with the restricted definition of eye worm, which had a sensitivity of 100% and a specificity in the range 79–92%.

Table 1. **Spearman rank correlation coefficients between rapid assessment indicators and parasitological indicators of *Loa loa* endemicity (*P* <0.01)**

Rapid assessment indicator	Parasitological indicators of *Loa loa* endemicity			
	Prevalence of microfilaraemia	Prevalence of >8000 microfilariae/ml	Prevalence of >30 000 microfilariae/ml	Community microfilarial load
% with history of eye worm	0.782	0.753	0.793	0.778
% with history of eye worm according to the restricted definition	0.850	0.812	0.813	0.855
% with history of Calabar swellings	0.748	0.698	0.739	0.743
% with history of Calabar swellings according to the restricted definition	0.693	0.651	0.709	0.683
% with history of eye worm or Calabar swellings according to the restricted definitions	0.799	0.755	0.786	0.795
% with history of eye worm and Calabar swellings according to the restricted definitions	0.812	0.768	0.781	0.811

Fig. 3. **Relationship between the prevalence of high intensity microfilaraemia and the prevalence of a history of eye worm at the community level**



Discussion

All communities where *L. loa* was highly endemic had local names for eye worm and Calabar swellings, indicating a general awareness of the condition. In villages of very low endemicity, where the prevalence of *L. loa* infection was <10%, no local terms for eye worm were identified. The clinical signs reported for Calabar swellings were less consistent than those of eye worm.

The prevalence and intensity of *L. loa* infection varied considerably between the Buea, Calabar and Yaoundé study sites. Endemicity was low in Cross River State, Nigeria, very high in Cameroon's East Province and ranged from low to high in the South-West and North-West Provinces of Cameroon. The reported range of prevalences of *L. loa* microfilaraemia in the present study confirms results obtained previously in eastern Nigeria (*13–15*) and south-western Cameroon (*1*).

Intensity of *Loa loa* infection

High intensity *L. loa* infection is the principal risk factor for severe adverse reactions to ivermectin treatment. There has been some controversy about where highly infected individuals might be found, i.e. whether a high intensity of infection could occur in any community with loiasis or whether such infection would be found predominantly in communities of high endemicity. The clear relationship between the prevalence of microfilaraemia and the intensity of *L. loa* infection reported

Table 2. **Sensitivity and specificity of rapid assessment procedures based on eyeworm and Calabar swellings for the diagnosis of communities with high and very high intensities of *Loa loa* infection**

RAP[a]/Indicator of *Loa loa*[b]	Sensitivity (%)	Specificity (%)	PPV[c]	NPV[d]
History of eye worm >40%				
Prevalence of *L. loa* >20%	100.0	66.7	62.1	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	65.7	60.3	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	57.1	43.1	100.0
History of swelling >40%				
Prevalence of *L. loa* >20%	100.0	56.1	55.4	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	55.2	53.8	100.0
Prevalence of >30 000 mf/ml more than 2%	100.0	48.1	38.5	100.0
Eye worm (RD)[e] >40%				
Prevalence of *L. loa* >20%	100.0	92.4	87.8	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	91.0	85.4	100.0
Prevalence of >30 000 mf/ml more than 2%	100.0	79.2	61.0	100.0
Calabar swelling (RD)[e] >40%				
Prevalence of *L. loa* >20%	94.4	78.8	70.8	96.3
Prevalence of >8 000 mf/ml more than 5%	94.3	77.6	68.8	96.3
Prevalence of >30 000 mf/ml more than 2%	96.0	68.8	50.0	98.1
Eye worm (RD)[e] or Calabar swelling (RD)[e] >60%				
Prevalence of *L. loa* >20%	100.0	89.4	83.7	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	88.1	81.4	88.1
Prevalence of >30 000 mf/ml more than 2%	100.0	76.6	58.1	100.0
Eye worm (RD)[e] AND Calabar swelling (RD)[e] >20%				
Prevalence of *L. loa* >20%	100.0	89.4	83.7	100.0
Prevalence of >8 000 mf/ml more than 5%	100.0	88.1	81.4	100.0

[a] RAP= rapid assessment procedure.
[b] mf = microfilariae.
[c] PPV = positive predictive value.
[d] NPV = negative predictive value.
[e] RD = restricted definition (history of eye worm lasting 1–7 days and confirmed with photograph of adult *Loa loa* in the eye or history of Calabar swelling that itched and lasted 1–7 days).

in the present study confirms earlier investigations carried out in the Centre Province of Cameroon (*5*). The 20% threshold prevalence of microfilaraemia corresponded to about a 5% prevalence of high microfilarial loads, which is the cut-off point above which there is a risk of severe adverse reactions involving functional impairment after ivermectin treatment (*3*). Thus there is now abundant evidence that the prevalence and intensity of *L. loa* infection are directly related.

The rapid increase in the community microfilarial load from a prevalence of 20% towards an upper limit of around 60% confirms the threshold value for severe adverse events. Above a prevalence of 20%, the intensity of infection increases rapidly, as does the risk for severe adverse events. It was previously reported that a significant proportion of the population in a community with *L. loa* endemicity was symptomatic but amicrofilaraemic, probably because of an efficient immune response (*7*, *16*, *17*). Indeed, individuals with occult loiasis have high levels of IgG antibodies that bind to a microfilarial surface antigen of molecular mass 23 kDa and can mediate cellular adherence. It is worth noting that there was a tenfold increase in the community microfilarial load over the rather narrow prevalence range of 30–50%. This suggested major increases in adult worm loads, possibly related to a significant rise in the intensity of transmission, notwithstanding the limited variation in the prevalence of patent infection.

The high correlations between the parasitological indices and the RAP indices reflected the reliability of the latter for predicting the prevalence and intensity of *L. loa* infection. Although Calabar swellings have been described as a pathognomonic sign of loiasis, their use in the present study was limited and obscured by other causes of swellings that were non-specific. The migration of adult *L. loa* through the conjunctiva is more striking and its occurrence is preceded by itching and pain. Eye worm is readily identifiable by persons in close proximity to each other or by individuals harbouring the worm. In the Calabar study sites a high prevalence of a history of eye worm was reported in conjunction with a low prevalence of *L. loa* microfilaraemia. This underlined the necessity of confirming the condition by using photographs to which people could relate, as well as by considering the duration of recent episodes.

The best indicator of *L. loa* infection consisted of a restricted definition of a history of eye worm, confirmation by means of a photograph and a duration of 1–7 days for the most recent episode (RAPLOA). With a threshold of 40% this was a good predictor of high-risk communities, with a sensitivity of 100% and a specificity in the range 76–92%. RAPLOA should be used to identify communities with a high prevalence and intensity of *L. loa* infection. Where the procedure indicates a prevalence of >40%, there is a high risk of adverse reactions during community-directed treatment with ivermectin. Under such circumstances, ivermectin delivery for the control of onchocerciasis should only be undertaken under close medical supervision.

The fact that the present study covered a wide range of prevalences and intensities of infection and a wide range of bioecological zones strengthens the reliability of the model. ■

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Conflicts of interest: none declared.

Résumé

Méthode d'évaluation rapide de la prévalence et de l'intensité des infections à *Loa loa*

Objectif Examiner la validité des observations portant sur la présence de macrofilaires de *Loa loa* dans l'œil et d'œdèmes de Calabar pour l'évaluation rapide de la prévalence et de l'intensité de la loase au niveau communautaire.

Méthodes Au total, 12 895 personnes de plus de 15 ans vivant dans 102 communautés villageoises du Cameroun et du Nigéria ont participé à l'étude. Un questionnaire standardisé a été administré aux participants, chez qui on a réalisé un prélèvement de sang par piqûre au doigt à la recherche de microfilaires de *L. loa*. Une évaluation rapide de la prévalence et de l'intensité de la loase a été réalisée sur la base des antécédents de présence de *L. loa* dans l'œil et d'œdèmes de Calabar.

Résultats L'étude a montré une forte corrélation entre les indices tirés de la méthode d'évaluation rapide et les indices parasitologiques d'endémicité de *L. loa*. Les indices tirés de l'évaluation rapide permettent d'identifier les communautés à haut risque (sensibilité : 94-100 % ; spécificité : 66-92 %). Les plus fortes valeurs de la sensibilité (100 %) et de la spécificité (79-92 %) ont été obtenues avec la méthode d'évaluation rapide reposant sur la présence observée de *L. loa* dans l'œil pendant 1 à 7 jours avec confirmation par la reconnaissance, avec l'aide de l'enquêteur, d'une photographie montrant une filaire adulte de *L. loa* dans l'œil.

Conclusion Une évaluation rapide de la prévalence et de l'intensité de la loase au niveau communautaire peut être réalisée selon la méthode reposant sur la présence observée de *L. loa* dans l'œil pendant 1 à 7 jours avec confirmation par la reconnaissance, avec l'aide de l'enquêteur, d'une photographie montrant une filaire adulte de *L. loa* dans l'œil.

Resumen

Método de evaluación rápida de la prevalencia e intensidad de la infección por *Loa loa*

Objetivo Evaluar la validez de las observaciones de *Loa loa* a nivel ocular y de la tumefacción de Calabar como criterios de evaluación rápida de la prevalencia e intensidad de la loasis a nivel de la comunidad.

Método Participaron en el estudio 12 895 individuos mayores de 15 años de 102 comunidades de aldeas del Camerún y Nigeria. Se distribuyó entre los participantes un cuestionario normalizado y se les extrajeron muestras de sangre por punción digital para determinar la presencia de microfilarias de *Loa loa*. La evaluación rápida de la prevalencia e intensidad de la loasis se hizo a partir de los antecedentes de afectación ocular o de tumefacción de Calabar.

Resultados Se observó una estrecha correlación entre los índices deparados por los procedimientos de evaluación rápida y los índices parasitológicos de endemicidad por *L. loa*. Los índices de evaluación rápida permiten identificar las comunidades de alto riesgo (sensibilidad: 94%–100%; especificidad: 66%–92%). La sensibilidad y especificidad más altas (100% y 79%–92%, respectivamente) se obtuvieron con el procedimiento de evaluación rápida basado en el criterio de unos antecedentes de afectación ocular de 1–7 días de duración, confirmados por el reconocimiento guiado, en una fotografía, de una filaria adulta de *L. loa* en el ojo.

Conclusión Es posible efectuar una evaluación rápida de la prevalencia y la intensidad de la loasis a nivel comunitario utilizando como criterio la observación del nematodo en el ojo por espacio de uno a siete días, confirmada por el reconocimiento guiado, en una fotografía, de un ejemplar adulto de *L. loa* en el ojo.

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