Epidermal parasitic skin diseases: a neglected category of poverty-associated plagues

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Abstract Epidermal parasitic skin diseases (EPSD) are a heterogeneous category of infectious diseases in which parasite–host interactions are confined to the upper layer of the skin. The six major EPSD are scabies, pediculosis (capitis, corporis and pubis), tungiasis and hookworm-related cutaneous larva migrans. We summarize the current knowledge on EPSD and show that these diseases are widespread, polyparasitism is common, and significant primary and secondary morbidity occurs. We show that poverty favours the presence of animal reservoirs, ensures ongoing transmission, facilitates atypical methods of spreading infectious agents and increases the chances of exposure. This results in an extraordinarily high prevalence and intensity of infestation of EPSD in resource-poor populations. Stigma, lack of access to health care and deficient behaviour in seeking health care are the reasons why EPSD frequently progress untreated and why in resource-poor populations severe morbidity is common. The ongoing uncontrolled urbanization in many developing countries makes it likely that EPSD will remain the overriding parasitic diseases for people living in extreme poverty. We advocate integrating control of EPSD into intervention measures directed against other neglected diseases such as filariasis and intestinal helminthiases.

Une traduction en français de ce résumé figure à la fin de l'article. Al final del artículo se facilita una traducción al español. الترجمة العربية لهذه الخلاصة في نهاية النص الكامل لهذه المقالة.

Introduction

Epidermal parasitic skin diseases (EPSD) occur worldwide and have been known since ancient times. Despite the considerable burden caused by EPSD, this category of parasitic diseases has been widely neglected by the scientific community and health-care providers. This is illustrated by the fact that in the recent edition of The *Communicable disease control handbook*, a reference manual for public health interventions, only one EPSD (scabies) is mentioned.[1] EPSD fulfil the criteria defined by Ehrenberg & Ault (2005) for neglected diseases of neglected populations, but are not listed on national or international agendas concerning disease control priorities.[2,3] This probably explains why efforts to control EPSD at the community level have very rarely been undertaken.[4]

Six EPSD are of particular importance: scabies, pediculosis (head lice, body lice and pubic lice infestation), tungiasis (sand flea disease) and hookworm-related cutaneous larva migrans (HrCLM). They are either prevalent in resource-poor settings or are associated with important morbidity. In this paper we focus on these diseases, summarize the existing knowledge on the epidemiology and the morbidity in resource-poor settings and focus on the interactions between EPSD and poverty.

We use the term "underprivileged population" to designate a typical resource-poor setting in low-income countries, in contrast to the socioeconomic characteristics of affluent communities in high-income countries. The expressions "hot-climate country" and "cold-climate country" are used when we refer to climatic restrictions on the occurrence of EPSD.

Searches of PubMed and LILACS using keywords "parasitic skin disease", "scabies", "pediculosis", "tungiasis", "cutaneous larva migrans" and their synonyms were used as a source of references. Searches were made without time limitations. In addition, we used references retrieved by the authors during previous work on EPSD. Articles in English, French, Portuguese and Spanish were reviewed and analysed where quantitative data were provided, the study design was sound and the study had been performed in a resource-poor setting in a low-income country. Of 95 articles identified by these criteria, 50 were selected and cited in the reference list.

Background

The six major EPSD differ considerably in their biological and epidemiological characteristics and life cycles (Table 1). Scabies is caused by a mite (*Sarcoptes scabiei)*, pediculosis by lice, tungiasis by sand fleas (*Tunga penetrans)* and HrCLM by nematode larvae. Although HrCLM and tungiasis are self-limiting diseases, the parasites may persist for months and can cause long-lasting sequels. *S. scabiei* and lice propagate continuously and cause persisting symptoms if the infestation remains untreated.[5]

In EPSD, host-parasite interactions are restricted to the stratum corneum, the upper layer of the epidermis, which is where the ectoparasites complete their life-cycles, in part or entirely. In other parasitic skin diseases, such as leishmaniasis, loiasis or onchocerciasis, other layers of the dermis are also affected. Whereas *S. scabiei* and lice accomplish their life-cycle within or on top of the epidermis, *T. penetrans* needs the host only for the production of eggs and completes its other developmental stages off-host. In contrast, animal hookworm larvae that have penetrated into the epidermis find themselves at a biological impasse and cannot develop further.

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Table 1. **Biological and epidemiological characteristics of the six major EPSD**

Characteristics	Scabies	Pediculosis capitis	Pediculosis corporis	Pediculosis pubis	Tungiasis	HrCLM
Biological						
Infective agent	*Sarcoptes scabiei*	*Pediculus humanus* var. *capitis*	*Pediculus humanus* var. *corporis*	*Phthirus pubis*	*Tunga penetrans*	Animal hookworm species such as *A. caninum*, *A. braziliense*, *Uncinaria stenocephala*
Taxonomical classification	Acaridae (mite)	Phtiraptera (louse)	Phtiraptera (louse)	Phtiraptera (louse)	Siphonaptera (flea)	Helminths (nematode)
Life-cycle	Completely on-host	Completely on-host	Completely on-host	Completely on-host	Partially on-host[a]	Partially on-host (biological impasse)
Epidemiological						
Transmission						
Person-to-person[b]	+++	+++	+++	(+)		
Sexual	+			+++		
Fomite	+	+	+++	+	(+)	(+)
Soil-to-skin					+++	+++
Capacity to transfer pathogenic microorganisms						
Actively	Not known	(+)	+++		+	Not known
Passively	+	++	++	++	+++	++
Occurrence	Worldwide	Worldwide	Restricted mainly to cold-climate regions	Worldwide	Caribbean, sub-Saharan Africa, South America	Predominantly in hot-climate countries
Seasonal variation	Peak during cold season[c]	Peak during cold season[c]	Inconsistent data	Peak during cold season	Peak in hot and dry season	Peak in rainy season
Animal reservoir	no[d]	no	no	no	Dogs, cats, pigs, rats[e]	Dogs, cats[e]

EPSD, epidermal parasitic skin diseases; HrCLM, hookworm-related cutaneous larva migrans.
+, rare; ++, frequent; +++, very frequent.
[a] Female fleas penetrate into the epidermis, develop and produce eggs; Eggs develop into larvae, pupae, adults off-host in soil.
[b] Other than sexual.
[c] Only in cold-climate countries.
[d] Sarcoptic mange may be transmitted to humans from pet dogs but causes self-limiting manifestations.
[e] Other animals may serve as a reservoir.

Epidemiology

Scabies, pediculosis capitis and pediculosis pubis occur worldwide but pediculosis corporis is restricted to cold-climate countries and is virtually absent in the tropics (Table 1). HrCLM is very rare in industrialized parts of the world but is ubiquitously present in developing countries.[6] Tungiasis is geographically restricted to the Caribbean, sub-Saharan Africa and South America.[7]

Except in epidemic circumstances, data on EPSD are not recorded so there is no reliable information available on global disease occurrence, changes in incidence over time, and spatial distribution in endemic areas. Hengge et al.[8] suggested that 300 million cases of scabies exist worldwide, with many more individuals being at risk at any point in time. Similarly, in resource–poor settings, virtually all individuals are permanently at risk for head-lice infestation, i.e. several billion people globally. As tungiasis and HrCLM are climatically and spatially restricted, the number of people at risk is lower, although still sufficient to merit attention.

The distribution of EPSD is irregular, and incidence and prevalence vary in relation to area and population studied. A study in a resource-poor community in urban Bangladesh, for example, showed that virtually all children aged less than 6 years developed scabies within a period of 12 months.[9] In a rural village in the United Republic of Tanzania, the overall prevalence was 6%, in rural and urban Brazil 8–10%, and in rural India 13%.[10–12] In Egyptian children, the prevalence was estimated to be 5% but in Australian Aboriginal communities the prevalence in this age group approached 50%.[13,14] Of 5–9-year-olds children living in a displacement camp in Sierra Leone, 86% were found to be infested with *S. scabiei*.[15]

In some native populations in the Amazon lowland, head-lice infestation is present in virtually all inhabitants, while it is quite rare among adults in affluent societies.[16] In an urban slum in Fortaleza, Brazil, girls experienced 19 new head-lice infestations per year, and boys 15 (authors' unpublished data, 2008). In contrast, in Germany the incidence was estimated at 1500 per 10 000 children per year.[16]

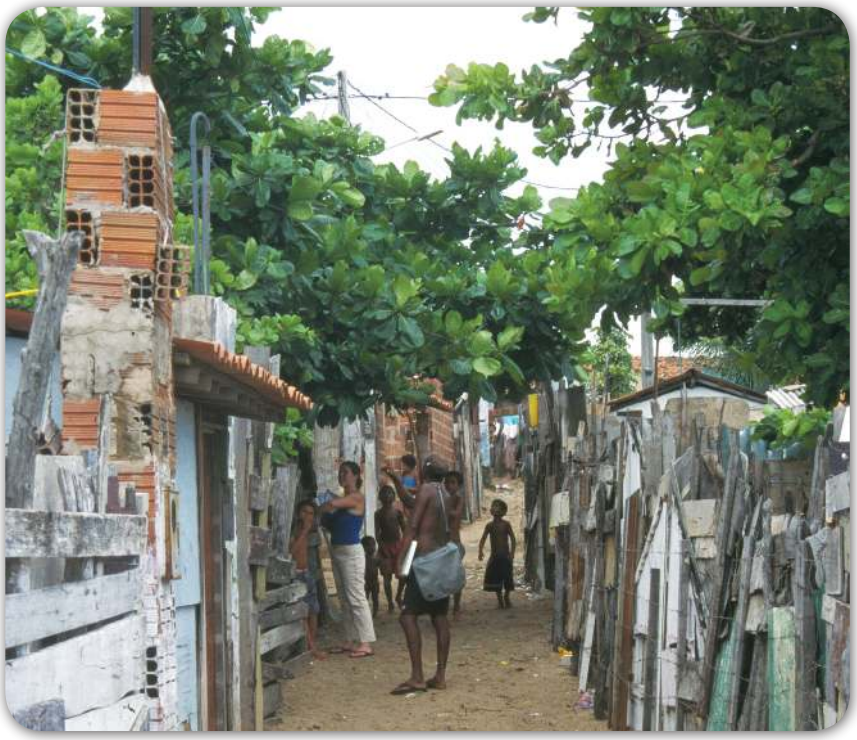
During peak transmission, the prevalence of tungiasis in children living in resource-poor rural and urban communities in Brazil and Nigeria reached more than 60%.[7,17] In contrast, in high-income communities in these

same countries, tungiasis is restricted to single cases that typically occur when people visit local beaches.[18] The situation is similar for HrCLM, with prevalence in children as high as 15% during the rainy season and an incidence of 1.840 cases per 10 000 individuals per year.[19]

EPSD usually show considerable seasonal variation of disease occurrence (Table 1).[20–23] In the tropics, the cyclical changes are particularly evident in tungiasis and HrCLM; prevalence of tungiasis is highest in the dry season and of HrCLM in the rainy season.[19,20]

The factors responsible for the high burden of EPSD in resource-poor communities are complex and have not been clarified. It has been suggested that crowding, sharing of beds, frequent population movements, poor hygiene, lack of access to health care, inadequate treatment, malnutrition and social attitudes contribute to the high burden of scabies in these settings.[24] It is difficult to disentangle the relative importance of economic, environmental and behavioural factors, since they frequently coexist.[25] There is, however, circumstantial evidence that extreme poverty and its economic and social consequences play a pivotal role (Fig. 1).[9,25]

Fig. 1. **Typical setting in a resource-poor neighbourhood in north-eastern Brazil in which EPSD are prevalent and the exposure risk for tungiasis and cutaneous larva migrans is high**



EPSD, epidermal parasitic skin diseases.

Tungiasis is a paradigmatic example for this complex web of causation. Sand flea disease is a zoonosis affecting a broad spectrum of animals, with pigs, dogs, cats and rats as the principal reservoirs. In resource-poor settings, stray dogs and cats are common and organic waste frequently litters the soil. Rats are attracted if garbage is not collected, sewage not disposed of properly and food stored inadequately. The risk for infestation is high if feet are not protected by shoes and socks, either because people cannot afford them or if wearing shoes is not part of local custom.[26,27] In resource-poor rural and indigenous populations in the hinterland of Brazil, the transmission of *T. penetrans* occurred almost exclusively indoors.[7] Dwellings in these settings typically do not possess a solid floor, or the ground is covered with rough concrete or broken tiles with many crevices, thus providing an ideal habitat for the off-host development of *T. penetrans*. In an urban environment it spreads in slums, where roads and paths are not paved, waste litters the area and yards consist of sand or mud.

Atypical paths of transmission in resource-poor settings are another epidemiological characteristic of EPSD. When laundry is dried on the ground, instead of using clothes lines, there is a high risk of contamination from dog and cat faeces containing hookworm larvae. In resource-poor settings, the high frequency of lesions of HrCLM on the upper part of the body, including the face, probably reflects this particular type of transmission.[28]

Another epidemiological peculiarity in poor settings is the observation that deficient sanitation is a significant risk factor for scabies.[9] So far, it seems that scabies is not influenced by hygienic practices or the availability of water, since the prevalence of scabies is very high in the Kuna Indians in Panama and among children in the Solomon Islands, where individuals take frequent baths and where careful daily personal hygiene is traditional.[29,30] We suggest that deficient sanitation is a characteristic of poor households and that poor hygiene does not by itself increase the odds of acquiring scabies. Interestingly, in rural Egypt, high prevalence of scabies was associated with households receiving their water supply from a hand pump, which the authors considered an indicator of low socioeconomic status rather than of deficient hygiene.[13] In resource-poor settings, scabies is usually not a sexually transmitted disease, while this seems to be a common mode of transmission in high-income countries.[25]

Poverty also plays a role in the transmission dynamics of head lice. In children living in a poor urban neighbourhood in north-eastern Brazil, the infestation rate depended significantly on the income of the household: the lower the family's income, the more head-lice episodes a child experienced per unit of time. In high-income countries, children of all socioeconomic groups are at similar risk for infestation with *Pediculus humanus* var. *capitis*.[16]

Within a resource-poor population, certain groups are at a particularly high risk for disease occurrence and severe morbidity. These may be girls and women (head-lice infestation), children (head-lice infestation, scabies, HrCLM, tungiasis), the elderly (scabies, tungiasis) or displaced or homeless people (scabies, pediculosis corporis, pediculosis pubis).[7,11,31,32]

A peculiar epidemiological characteristic of EPSD is the concomitant

presence of several ectoparasites on the same individual. In a fishing community in Brazil, for instance, 9% of the inhabitants were simultaneously infested with two or more ectoparasites.[33] Not surprisingly, individuals with EPSD also tend to be co-infected with intestinal helminths.[33]

Morbidity

Although the morbidity associated with EPSD is significant, a systematic assessment of the severity of the burden is still lacking. Engels & Savioli[34] suggested that EPSD may represent a considerable subjective burden, although disability-adjusted life years (DALYS) have not yet been calculated.

According to its pathophysiological basis, pathology can be schematically divided into two patterns, namely inflammation-related and itch-related. In tungiasis, the predominant morbidity is the result of heavy inflammation surrounding the lesions, together with secondary bacterial infection (Fig. 2 and Fig. 3).[35] Superinfection reinforces the inflammatory process. Persistent inflammation and superinfection frequently lead to long-lasting sequelae – i.e. secondary morbidity – such as suppuration, ulceration, gangrene, necrosis of surrounding tissue, deformation and loss of nails, resulting in physical disability.[7,36] Tungiasis has also been associated with tetanus in non-vaccinated individuals. In a study in São Paulo, Brazil, tungiasis was identified as the port of entry for 10% of tetanus cases.[37] All heavily infested individuals living in a resource-poor neighbourhood in north-eastern Brazil showed signs of acute and chronic inflammation: 19% had fissures; 50% presented with ulcers; deformation and/or loss of nails occurred in 69%,[36] resulting in walking difficulty in all patients and difficulty in gripping in half of the patients with lesions at the fingers. A broad host of pathogenic microorganisms has been isolated from superinfected lesions, such as *Staphylococcus aureus*, *Streptococcus pyogenes*, enterobacteriaceae, *Bacillus* spp., *Enterococcus faecalis*, *Pseudomonas* spp., as well as various anaerobic pathogens.[35,38]

Fig. 2. **Tungiasis-associated pathology at the heel**

Body lice are vectors of a host of pathogenic bacteria, such as *Rickettsia prowazekii* (the agent of epidemic typhus), *Borrelia recurrentis* (the agent of relapsing fever), *Bartonella quintana* (the agent of trench fever and bacillary angiomatosis) and *Yersinia pestis* (the agent of plague), and can cause important secondary morbidity through life-threatening infections.[39] Head lice can transfer *Y. pestis* during blood sucking.[40] Lice can passively carry staphylococci, streptococci, *Acinetobacter* spp. and *Serratia marcescens* and transfer them from infected lesions to other areas of the skin.[41]

Morbidity related to itching (pruritus) is best studied in scabies as it is such a common symptom that patients scratch their lesions almost constantly. Repeated scratching of a lesion causes excoriation and denudation of the skin thus creating portals of entry for pathogenic bacteria. The clinical consequences of secondary bacterial infection, especially with group A streptococci, result in significant, frequently unrecognized illnesses, such as cellulitis, boils, pyomyositis, lymphangitis and generalized lymphadenopathy.[42] Streptococci and staphylococci bacteria have been isolated from skin burrows as well as from faecal pellets of the ectoparasite, suggesting that the mites themselves may contribute to the spread of pathogenic bacteria.[43] Moreover, secondary infection of scabies lesions with group A streptococci is a major precipitant of post-streptococcal glomerulonephritis and possibly also of rheumatic fever.[44]

Fig. 3. **Multiple sand flea lesions at the fingertips**

The debilitating impact of persistent itch has repeatedly been stressed for a variety of non-infectious diseases but remains to be assessed for EPSD. In neurophysiology it is known that chronic itch leads to persistent firing of specialized A and C itch fibres in the skin. As a consequence, pain fibres in the neighbourhood are transformed into itch fibres, eventually leading to a sensitization of spinal neurons. A similar consequence can be anticipated to occur in EPSD. Since the pruritus intensifies at night, disturbance of sleep is to be expected. Recently, alterations of sleep have been confirmed in 84% of patients with HrCLM[21] and in 72% patients with scabies.[42] Tungiasis has also been shown to cause considerable sleep alterations.[38]

An aspect of morbidity which has been completely neglected is the psychological impact of EPSD. Since lesions on the skin can be seen by the naked eye, in the case of HrCLM and tungiasis even from a distance, the fact that an individual is infested with ectoparasites does not go unnoticed and can be a source of mental strain and distress. The unhealthy aspect of the skin in EPSD and constant scratching of lesions could influence self-esteem and affect the ability to adjust socially. In north-eastern Brazil, mothers of children with tungiasis are faced with societal notions linking the presence of this ectoparasitosis to neglect. The resulting stigma discouraged mothers from bringing their children to the health centre.[45] If patients with scabies are treated with a topical acaricide, the compound has to be applied to the whole body surface. Unfortunately, acaricides, such as sulfur in petrolatum, have a strong odour and so may reinforce stigmatization.

In resource-poor communities in Brazil, the severity of tungiasis was directly related to the economic status of the household in which the affected individuals lived.[9,46] A similar observation has been made in individuals with scabies in urban Bangladesh. Morbidity also depends on the duration of disease which means that the longer the infestation progresses, the higher the intensity of clinical signs and symptoms. This is of importance where access to health care is limited, delaying diagnosis and limiting availability of drugs for treatment. Finally, infection with HIV and human T-lymphotropic virus type 1, frequent in many resource-poor communities in the tropics, induces an exceptionally severe form of scabies, namely crusted or "Norwegian" scabies.[47]

Control

Although several characteristics should make interventions against EPSD cost-effective, control has rarely been attempted. First, the diagnosis of EPSD is relatively easy and can usually be done by the affected individual with a high degree of certainty.[48] Second, five of the six major EPSD can be effectively treated with topically applicable insecticides/acaricides or with oral ivermectin. Third, since there is a considerable overlap in the spatial distribution of EPSD and because these diseases cluster in similar population groups, interventions against different EPSD could be performed simultaneously.

Control of scabies by mass treatment with topical permethrin has been achieved in hyperendemic indigenous communities in Australia and Panama.[29,30] The interventions resulted in a significant reduction in prevalence of scabies and severity of pyoderma without concomitant use of antibiotics. In a low-income fishing community in Ceará State, Brazil, where scabies, pediculosis, tungiasis and HrCLM were endemic, mass treatment with ivermectin was performed (2 doses of 200 μg/kg body weight 10 days apart) and the population was followed up for a period of 9 months. Prevalence 30 days after treatment dropped by 97% for active pediculosis and 82% for scabies.[49] Tungiasis and HrCLM also decreased, although, due to the seasonal variation of these ectoparasitoses, the reduction of disease occurrence could not be quantified. Nine months after mass treatment, the prevalences of pediculosis and scabies were reduced by a factor of 2.1 and 2.6, respectively, when compared to pre-intervention.

A plant-based repellent based on coconut oil was used to prevent infestation with sand fleas in an area with extremely high transmission. The twice-daily application of the repellent on the skin of the feet decreased the infestation rate by 86% and reduced intensity of infestation by 90% despite ongoing transmission.[50] At the same time, tungiasis-associated pathology declined to an insignificant level.

Measures to reduce poverty in vulnerable populations could be a universal approach to reducing the prevalence and morbidity of EPSD because this category of illness is so intricately related to extreme poverty.

Future goals and strategies

Since major knowledge gaps currently impede the calculation of the global burden of EPSD, it is important to assess disease occurrence and morbidity in a systematic manner. This would lead to an adjustment of the global burden of neglected diseases because existing data suggest that EPSD have a more substantial impact on health than previously thought.[34] Looking at EPSD as a coherent family of infectious skin diseases will make sense in different ways: they tend to cluster in the same populations, they share similar animal reservoirs/ways of transmission and, to make progress in controlling them, they have to be addressed in an integrated manner.

What is needed?

First, sound epidemiological research should be encouraged. We urgently need reliable data on the spatial distribution, incidence, prevalence, seasonal variation, clustering of different EPSD in the same population and on risk factors for development of severe disease. Second, clinical and epidemiological methods have to be combined to determine primary and secondary morbidity associated with EPSD. The association of skin lesions with pathogenic micro-organisms, particularly group A streptococci, warrants indepth investigations. The possible relationship between EPSD, pyoderma and debilitating sequels such as post-streptococcal glomerulonephritis has to be scrutinized.

What can be done?

Since EPSD are so intricately linked with poverty, it seems unlikely that they can be eradicated as long as people continue to live in extreme poverty. Since prevalence, intensity of infestation and morbidity are correlated, a reduction in prevalence will presumably be followed by a decrease in morbidity. This can be achieved by repeated mass treatment with ivermectin. Alternatively, interventions could be targeted at the most vulnerable groups in a defined setting. In

both cases it would be essential to make ivermectin available in all endemic areas. A different approach suitable for scabies, pediculosis and tungiasis is based on the prevention of infestation by the reduction of exposure. By this line of thought, the combat of tungiasis and HrCLM could be integrated in existing schemes of zoonosis control.

Based on experiences from north-eastern Brazil and the Solomon Islands, it seams feasible and practical to integrate control of EPSD, pyoderma, filariasis and intestinal nematodes.[29,49] Ehrenberg & Ault[2] have advocated this approach in their previous analysis of possible interventions for "neglected diseases of neglected populations" in the Caribbean and Latin America. Measuring the effect of such integrated control is likely to reveal the real impact of EPSD on human health and well-being.

A distinction needs to be made between developing interventions that address the needs of poor people and methods of actually reaching those people. In the case of EPSD, control measures will only be successful if communities are committed to participating and members of the community actively engage themselves during planning, implementation and execution. However, it is the responsibility of the society to provide arenas and resources where those on the lowest incomes can commit themselves and contribute actively.

Conclusion

EPSD are more than just irritations of the skin or bearable nuisances. They have a substantial impact on the health of people living in extreme poverty. EPSD are widespread, polyparasitism is common and significant primary and secondary morbidity is obvious. The epidemiology is characterized by inequality: the disease burden is very high in impoverished communities and the very poor are disproportionately affected. Within this vulnerable group, children, women, the elderly, homeless and displaced persons bear an exceptionally high burden of disease.

Poverty influences the epidemiology of EPSD in many ways. It favours the presence of animal reservoirs, ensures ongoing transmission, facilitates atypical ways of spreading the infectious agent and increases the chances of exposure. This results in an extraordinarily high prevalence and intensity of infestation and significant morbidity of EPSD. Stigma, lack of access to health care and deficient behaviour in seeking health care are the reasons why EPSD frequently progress untreated.

Inequality and neglect seem to be the major driving forces that keep the disease burden at an intolerably high level. Health-care stakeholders and political decision-makers must acknowledge that EPSD are debilitating and merit much more attention from health professionals than hitherto given.

The ongoing uncontrolled urbanization in many developing countries makes it likely that EPSD will remain the overriding parasitic diseases for people living in extreme poverty and remain indicators of neglect by societies and particularly public health policies. ■

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Résumé

Les maladies parasitiques de l'épiderme : une catégorie négligée de pathologies liées à la pauvreté

Les maladies parasitiques de l'épiderme constituent une catégorie hétérogène de maladies infectieuses, dans lesquelles les interactions parasite-hôte sont confinées dans la couche supérieure de la peau. Les six principales maladies de ce type sont la gale, la pédiculose (de la tête, du corps et du pubis), la tungiase et les larva migrans cutanées dues à des ankylostomes. Nous présentons un résumé des connaissances actuelles sur les maladies parasitiques de l'épiderme et montrons que les maladies sont très répandues, s'intègrent souvent dans un polyparasitisme et sont à l'origine d'une morbidité primaire et secondaire importantes. Nous montrons également que la pauvreté favorise la présence de réservoirs animaux, permet à la transmission de se poursuivre, facilite la propagation des agents infectieux par des méthodes atypiques et accroît la probabilité d'exposition. Il en résulte une prévalence et une intensité extraordinairement élevées de l'infestation des populations pauvres par les maladies parasitiques de l'épiderme. La stigmatisation, le manque d'accès aux soins de santé et le comportement négatif face à la nécessité de consulter expliquent pourquoi ces maladies progressent souvent sans être traitées et entraînent couramment une morbidité très lourde parmi les populations démunies. L'urbanisation non contrôlée qui sévit dans de nombreux pays en développement maintiendra probablement les maladies parasitiques de l'épiderme parmi les principales parasitoses touchant les personnes vivant dans l'extrême pauvreté. Nous préconisons d'intégrer la lutte contre ces maladies dans les interventions visant les autres maladies négligées, telles que la filariose et les helminthiases intestinales.

Resumen

Parasitosis epidérmicas: un problema desatendido asociado a la pobreza

Las parasitosis epidérmicas (PE) son un grupo heterogéneo de enfermedades infecciosas en las que la interacción parásito-huésped se limita a la capa superior de la piel. Las seis PE principales son la escabiosis, las pediculosis (de cuero cabelludo, cuerpo y pubis), la tungiasis y la larva migrans cutánea por anquilostoma. En este resumen acerca de los conocimientos actuales sobre las PE se explica que estas enfermedades están muy extendidas, que el poliparasitismo es un problema

frecuente, y que la morbilidad primaria y secundaria asociada es importante. Se muestra que la pobreza favorece la aparición de reservorios animales, la continuidad de la transmisión de los agentes infecciosos y las formas atípicas de propagación de éstos, aumentando así las probabilidades de exposición. Esto da lugar a una prevalencia e intensidad muy elevadas de este tipo de infestaciones en las poblaciones con pocos recursos. La estigmatización, la falta de acceso a los servicios de salud y una escasa tendencia a la búsqueda de atención sanitaria explican que las PE evolucionen con frecuencia en ausencia de tratamiento y que en las poblaciones con recursos escasos los casos de morbilidad grave sean comunes. La urbanización no planificada que se da en muchos países en desarrollo lleva a pensar que las PE seguirán siendo las enfermedades parasitarias predominantes entre las personas que viven en una situación de pobreza extrema. Recomendamos que las medidas de control de las PE se integren en las medidas de intervención dirigidas contra otras enfermedades desatendidas como la filariasis y las helmintiasis intestinales.

ملخص

أمراض الجلد الطفيلية التي تصيب البشرة: فئة مهملة من الأمراض المرتبطة بالفقر

تمثِّل أمراض الجلد الطفيلية التي تصيب البشرة فئة متغايرة المنشأ من الأمراض الـمُعدية التي تنحصر فيها تفاعلات الطفيلي المضيف على طبقة الجلد الخارجية. وتضم هذه الفئة ستة أمراض رئيسية هي الجرب، والقمال (في الرأس والعانة والجسم)، وداء الطوامر، وداء هجرة اليرقات الجلدي الناشئ عن الدودة الشصّية. ويلخص الباحثون في هذه الدراسة المعارف الحالية حول أمراض الجلد الطفيلية التي تصيب البشرة، ويبينون مدى انتشار هذه الأمراض، حيث تشيع الإصابة بالطفيليات المتعددة التي تؤدي إلى وقوع مراضة أولية وثانوية كبيرة. ويبين الباحثون أنه مع الفقر يشيع وجود المستودعات الحيوانية، كما أن الفقر يؤدي إلى استمرار سراية الأمراض، ويمهد السبيل للطرق اللانمطية لانتشار العوامل الـمُعدية، ويزيد من فرص التعرّض لها، الأمر الذي يُفضي إلى معدلات انتشار مرتفعة ارتفاعاً غير عادي، والى شدة احتشار أمراض الجلد الطفيلية التي تصيب البشرة. وتمثل الوصمة، وعدم الحصول على الرعاية الصحية، والتقاعس عن التماس الرعاية الصحية الأسباب التي تجعل الأمراض الطفيلية التي تصيب البشرة كثيراً ما تظل بلا معالجة، وتؤدي إلى شيوع المراضة الوخيمة في المجتمعات المحلية الشحيحة الموارد. وإن التوسع العمراني الخارج عن السيطرة في العديد من البلدان النامية، يهيئ الفرصة لأن تظل هذه الأمراض تمثل الأمراض الطفيلية المهيمنة، وذلك لدى الأشخاص الذين يعيشون في فقر مدقع. ويدعو الباحثون إلى إدماج عناصر السيطرة على الأمراض الطفيلية التي تصيب البشرة ضمن تدابير المداخلات الموجهة نحو الأمراض الأخرى المهملة، مثل داء الفيلاريات والدواد المعوي.

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