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ONCHOCERCIASIS AND THE AFRICAN PROGRAMME FOR ONCHOCERCIASIS CONTROL (APOC)

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Introduction

Onchocerciasis, or 'river-blindness', is a disease caused by infection with the filarial worm, *Onchocerca volvulus*. The parasite is transmitted to human hosts by infected female 'blackflies', *Simulium* spp., as they feed on the host's blood. Whilst feeding, the fly secretes saliva containing infective larvae. These larvae enter the host's subcutaneous tissue, migrate, and form nodules in which they mature into adults. The smaller, male worms migrate between nodules and mate with females. After mating, the adult females, which live for up to 15 years, may produce and release 1000 or more microfilariae per day. It is these microfilariae which cause the debilitating effects of the disease as they migrate through the skin causing intense itching,



Residents in onchocerciasis endemic areas often suffer from severe pruritus and scratch their skin with sticks or stones

Photo: Michele Murdoch

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Onchocerciasis and APOC

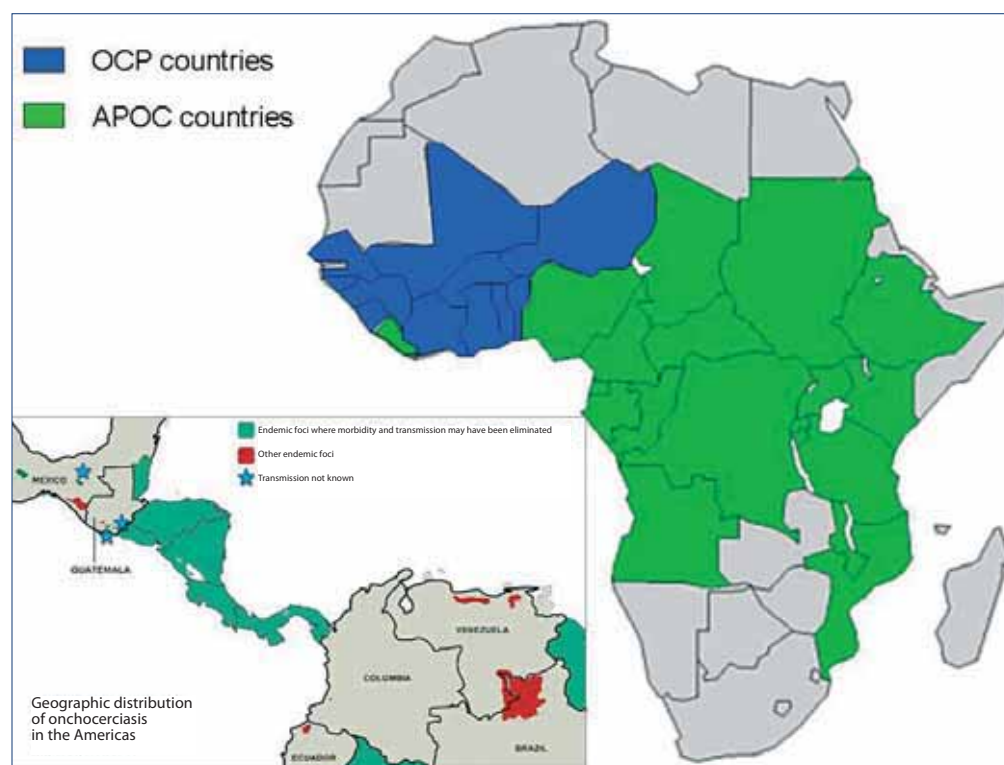


Fig. 1: Geographical distribution of onchocerciasis (World Health Organization. <http://www.who.int/pbd/blindness/onchocerciasis>)

depigmentation and disfigurement. They sometimes migrate into the cornea of the eye, causing the blindness that gives the disease its common name. If a non-infected blackfly feeds on an infected host it takes up microfilariae in its blood meal and after migrating first to the thoracic muscle and then to the head and proboscis, these may subsequently develop into infective larvae in the salivary glands, completing the life-cycle. *Simulium* spp. are widespread, and the species transmitting onchocerciasis are found in 30 countries of Africa, where the vast majority of the global burden of disease is found. Smaller foci of infection also occur in the Yemen and Central and Southern America (Mexico, Guatemala, Ecuador, Colombia, Venezuela and Brazil; Figure 1).

Blackflies breed in fast-flowing, well-oxygenated streams and rivers and it is close to these rivers in tropical areas that the disease is endemic.¹ In the past, the disease has had disastrous consequences for individuals and communities in infected areas. These consequences have included a high prevalence of blindness (up to 33% in highly affected communities), and sometimes abandonment of villages.

Treatment and Control

The first concerted efforts to control onchocerciasis were initiated in the early 1970s, resulting in the launching, in 1974, of the Onchocerciasis Control Programme (OCP). This was the first public-private partnership between countries, donors and sponsoring agencies, targeting highly infected West African countries. Initially, in the absence of an effective drug for treatment, the objective of OCP was elimination of the vector, and control measures depended upon larvicides applied to *Simulium* breeding sites, often by helicopter. This approach successfully interrupted parasite transmission and controlled onchocerciasis throughout the affected region. In the 1980s, however, *Simulium* was found to be reinvading some cleared areas.

In 1986, large-scale clinical trials demonstrated the efficacy of ivermectin in the treatment of onchocerciasis and in reducing transmission intensity. The following year, 1987, the manufacturers, Merck & Co. Inc., promised to donate ivermectin for as long as needed and, since 1988, this has been the primary control tool. Ivermectin is a microfilaricide that kills the microfilariae, but does not kill the adult worm that produces them. For this reason, it is necessary to continue annual treatment of the human host population over the adult female worms' lifespan of approximately 14 years. This reduces transmission of the parasite, by lowering the microfilarial load of the host, as *Simulium* no longer become infected after feeding on a treated person. Treatment also effectively controls the debilitating effects of the disease caused by microfilariae. To reduce transmission effectively and eventually eliminate the disease, at least 65% of the target population must be treated for several years.²

APOC

The African Programme for Onchocerciasis Control (APOC) was launched in December 1995 with a mandate to build on the remarkable success of OCP in West Africa. The goal of APOC is to 'eliminate onchocerciasis as a disease of public health importance and as an important constraint to socio-economic development throughout Africa'. The APOC strategy relies on the establishment of self-sustainable ivermectin treatment programmes in the 19 high-risk endemic countries in Africa outside the OCP area. The fundamental principles of APOC are: empowerment of the endemic communities in respect of public health care; global partnership between private and public sectors and affected communities; development of existing and future strategies to make control operations feasible and cost effective. These principles continue to be supported by the pledge from Merck & Co. Inc., in 1987, to donate ivermectin to treat onchocerciasis through the Mectizan Donation Programme, for as long as needed, as well as through the experience gained by OCP.³

The APOC programme functions through community-directed treatment with ivermectin (CDTI), in which communities are empowered to manage their own treatment programmes, with support from the primary health care system, local authorities and Ministries of Health, usually in partnership with a Non-Governmental Development Organisation. This approach is designed to maximise sustainability, enabling it to eventually function without external funds and reach remote rural areas not easily accessed by health workers. The programme has achieved remarkable success, with sustained high treatment coverage in most areas in which APOC provides support. In 2006, a total of 472,000 trained community-selected ivermectin distributors treated 48.5 million eligible persons in 16 African countries. An additional recent exciting feature of the CDTI approach is its integration with other primary health care interventions, such as provision of insecticide-treated bednets to control malaria, supplementation of children and pregnant mothers with vitamin A, immunisation programmes and

control of tuberculosis. These have all contributed to improved health care and programme sustainability. A further achievement of APOC has been the development of a method for rapid epidemiological mapping of onchocerciasis (REMO: Figure 2) based on Geographical Information Systems (GIS) and tools for monitoring and evaluating community-directed treatment programmes.

The benefits of APOC supported CDTI programmes can be summarised as direct benefits resulting from reducing the disease burden and transmission, indirect benefits to National Health Systems, especially strengthening primary health care delivery, and social and economic benefits to affected communities. As a result of the community-based approach and Merck & Co. Inc.'s donation of Mectizan®, the cost of treatment per person is only US\$ 0.58.

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Dr Amazigo's interest in gender and community development advocacy increased with her research on Onchocerciasis in 1990 with a WHO grant, which formed the scientific basis for the launch of APOC in 1995, to succeed the Phase I Onchocerciasis Control Programme (OCP) in 11 West African countries.

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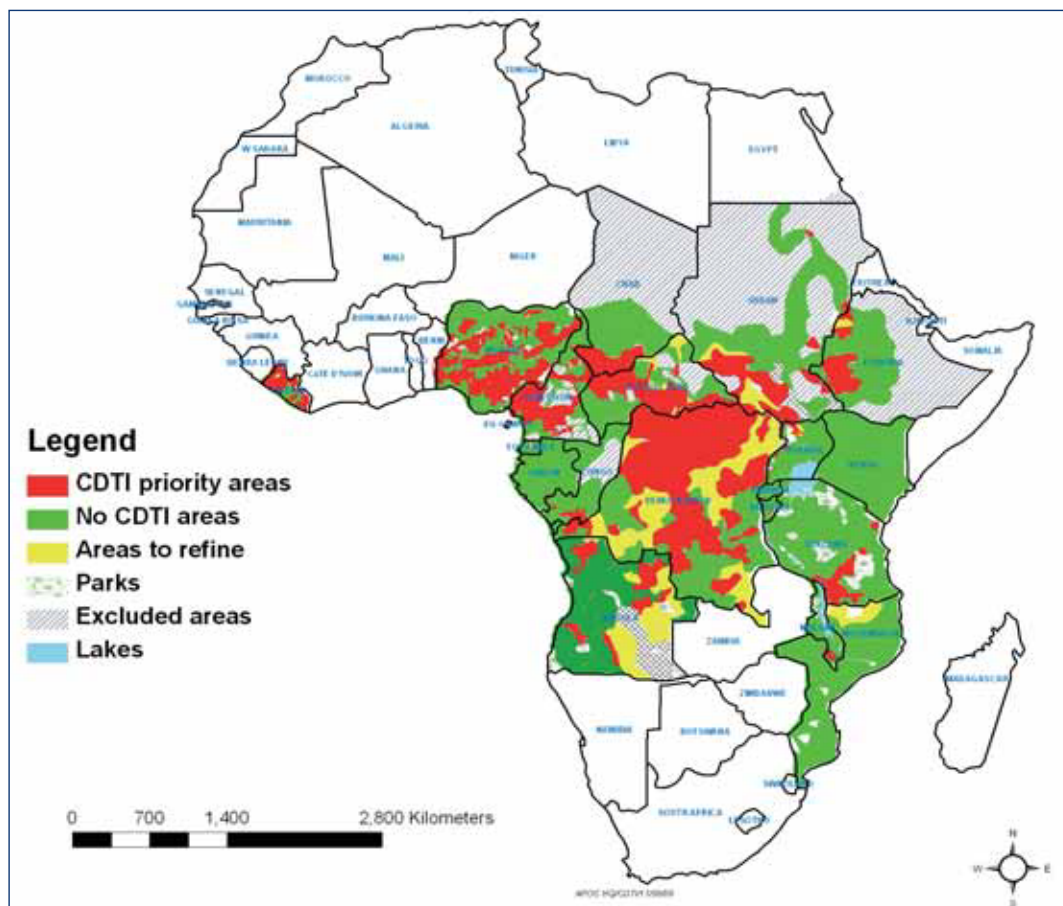


Fig. 2: Rapid epidemiological mapping of onchocerciasis (REMO) in countries covered by APOC, 2008.

SKIN SIGNS OF ONCHOCERCIASIS

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Recent global estimates suggest that 37 million people are infected with onchocerciasis, most of whom live in Africa. A total of 90 million people are considered at risk of infection because of where they live.¹

In 1875, a British surgeon called John O'Neill first described an itchy papulo-vesicular-pustular eruption which was known locally in the Gold Coast (now Ghana) as 'craw-craw'. He demonstrated the presence of microfilariae in skin biopsies and correctly concluded that they were the cause of the complaint. Despite this early recognition of cutaneous involvement, subsequent attention and research concentrated on blindness as the main devastating complication of this disease. It is only relatively recently, i.e., since the early 1990s, that it has become widely recognised that itching and skin problems from onchocerciasis also cause significant morbidity and harmful psycho-social and economic effects.

Pruritus

The first indication that a person is infected with onchocerciasis is usually intense pruritus and at this stage the skin itself may look normal. The itching may be severe causing insomnia and difficulty working. Fatigue from incessant pruritus has even been cited as the reason new mothers give up breast-feeding in endemic areas.² Residents of endemic villages can often be seen scratching their skin with sticks or stones to try to obtain relief (Frontispiece: Page 13).

Onchocercal Skin Changes

Onchocerciasis should be considered as a diagnosis whenever a patient from an endemic area complains of itching or has an itchy rash (Box 1). The various forms of onchocercal skin disease may be categorised using a classification system based on clinical findings.³ An affected person may have one or more of these skin changes at the same time and the appearances may change over time. It is very important to realise that these clinical signs are non-specific and, hence, there are various differential diagnoses to consider within each category (Box 2).

Acute Papular Onchodermatitis (APOD)

Acute papular onchodermatitis (APOD) mainly affects children and young adults and consists of small (1 – 3mm diameter), evenly-sized itchy papules widely scattered on the upper trunk and arms (Figure 1). In more severe cases, vesicles and pustules are seen. Erythema and oedema of the skin may also be present, affecting a single limb, or area of the trunk or face. APOD may only last for a few days at a time. A skin biopsy taken from a papule or vesicle and exam-

ined down a microscope may reveal dead microfilariae surrounded by inflammatory cells.

The main differential diagnoses are miliaria and insect bites. Miliaria are smaller vesicles and usually limited to flexural sites. Bites of *Simulium* and other insects are small, closely clustered and many have a tangential punctum.

Chronic Papular Onchodermatitis (CPOD)

Chronic papular onchodermatitis (CPOD) affects children and adults and is seen mainly on the buttocks, waist area and shoulders (Figure 2). Flat-topped papules are seen which vary considerably in size (from 3 to 9mm in diameter) and height (some lesions are almost flat, others may be raised up to 5mm above the skin surface). Post-inflammatory hyperpigmentation is characteristic. Itching is common but may not always be present.

The most difficult differential diagnosis is scabies, but usually this also affects the extremities and characteristic burrows may be seen.

Box 1: Diagnosis of Onchocerciasis

Onchocerciasis should be considered as a diagnosis whenever a patient from an endemic area complains of itching or has an itchy rash

Box 2: Main Differential Diagnoses

| Category of onchocercal skin disease | Main differential diagnoses | Distinguishing features and remarks |
|---|---|---|
| Acute papular onchodermatitis (APOD) | Miliaria (heat rash or prickly heat) | APOD vesicles are larger and more widely scattered over the trunk, whereas miliaria is usually limited to flexural sites |
| | Bites of <i>Simulium</i> and other insects | These papules are small, closely clustered and many have a tangential punctum |
| Chronic papular onchodermatitis (CPOD) | Scabies | Involvement of extremities and presence of burrows indicate scabies. Examine other family members |
| | Eczema | Eczema is rarely limited to the buttocks, the commonest site for CPOD. The flat-topped papules of CPOD are characteristic |
| Lichenified onchodermatitis (LOD) | Lichenified eczema | Eczema and scabies tend to be symmetrical unlike LOD which may be limited to one limb |
| | Lichenification secondary to chronic scabies | |
| Atrophy | Senile atrophy | Atrophy associated with old age is usually generalised whereas onchocercal atrophy may be limited to, e.g., the buttocks. Reserve a clinical diagnosis of onchocercal atrophy to patients <50 years |
| Depigmentation | Other post-inflammatory/post-traumatic hypopigmentation | The shins are common sites for trauma. Onchocercal depigmentation is often quite extensive and bilateral with 'spots' of normally pigmented skin centred around hair follicles |
| | Repigmenting vitiligo | Vitiligo typically begins in an acrofacial distribution. Repigmentation of patches of vitiligo may give a 'spotty' appearance initially |



Fig. 1: Acute papular onchodermatitis on the back
Photo: Michele Murdoch



Fig. 2: Chronic papular onchodermatitis

Photo: Michele Murdoch

It is important to examine other close family members if scabies is suspected. Eczema may also be difficult to differentiate from CPOD but eczema is rarely limited to the buttocks, which is the commonest site for CPOD. The flat-topped papules of CPOD are characteristic.

Lichenified Onchodermatitis (LOD)

Lichenified onchodermatitis (LOD) is common in certain geographical areas, such as the Yemen and Sudan, though it is also seen less frequently in other countries. It is sometimes called 'sowda' from the Arabic word for black. It is typically seen in young adolescent boys and consists of extremely itchy hyperpigmented papules, nodules and plaques. With increasing severity, the plaques become more confluent and the skin is very lichenified (i.e., like the bark of a tree) from constant rubbing and scratching.

The eruption is classically confined to a single limb, usually the leg (Figure 3) and there is soft enlargement of the draining lymph nodes. The important differential diagnoses are lichenified eczema and lichenification from chronic scabies, but these conditions are usually symmetrical, whereas LOD may be strikingly limited to one limb. Secondary bacterial infection of the skin is common in CPOD and LOD.

Atrophy

The atrophy associated with onchocerciasis is premature ageing of the skin. The skin is excessively wrinkled and this is mainly seen on the buttocks (Figure 4) and less commonly on the limbs. If the edge of a finger is pushed firmly along the skin, many additional fine wrinkles appear. Also, loss of elasticity of the skin may be shown by lifting the skin in a normally hydrated person with the thumb and forefinger and, on release, seeing the skin return to the normal position slowly. Itching is usually absent and cuts and wounds heal slowly.

The main differential diagnosis is senile atrophy of the skin, but the atrophy associated with old age is usually generalised, whereas onchocercal atrophy is limited to one site, e.g., buttocks. It is probably safer to restrict diagnosing onchocercal atrophy to individuals who are less than 50 years old.

Hanging Groin

Hanging groin is a form of atrophy affecting the skin of the groin and anterior thigh. The changes may affect one or both sides of the groin together. It is thought that hanging groin is induced by the development of massive lymphadenopathy in a sling of atrophic skin. Subsequently the lymph nodes become fibrotic and shrink, leaving loose hanging folds of the skin (Figures 5 and 6). Femoral and inguinal hernia are common in association with hanging groin.



Fig 3: Lichenified onchodermatitis affecting one leg in an 18 year old male
Photo: Michele Murdoch

Depigmentation

Also known as 'leopard skin', onchocercal depigmentation is found symmetrically on the shins (Figure 7) and, less commonly, in the lateral aspects of the groin (Figure 8) and on the abdomen. Itching is not usually present. On close inspection, patches of complete pigment loss are seen, with islands or 'spots' of normally pigmented skin centred around hair follicles. The skin is flat or slightly depressed. Early changes of incomplete pigment loss are seen as yellow-brown areas on black skin.

Palpable Onchocercal Nodules

Onchocercal nodules are firm subcutaneous nodules overlying bony prominences (Figure 9). In Africa, the commonest site is one or both iliac crests on the pelvic girdle and in Latin America nodules are relatively more common on the head. The nodules consist of adult filarial worms surrounded by fibrous tissue. They are relatively asymptomatic, other than individuals disliking their presence, though sometimes the nodules enlarge to such an extent that they are a nuisance because of their size.

Skin Signs of Onchocerciasis

Although some nodules are easily visible, a careful examination by palpation is needed to detect smaller nodules. It is often helpful to ask the patient if they know where any nodules are located. For examination of nodules, it is easier to stand behind the undressed patient and palpate the head and shoulder girdle first. A set routine is then followed palpating all preferred sites, in turn, i.e., ribs, arms, pelvic girdle (iliac crests, trochanters, sacrum), sides of the knee, ankles and feet (Figure 10).

Lymphadenopathy

Enlarged hard lymph glands may often be found in the groin.

Lymphoedema

Elephantiasis of the external genitalia has been reported in some endemic areas but co-infection with *Wuchereria bancrofti* was not satisfactorily excluded in these reports. Similarly, the possible association of hydrocele and elephantiasis of the limbs in onchocerciasis requires clarification.

Systemic Complaints

More research is needed on the significance of systemic symptoms in onchocerciasis. Generalised body aches and pains, backache and joint pains, lower body weight, epilepsy and dwarfism associated with signs of pituitary deficiency have all been reported.



Fig. 4: Atrophy in a 28 year old fisherman
Photo: Michele Murdoch

The best site from which to take the snip varies with the geographical region:

- In Africa - overlying the iliac crest
- In Central and Southern America - the shoulder blade region
- In the Yemen and the Sudan - the calf.

Basically, the more snips which are taken, the greater the sensitivity of the test. Usually, at least two snips are taken, one from each side of the body (Figure 11). Skin snips may be negative in lightly infected persons.

Onchocercal nodules may be excised under local anaesthetic (Figure 12) but this is not a routine method of diagnosis and even small nodules may bleed a lot during excision due to vessels around the fibrous capsule. When the nodule is sliced across, the adult worms can be seen. Dissection of the nodule after collagenase digestion reveals the worms further (Figure 13).

A full blood count usually reveals an eosinophilia. There is no specific serological test for onchocerciasis yet. An ELISA test for filariae may be available in some laboratories, but this is not specific for onchocerciasis.



Fig. 5: Hanging groin in a female

Photo: Michele Murdoch

Diagnosis

The mainstay of diagnosis is to take a skin snip. The skin is first lifted up, or 'tented', using a needle and, then, a small snip of skin is removed from the apex with a scalpel blade and placed on a glass slide with a drop of normal saline. After at least half an hour, microfilariae may be seen wriggling in the saline down a microscope.



Fig. 6: Late hanging groin in a male with redundant folds of atrophic skin. (Depigmentation is also present in the groin and on the shins)

Photo: Michele Murdoch

Skin Signs of Onchocerciasis

Treatment and Control

The current treatment for onchocerciasis is a single annual dose of 150 - 200µg/kg ivermectin (Mectizan®) which is repeated throughout the life-span of the adult worm, approximately 14 years.

The largest control programme is the African Programme for Onchocerciasis Control (APOC) which is described in the previous article. Each tablet of Mectizan® contains 3mg of ivermectin. The number of 3mg tablets needed to achieve the recommended dose is determined by the individual's weight or, more recently, height. Exclusion criteria for ivermectin are children under five years of age, or weighing less than 15kg or less than 90cm in height, pregnant women, women breast feeding infants less than one week old, individuals with serious illnesses of an acute or chronic nature and those individuals with a history of immediate hypersensitivity to Mectizan®.

In Latin America, the Onchocerciasis Elimination Programme in the Americas (OEPA) aims to eliminate all morbidity from onchocerciasis and, wherever possible, suppress transmission, using a strategy of six monthly mass ivermectin therapy.



Fig. 7: Depigmentation on the shins
Photo: Michele Murdoch



Fig. 8: Depigmentation in the groin

Photo: Michele Murdoch

In the Yemen and African countries where onchocerciasis and lymphatic filariasis are co-endemic, integrated control programmes use annual mass treatment with ivermectin and albendazole. Diethylcarbamazole (DEC) is contra-indicated in individuals with heavy onchocerciasis infections as it can precipitate Mazzotti reactions (exacerbation of itching or papular eruption, pulmonary oedema and even collapse and precipitation of acute optic neuritis which may cause blindness). Although it was used in the past, DEC is now obsolete (should never be used) as a treatment for onchocerciasis.

Ivermectin may cause an ill-defined encephalopathy in individuals who are heavily co-infected with *Loa loa*. In areas which are co-endemic for onchocerciasis and loiasis, therefore, careful mapping of habitat and vegetation is required to identify likely areas of co-endemicity - to ensure that staff are appropriately trained in advance in the management of severe reactions and that medical supplies are obtained.



Fig. 9: Large onchocercal nodule overlying a rib

Photo: Michele Murdoch

Aside from control programmes, if a patient has confirmed onchocerciasis but is known to be hypersensitive to ivermectin, one might possibly consider treatment with suramin, but this has to be given intravenously, is nephrotoxic and may result in inflammation and subsequent degenerative changes in the optic

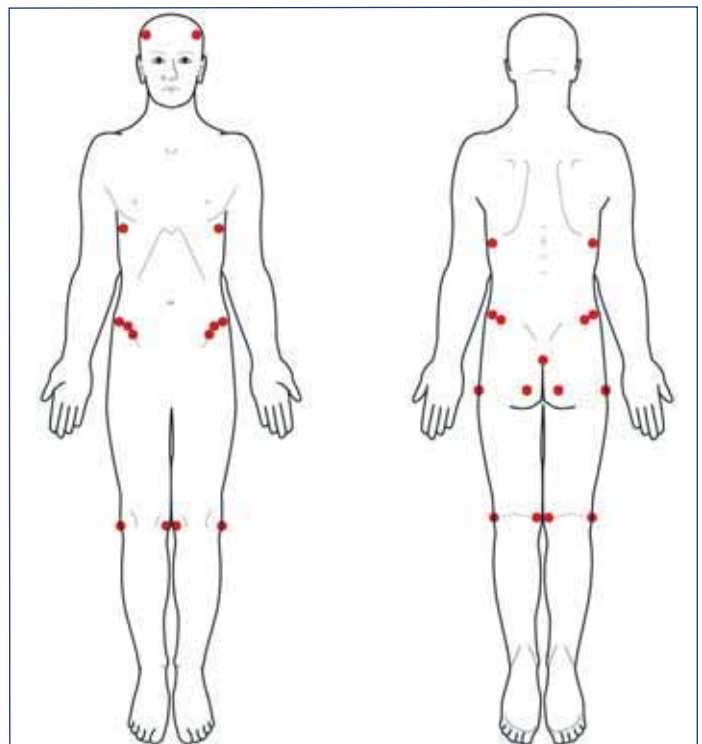


Fig. 10: Body map showing common sites for onchocercal nodules. In Africa the commonest site is one or both iliac crests on the pelvic girdle. In Latin America nodules are relatively more common on the head.

Skin Signs of Onchocerciasis

nerve and retina. WHO does not recommend treatment with suramin in light to moderately infected patients whose eyes are not at risk.

If an infected person from an endemic area travels to a non-endemic area or country and doesn't plan to return to an endemic area, more intensive treatment regimes may be considered, e.g., three single doses of ivermectin, one month apart, plus doxycycline 100mg/day for six weeks. If there is a recurrence of itching, a typical papular rash or eosinophilia, further doses of ivermectin may be given at 6 – 12 monthly intervals.

Finally, secondary bacterial infection of the skin may require treatment with antibiotics. Topical steroids and moisturisers, if available, may be used and, also, antihistamines may provide partial relief of pruritus.

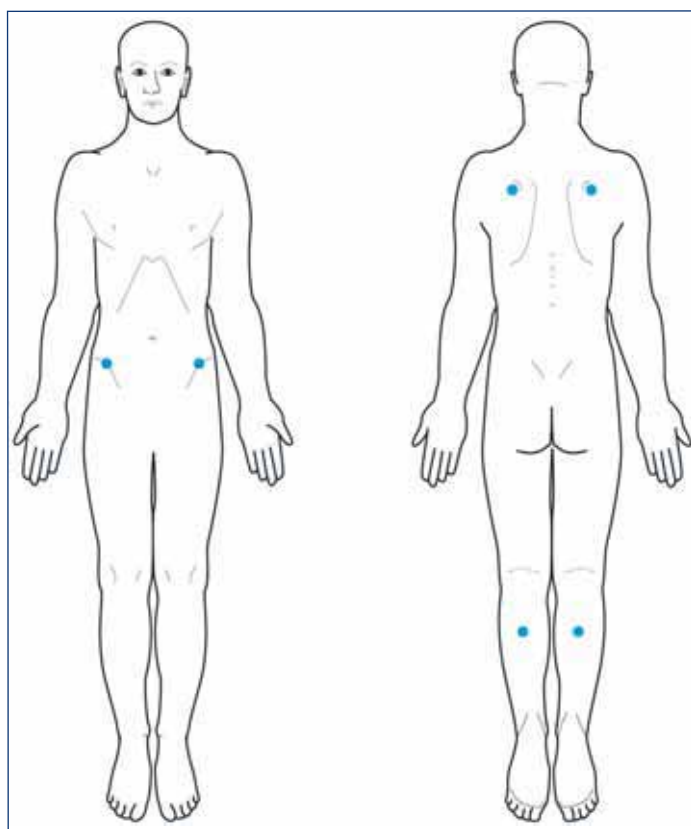


Fig. 11: Body map showing preferred sites for taking skin snips.
i) In Africa – overlying the iliac crest
ii) In Central and Southern America – the shoulder blade region
iii) In the Yemen and Sudan – the calf.

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Fig. 12: Excised onchocercal nodule surrounded by a fibrous capsule
Photo: Michele Murdoch

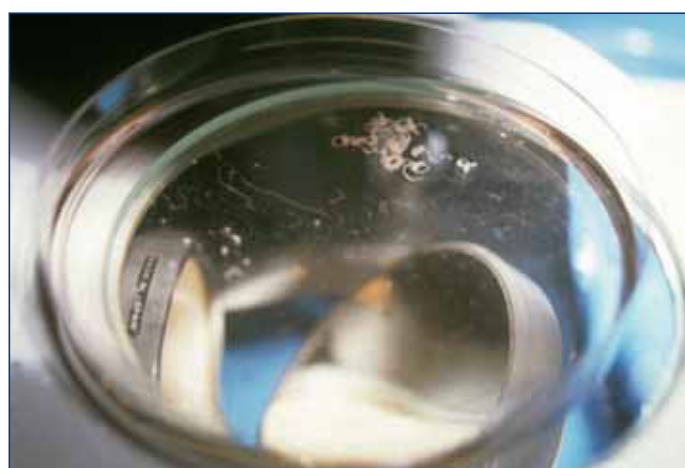


Fig. 13: Adult female (right) and thread-like male worms (left) dissected out following collagenase digestion of a nodule
Photo: Michele Murdoch

Acknowledgements

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Figure 6 and Box 2 (modified) are reproduced with permission from Murdoch et al, 1993. Courtesy of Blackwell Publishing. □

Dr Michele Murdoch qualified from University College Hospital, London, in 1981 and subsequently trained in Dermatology at the Royal London Hospital and St. John's Hospital for Diseases of the Skin, London. In 1989, she became a Co-Principal Investigator of a WHO / Tropical Diseases for Research and Training (TDR) project on onchocerciasis in Kaduna State, Northern Nigeria and, with the help of Professor Rod Hay, developed and then field-tested a clinical classification system for recording the skin changes in this disease. As a Wellcome Clinical Research Fellow she researched immunological aspects of onchodermatitis at Imperial College, London. Dr Murdoch is currently working as a Consultant Dermatologist in Watford, UK, is a visiting lecturer at the London School of Hygiene & Tropical Medicine and has published on onchocerciasis, including a chapter in the popular undergraduate textbook, *The Principles of Medicine in Africa*.

Presentations and Local Remedies of White Jellyfish Stings

PRESENTATIONS AND LOCAL REMEDIES OF WHITE JELLYFISH (*RHIZOSTOMA SP.*) STINGS IN IRAQI FISHERMEN

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Introduction

Jellyfish stings are common worldwide with an estimated 150 million cases annually.¹ More than 100 species are toxic to humans and their stings cause a wide range of clinical manifestations - from skin inflammation to cardiovascular and respiratory collapse.²⁻⁴ Fatalities and hospitalisations may occur, mainly in the Indo-Pacific regions.⁵

Jellyfish are marine invertebrates belonging to the class Scyphozoa of the phylum Cnidaria. They can be found in every ocean in the world and in some fresh waters. The use of the term 'jellyfish' is actually a misnomer since scyphozoans are not fish, which are vertebrates.⁴ The body of an adult jellyfish consists of a bell shape producing jelly and enclosing its internal structure, from which tentacles are suspended (Figures 1 and 2). Each tentacle is covered with cells called cnidocytes that can sting or kill other animals. Most jellyfish use these cells to secure prey or for defence. Others, such as the Rhizostomae, do not have tentacles at all.^{6,7}

Persons who are involved in water activities such as swimming, sailing, saltwater fishing are more likely to be affected.^{8,9} The toxin affects the sodium and calcium ion transport across the cellular membranes. It may affect skin, the myocardium, nervous tissue, hepatic tissue, and kidneys.³ Skin lesions from jellyfish stings may present as immediate skin reaction such as local erythema,



Fig. 1: *Rhizostoma species*

Photo: Kathem K Al-Rubiay et al



Fig. 2: *Rhizostoma species*

Photo: Kathem K Al-Rubiay et al

pain, pruritus, paresthesiae, blistering, and swelling.¹⁰⁻¹² A delayed skin reaction occurs within a few days and mainly presents as pruritic papules^{13,14} with histological findings similar to that of allergic contact dermatitis.¹⁵ Systemic reactions are usually associated with exposure to a large amount of toxin. They are usually limited to nausea, headache, and chills, but may lead to major anaphylactic reaction with a drop in blood pressure, acute heart failure, and acute renal failure.¹⁶⁻¹⁹

Jellyfish stings are commonly treated by the application of normal saline or 5% acetic acid (house vinegar), ice pieces, seawater or tap water. Medical treatment can be achieved by antihistamine drugs and topical corticosteroids. Recently, a topical sting inhibitor has been used for prevention of jellyfish stings.²⁰⁻²³ Several studies on jellyfish stings were carried out. However, none of these have been carried out in Basra which lies on the Arab Gulf in the south of Iraq. Our study is the first of its kind to study the clinical presentation and management of jellyfish stings in Basra.

Materials and Methods

One hundred fifty-five fishermen were selected randomly in this cross-sectional study at three Marine stations of fishermen in Basra. They were in Al-Fao (70 fishermen), Khour Abid Allah (45 fishermen) and Um-Kasser (35 fishermen). All were males and their ages ranged between 24-45 years (mean 33.6 ± 6.5 years). The study was conducted over a six month period. We used a questionnaire specifically developed for the purpose of this study. This questionnaire included the type of skin reactions, any systemic involvement, time of onset, the progression of the reaction, types and methods of treatments by fishermen, and any hospitalisation and fatality caused by jellyfish. The data were collected through face to face interviews and were statistically analysed.

Results

The study showed that the type of jellyfish was white jellyfish (*Rhizostoma sp.*), with a white translucent umbrella and eight oral arms. Locally, the jellyfish is called 'Thaklol', 'Zaklol' or 'white jellyfish' (Figure 1).

Overall, 78.7% of fishermen gave a history of stings during the previous three months with no significant difference between them in three stations ($X^2 = 0.74, P = 0.6907$) (Table 1). The common

Presentations and Local Remedies of White Jellyfish Stings

Table 1: Local name and percentage of stings among fishermen in three stations (* Overall percentage 78.7 in three stations)

| Stations | Local name | No. of fishermen | No. of stings | % of stings* |
|------------------|------------|------------------|---------------|--------------|
| Al-Fao | Thaklol | 70 | 60 | 85.7 |
| Khour Abid Allah | Zaklol | 45 | 30 | 66.6 |
| Um-Kasser | Zaklol | 35 | 28 | 80 |

Table 2: Distribution of cases according to sites of stings among fishermen in three stations during the previous three months (*Overall % - hands 67.8%; legs 32.2%; abdomen 29.7%; eyes 11.2%)

| Stations | No. of stings | Sites (%)* | | | | |
|------------------|---------------|------------|------|---------|------|--------|
| | | Hands | Legs | Abdomen | Eyes | Others |
| Al-Fao | 60 | 68.3 | 28.3 | 16.7 | 10 | 21.7 |
| Khour Abid Allah | 30 | 76.7 | 36.7 | 20 | 13 | 26.7 |
| Um-Kasser | 28 | 57.1 | 35.7 | 17.1 | 10.7 | 25 |

Table 3: Clinical features of immediate and delayed skin reactions

| Signs and symptoms | Immediate reactions | Delayed reactions |
|--------------------|---------------------------|-----------------------------|
| Onset | Less than 5 minutes | After 72 hours |
| Number | In all cases | In 62% of cases |
| Pain | Very painful (89 %) | Painless (92 %) |
| Itching | Severe (68 %) | Mild (61%) |
| Burning sensation | Severe (45 %) | +/- Mild |
| Rashes | Fingerprint in 90.5% | Monomorphic papular (89.3%) |
| Fainting | Some cases (3%) | Not recorded |
| Course | Disappear during 48 hours | Cure within few weeks |

Table 4: Distribution of cases according to type of treatment (*Overall % - seawater 65.3%; tap water 44.1%; ice pieces 39.8%)

| Stations | No. of stings | Types of treatments (%) * | | | |
|------------------|---------------|---------------------------|-----------|------------|--------------|
| | | Seawater | Tap water | Ice pieces | No treatment |
| Al-Fao | 60 | 66.7 | 48.3 | 41.7 | 25 |
| Khour Abid Allah | 30 | 60 | 36.7 | 40 | 20 |
| Um-Kasser | 28 | 67.9 | 42.9 | 35.7 | 28.6 |

sites were the hands (67.8 %), followed by the legs (32.2 %). Other parts of the body were attacked, such as the abdomen, eyes and back, with no significant difference according to sites among fishermen in the stations (Table 2). The majority of fishermen (95.2%) claimed that stinging led to skin reactions immediately after exposure and within 5 minutes. The presenting complaints were pain (89 %), itching (68%), burning sensation (45%), and erythematous weals (Figure 3) in 90.5%. Others reported fainting (3%) and inability to move the part, especially when the attack was on the lower extremities. After a few days (3 days) of exposure, a new



Fig. 3: Twelve hours after exposure to jellyfish stings

Photo: Kathem K Al-Rubiay et al

group of painless and itchy erythematous, monomorphic, papular rashes (Figures 4 and 5) occurred at the site of contact in 62% of cases, as a delayed-type of reaction which resolved spontaneously in the majority of the cases (Table 3).

The most common type of local treatment used among fishermen was seawater in 65.3 % of cases, followed by tap water (44.1%) and ice pieces (39.8 %). About a quarter of fishermen (24.6%) considered stings were not significant and did not believe there was any need for medical help (Table 4).

Discussion

Fishermen are commonly exposed to jellyfish stings, especially in summer, because of fishing. From the information we gathered, the commonest type of jellyfish in the three stations was *Rhizostoma* sp., class Scyphozoa, which belong to phylum Cnidaria and called locally 'Thaklol', 'Zaklol' or 'white jellyfish'.⁶ During fishing, most white jellyfish die but remain attached to fishing nets. Fishermen may try to remove them. This may explain the high percentage (78.7%) of a positive history of stinging in this study among fishermen.

The study showed that white jellyfish envenomation can cause an immediate local skin reaction, presenting as weals in 90.5%.⁶ The study showed that delayed cutaneous hypersensitivity reactions were also common (62%) after three days of exposure and appeared clinically as itchy, erythematous, painless, monomorphic papular rashes. However, other reporters claimed that it occurs after five days or more, and is pruritic and painless.^{13,14} Some authors described fatal or near-fatal stings and mortality rates up to 20%.^{2,18,19} Our study did not support this and showed that no fatality and no admission to hospital was reported among workers in three stations during the study. The hand was the commonest site stung by this jellyfish, more than the legs, because during their work the fishermen used to pull the fishing net over the side of a boat. This finding is similar to that found in other studies.^{5,16,17} Most of the fishermen reported that stings by jellyfish were simple and not life threatening and so there was no need to visit the doctor or the hospital. They were satisfied with many local remedies and some of them used sea or tap water or ice pieces; the pain disappeared and the rash improved rapidly. This approach of treatment was similar to that found by many studies, except the habit of washing with vinegar that was mentioned in some reports.^{20,23} In conclusion, white jellyfish (*Rhizostoma* sp.) caused high numbers of the stings among fishermen in Basra city - that led to immediate and delayed reaction to the skin. Self treatment is common practice. Although

Presentations and Local Remedies of White Jellyfish Stings

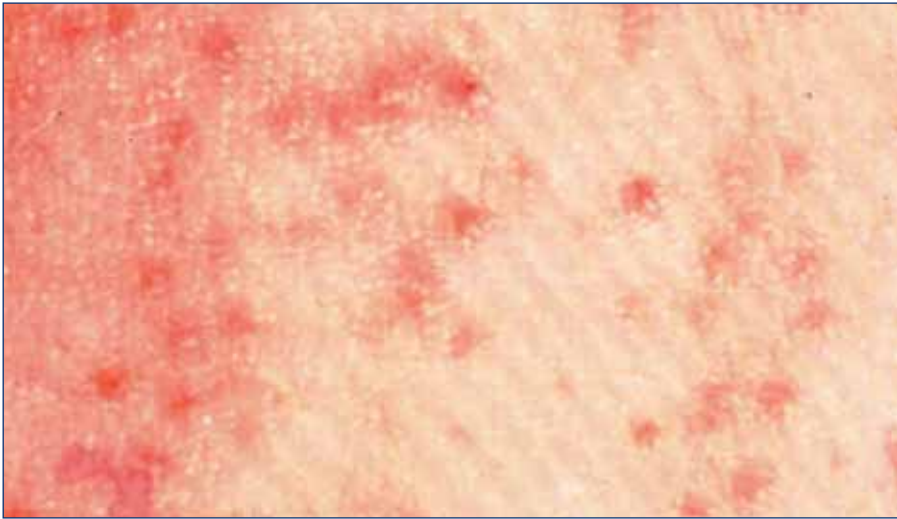


Fig. 4: Four days after exposure to jellyfish stings

Photo: Kathem K Al-Rubiay et al

life-threatening envenomation was not recorded, we recommend stressing the importance of public education, prevention policies and protective clothing, especially for fishermen. Physicians practising in these areas must be aware of the problem and advise the patients about the hazards of jellyfish.

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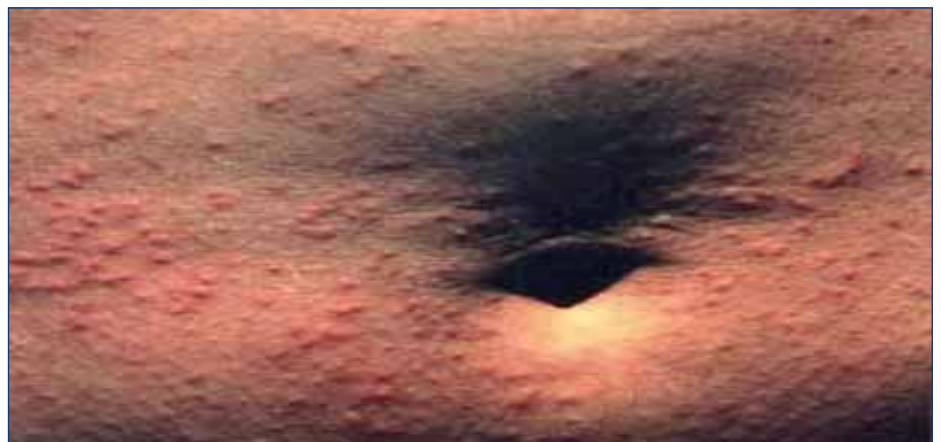


Fig. 5 : Seven days after exposure to the stings

Photo: Kathem K Al-Rubiay et al

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Questions 1, 2 & 3/Answers 1, 2 & 3:

1. Thanks to Dr Gail Davey
2. Thanks to Professor Ben Naafs
3. Copyright RDTC, Moshi, Tanzania

Question 1:

This 25 year old farmer from the highlands of Ethiopia has had increasingly swollen legs since the age of 10. Every now and then he gets a fever, malaise and the legs feel hot and sore and swell more. After these attacks they go down a bit but do not go back to normal

- a) What is the diagnosis?
- b) What is the treatment?
- c) Can it be prevented?



Question 2:

This fisherman from Guyana has soft swollen legs extending up to and including his scrotum. This has been progressing for several years:

- a) What is the diagnosis?
- b) What is the treatment (2 parts)?



Question 3:

This truck driver has noticed a hard swelling of his legs increasingly over the past 6 months, associated with dark brown lumps in the skin, starting on the foot:

- a) What is the diagnosis?
- b) How would you confirm it?
- c) What additional test would you do?



EXTRACTS FROM JOURNALS

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Noma – the ulcer of extreme poverty

Enwonwu C.O.

N Engl J Med 2006; **354**: 221-224

This abstract is a little bit old but it remains important. It gives a very helpful review of Noma. The important message is that this disease (whose name means 'to devour') is caused by mixed infections that are taking advantage of a bad situation. The patient (usually a child) typically has long-term nutrition problems, and there has often been a recent significant illness. Noma occurs where there is extreme poverty – lack of food, lack of health education, and little medical help all combine to create a disease where three quarters of affected patients die. Education about ways to reduce poverty, education about health, and adequate nutrition are all important – doing one of these but not the others will not stop this problem.

An outbreak of Paederus dermatitis in a suburban hospital in South India

Gnanaraj P., Venugopal V., Mozhi M.K., Pandurangan C.N.

J Am Acad Dermatol 2007; **57**: 297-300

These authors present 123 cases, collected over 12 months, of rash due to this beetle. Body fluids of the beetle are highly irritant, and cause severe rash with blisters and burning or stinging pain. Two-thirds of patients have more than one lesion. Usually, the beetle has been squashed as it crawls on the skin – it does not bite or sting humans. Paederus beetles are found worldwide, they are 1 – 1.5cm long, have a black head and an orange-brown body. Rice fields are an ideal breeding area, and the beetles become active after a rainy season. They are attracted to artificial light, and contact with them may be reduced by use of netting across windows and underneath lights so they do not drop onto people sitting under a light.

Efficacy of triclosan soap against superficial dermatomycoses

Dinkela A., Ferié J., Mbata M., Schmid-Grendelmeier M., Hatz C.

Int J Dermatol 2007; **46** Suppl 2, 23-28

These authors studied the effect of a soap containing triclosan (an antiseptic agent) compared with ordinary soap in 224 children with superficial fungal infections. Over half of scalp and body tinea infections, and over two-thirds of foot infections, were cured. The important aspect is that this was not significantly better than use of ordinary soap alone. Regular use of ordinary soap is therefore a fairly effective way to treat superficial fungal infections, and is cheap compared with other antifungal treatments.

Treatment of Old World cutaneous leishmaniasis

Khatami A., Firooz A., Gorouhi F., Dowlati Y.

J Am Acad Dermatol 2007; **57**: 335-346

This is a systematic review of controlled trials, which means that it is looking at treatments that have strong evidence to support their use. It lists over 20 treatments, varying from drugs such as paromycin and antimony, through to garlic and opium. The two main messages are that there is very little good quality evidence, and that the standard treatment with pentavalent antimony drugs is relatively expensive and has significant side effects. Topical paromycin is probably effective, it is cheap and non-toxic, but it is probably less effective than intralesional injection of meglumine antimony. Oral azoles such as itraconazole and fluconazole have also been reported to be useful and safe, but some good quality studies have shown that they are no better than placebo (inactive) treatment.

Treatment of New World cutaneous leishmaniasis

Tuon F.F., Amato V.S., Graf M.E., Siqueira A.M., Nicodemo A.C., Amato Neto V.

Int J Dermatol 2008; **47**: 109-124

Another systematic review, and analysis of 12 trials including 1150 patients. Overall, pentavalent antimonials had a 76.5% cure rate. Pentamidine had similar results, so either treatment choice is reasonable, and may depend upon cost, availability and side effects. Other treatments were all less effective.

Comparative efficacy of two nit combs in removing head lice

Speare R., Canyon D.V., Cahill C., Thomas G.

Int J Dermatol 2007; **46**: 1275-1278

This study compared a plastic and a metal fine tooth nit comb for removing head lice and their eggs, following initial treatment with a greasy topical application for head lice. The metal comb (Lice Meister®) on average removed similar numbers of live or dead lice but 3-4 times as many eggs, and was therefore viewed as more effective. Metal combs are usually more expensive than plastic combs, but may achieve better results.

Caretaking of the skin and leadership in public health

Ryan T.J.

Int J Dermatol 2007; **46** Suppl 2, 51-56

Many of the abstracts listed here have a message about poverty, and trying to improve skin health with effective but cheap treatments. Professor Ryan's article stresses the fact that some skin treatments can be cheap and simple but make a difference. Those who organize health care in areas of poverty should read this.

Answer 1:

a) This patient has podoconiosis also known as ‘mossy foot’ or ‘non filarial elephantiasis’. It occurs in individuals who are sensitive to certain minerals in the soil that penetrate the skin of the feet while working in the fields. The minerals pass through the skin and block the lymphatic vessels of the legs. The limbs become increasingly swollen over time and eventually the patient is incapacitated by this swelling.

b) Washing the legs and feet in warm water regularly and using emollients (moisturisers) and antifungal ointments between the toes, together with compression stockings (socks or stockings that are tight on the legs), and shoes, will lead to a reduction in swelling in many patients.

c) Avoiding exposure to irritant soils which are red volcanic soils typically found in tropical mountainous areas like Ethiopia. This can be done by wearing boots when working in the fields and walking, and even moving away from the areas, if possible.



Answer 2:

a) Filariasis caused by *Wucheria bancrofti*.

b) Ivermectin, 200 micrograms per kilogram body weight, given as a single dose, once a year for 5 years - but not to children under 5 years or pregnant women. The management of lymphoedema is the same as with podoconiosis above.



Answer 3:

a) Kaposi's sarcoma.

b) Skin biopsy for histology, if possible.

c) HIV test. This rapid spread suggests that the patient is immunocompromised and probably has HIV disease. If so, treatment for this is with highly active anti-retroviral therapy (HAART).



HIV RELATED SKIN DISEASES AND SEXUALLY TRANSMITTED INFECTIONS IN AFRICA

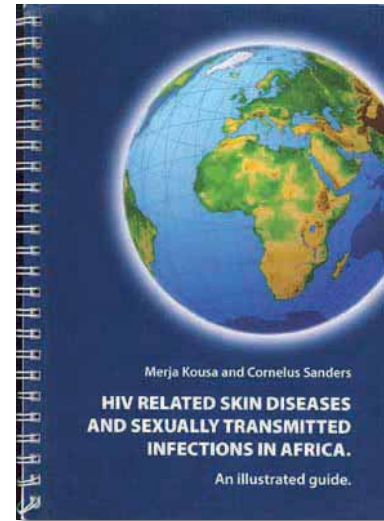
An Illustrated Guide

Merja Kousa and Cornelus Sanders
(*Kopijyvä Oy, Jyväskylä, 2006*)

ISBN 952-92-0163-X

This compact ring-plan handbook is an excellent summary of common skin manifestations of HIV-AIDS, including concise text and a summary of currently available treatments. This is accompanied by profuse illustrations, mostly of good quality, and many derived (with acknowledgement) from the Regional Dermatology Training Centre, Moshi, Tanzania. Most of the treatment recommendations are very sensible (although I would not advocate 'potent corticosteroid ointments' for psoriasis in general). Certainly the book will prove of great value to health care workers in Africa (and other parts of the world, for that matter). The book is currently available, for the cost of postage, from the Teaching Aids at Low Cost (TALC) website – www.talcuk.org - together with many other reasonably priced books.

Chris Lovell



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A blind adult being led by a child - the sad result of neglected long-standing onchocerciasis

Photo: Christian Blind Mission

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