

Community Dermatology



HIV Infections and AIDS

In this issue of *Community Dermatology*, two of the articles focus on HIV/AIDS and the skin – a 2006 Review by Michael Waugh (page 7) and a Quiz by Amy Evans (page 9).

These photographs illustrate that HIV/AIDS affects whole families and communities. There is always a potential devastating effect on every individual within a family.



Photos: Philippe Kestelyn & International Centre for Eye Health

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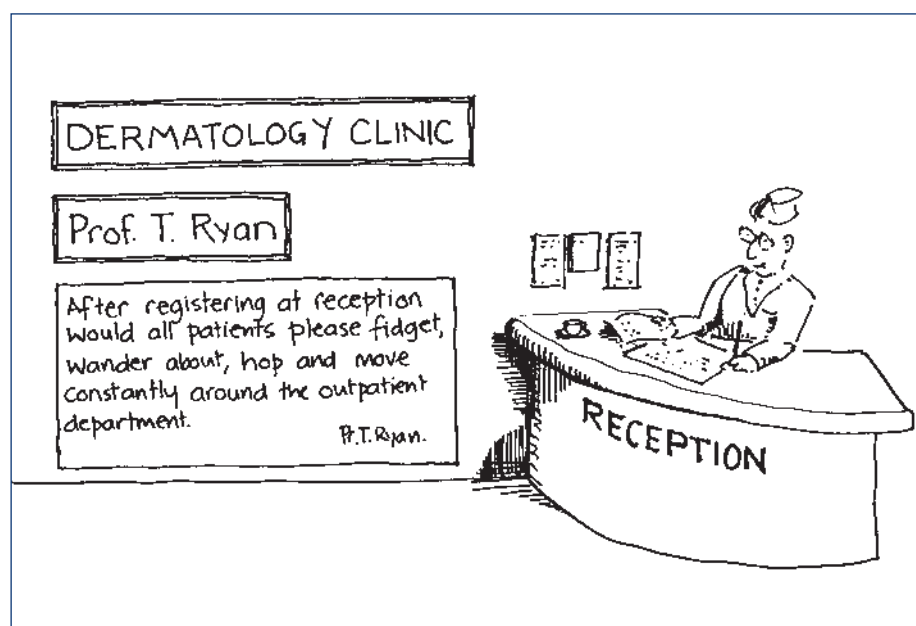
The Second Commandment: 'Keep Moving'

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We are so used to looking at clinical and histopathological photographs, which are 'stills' of the skin, that we ignore the fact that the normal skin is constantly on the move due to underlying muscle and joint movements and the transmission of the arterial pulse. There is a substantial literature on the need for movement at the cellular level or for the maintenance of a functioning blood vascular system or lymphatic system responsive to the forces of flow or blood pressure and, in the case of the lymphatic system, to tissue movement. The literature on bone formation is applicable to understanding how structures designed to resist stress are responsive to mechanical forces. The fibrous structure of the skin shares with bone a skeletal function and, like bone, complete immobilisation is deemed only of temporary benefit after fracturing. A little stress is a good thing but the age of the subject may determine for how long. Young cells are more flexible, less skeletal and divide more frequently. They also migrate more frequently. Old skin is inflexible and more rigid and less able to repair itself.

Complex Structure and Function

So complex is the structure and function of the skin that almost any mechanical force will influence cell behaviour through attachments of collagen and elastin fibres to cell membranes. However, forces applied to the attachments to one surface of a cell, may cause attachments to a cell lying in parallel, or located on another surface of the same cell, to switch on, or to switch off biochemical signals transduced by mechanical stress and distortions at the site of attachment. Much of this is the effect of the orientation of proteins sited within the cell membrane and having part of their molecule easily switched on by mechanical or biochemical influences on the cell membrane to a position inside or outside of the cell. Some of the phosphorylating enzymes, such as protein kinase C or tyrosine kinase, act in this way and determine activation of other essential enzymes.



Drawing: David de Berker

Characteristics of Healthy Skin and Damaged Skin

Healthy skin should be compared to the very different biochemical behaviour of repairing skin following injury. One example is the manner in which healthy and undamaged skin can tolerate ischaemia while skin that shows newly acquired redness as a sign of pressure injury reminds the carer that this is a warning that any further pressure will be very harmful. The undamaged skin can tolerate immobility and prolonged compression, but skin that has already suffered harm is switched into a repair mode that is demanding on oxygen and highly inflammatory and which withstands ischaemia very poorly.

Important events such as cell death by a self destructive process termed apoptosis are influenced by applying mechanical forces, as has been observed in studies of compression applied to hypertrophic scars.

The Lymphatic System and the Skin

The lymphatic system is the drainage system of the skin adapted for immunosurveillance through their carriage of T-cells and dendritic cells.

Sequestration of T cells in the skin is associated with immobility. T cell counts rise when movement is induced in the AIDS sufferer thereby mobilising the drainage system. It is also noteworthy that many with AIDS become gradually more immo-

bile and bedridden and without movement they have a substantially increased incidence of pressure ulcers and delay in healing.

Skin Health and the Cosmetics Industry

The cosmetic industry is aware of the value of moving the skin, since it is linked to the application of cosmetics such as 'facials' and to the management of the 'lumpy', 'bumpy' appearance of the thighs and buttocks of concern to young adult women, known as 'cellulite'. There are professions who specialise in skin movement such as the beauty therapist or the expert on manual lymphatic drainage and those rehabilitating patients with wounds and burns.

Western biomedicine has not attempted to bring all this together in a commandment but Asian Systems of Medicine through yoga or some subsets of Chinese Medicine such as t'ai chi know it so well that its acceptance is second nature to most Asian populations. T'ai chi is based on observation of animal movement and behaviour. In the animal kingdom licking wounds is also a form of gentle movement applying moist wound healing and mobilisation. The sensation of pain helps to determine how much licking is desirable at sequential stages of healing.

The Consequences of 'Not Moving'

There is however a substantial literature on the ill effects of not moving. This literature

is to be found when studying pressure ulcers and venous leg ulcers or the absence of blinking that precedes blindness in those affected by leprosy, as well as, for example, the lymphoedema of lymphatic filariasis - some of the greatest public health problems affecting the skin.

The ill effects of not moving or not being mechanically stimulated has been the topic of a few investigations of skin structure and function to be found in space medicine and in the literature on the paraplegic. In both, the skin atrophies. Suppression of hyperproliferation in psoriasis and lichenified eczema has been described following immobilisation of the skin, especially when using the stiffer varieties of hydrocolloid adhesive dressings.

'Too Much Movement'

Too much movement also has a literature but, oddly, dermatologic examples of poor health such as the lichenification of scratching or the formation of callus have not been interpreted in the same context as other movement literature. Such phenomena are the effects of mechanical stretch on repair and hypertrophy.

'Keep Moving!'

The reason for such emphasis in *Community Dermatology* is that movement is an effective self help therapy which costs nothing. It is included in patient literature for many of the above mentioned public health problems: preventing pressure ulcers, discouraging excess adipose tissue, for all forms of peripheral vascular disease, for leprosy and for lymphoedema due to lymphatic filariasis.

Movement includes breathing exercises and other body movements such as blinking, or ankle exercises. Its control includes diminishing inappropriate shearing forces such as scratching in different regions, which to varying degrees influence skin function. Movement as a therapy has been ignored by Dermatology but is backed up by a substantial evidence base.

This is not a command to exercise once daily which some find, as a routine, uncomfortable or rather time consuming and boring. Exercise is for strengthening muscles and for increasing cardiac output. It is not the same as keeping moving which is to be encouraged much of the time and is a relatively unenergetic full range of movement of all parts of the body. It includes taking deep breaths and breathing out slowly as happens when singing and chanting, an occupation underestimated by health services. I also tell patients to 'fidget' (see drawing) which surprises them since an early childhood memory is being told not to do so. Of course, there are many other much better advertised benefits of exercise. The lower limbs suffer from gravitational effects of fluid accumulation and ankle movements are now encouraged on long flights by most airways. One day movement of the skin will hopefully receive similar advocacy.

A few references to the science underlying these observations are added at the end of this article for further reading. In the meantime, 'keep moving!'

Acknowledgement

The author gratefully records that the illustration was drawn by Dr David de Berker.

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Diagnosing and Treating Scabies

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Definition

Scabies is the name given to a contagious infection of the outer layer of the skin (the epidermis) with a tiny creature called *Sarcoptes scabiei*. The eight-legged mite can hardly be seen with the naked eye. Infection results in severe itching and a characteristic pattern of signs on the skin.

Transmission

The mite is only really comfortable in its burrow just under the surface of the skin but it can pass from person to person by fairly prolonged skin-to-skin contact. The infection, therefore, tends to spread easily within families, hospitals, prisons and refugee camps and, also, by sexual contact. Mites can only remain alive for a very short period of time away from the human host and skin-to-skin contact is, therefore, the only way the infection can be transmitted. It is very difficult indeed for scabies to be transferred from person to person by clothing or bedding: on the other hand, holding hands with a child or nursing an ill patient quite easily results in transmission



Fig. 2a and 2b: Typical papules in the finger webs and on the wrists

Photo: Sam Gibbs

of the infection in either direction. There is often a delay of several weeks between contact with the infected person and the onset of itching symptoms.

Diagnosis

History

Scabies nearly always causes intense and unpleasant itching. Most patients will not have had itching like this before and will be able to remember roughly when it started. If the spouse, another family member or someone else living in close contact is also itchy for no known reason, then the diagnosis of scabies is very likely.

Examination

It is not unusual for patients with scabies to be very itchy but to have only a few skin lesions. Careful examination of the skin is, therefore, very important. Typical cases of scabies have a very characteristic 'rash'. This consists of small itchy bumps (papules), scratched (excoriated) and slightly scaly areas of skin concentrated in certain areas: between the fingers, on the wrists, axillary folds, abdomen, nipples (especially in women) and the genitalia (particularly in men) (Figures 1, 2a & 2b). These areas should be examined carefully. Small itchy bumps on the genitalia in men nearly always mean the diagnosis is scabies. In most cases of scabies the face and scalp are not affected.

If the patient is examined carefully, it is usually possible to find at least one burrow. This is a linear track where the burrowing mite has disrupted the epidermis (Figure 3). Burrows are difficult to find if the patient has scratched their skin a lot. The hands and wrists are usually a good place to find burrows.

In most cases of scabies a detailed history and careful examination of the skin are all that is needed to make a confident diagnosis.

Investigation

If there is uncertainty about the diagnosis, no definite burrows are found and a microscope is available, scrapings can be taken from the skin to try and confirm the presence of scabies mites and eggs in the skin. This is much easier to do than picking a single mite out from the end of a burrow with a needle, a technique mentioned in some textbooks.

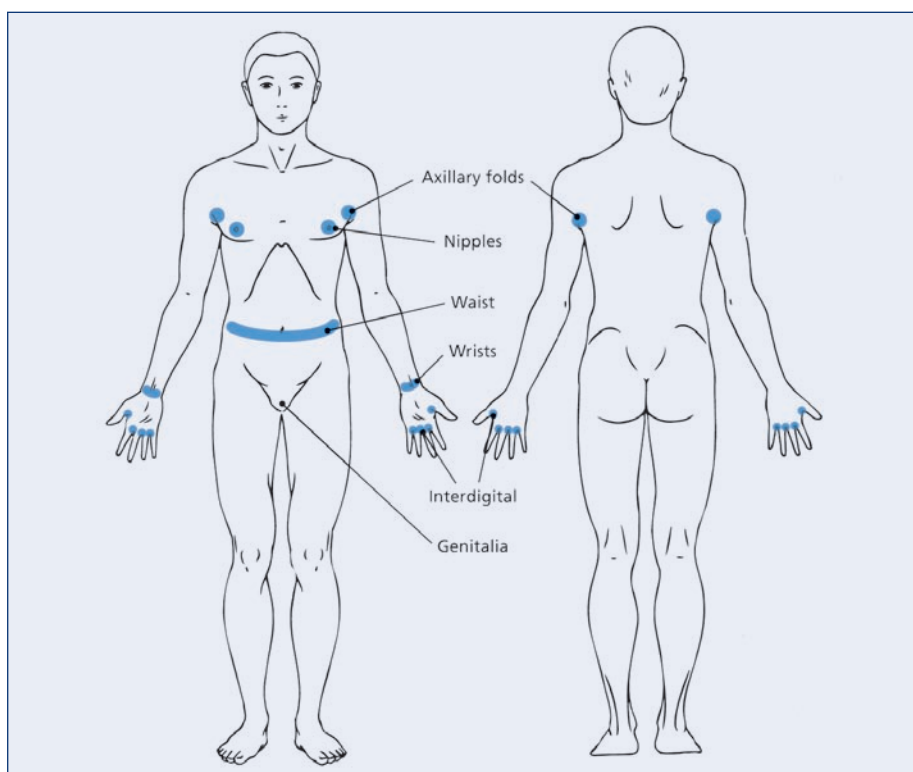


Fig. 1: Distribution of the 'rash' of scabies

Drawings: Ipswich Hospital Medical Illustration Dept.



Fig. 3: A burrow

Photo: Addenbrookes Hospital Medical Illustration Dept.

How to take scrapings

Use 10% potassium hydroxide or liquid paraffin or any other clear oil.

Place a few drops of this on the skin over suspected burrows, papules or scaly areas of skin. The finger webs, hands and wrists are often a good place to try. Gently scrape the surface of the skin with repeated horizontal movements. This scrapes the surface cells away and produces a cloudy sludge mixed with the potassium hydroxide or liquid paraffin. This can now be placed on a slide and viewed under a microscope at low power. Mites, oval shaped eggs and small, black, round faecal pellets (scybala) confirm the diagnosis of scabies (Figures 4a & 4b). (NB: the faecal pellets are dissolved by potassium hydroxide and will not be seen if this is used. Liquid paraffin or another type of clear oil is therefore the preferred medium).

When Scabies Is Not Typical

The very old and very young

In certain circumstances, scabies can be difficult to recognise because it does not always produce typical symptoms and signs. In the very old and very young, the 'rash' of scabies can be much more widespread and may not appear to be concentrated in the usual places (the finger webs, wrists, axillary folds and genitalia). In babies, infants and the frail elderly, it is not unusual to find papules, excoriations and burrows distributed fairly evenly over all of the skin, including the scalp, face, palms and soles (Figures 5a & 5b). It is quite a common mistake for a diagnosis of eczema to be made in this situation and for the wrong treatment to be used with disastrous consequences.

Crusted scabies

Rarely, very heavy scabies infection results in huge numbers of mites and scale building up on the skin. This looks very different from typical scabies and is usually called crusted scabies (hyperkeratotic scabies or Norwegian scabies are other terms sometimes used) (Figures 6a & 6b). This is more likely to occur in people who are very ill, immobile and debilitated (and unable to scratch their skin) and also those with impaired immunity, including people with HIV/AIDS. Patients with crusted

scabies are highly infectious and are often the cause of outbreaks of scabies in hospitals and prisons, and the diagnosis is often missed or delayed. Crusted scabies needs more treatment than ordinary scabies (see below).

Treatment

Topical treatments for ordinary scabies

The following topical treatments are those most commonly used for treating scabies:

- 5-10% precipitated sulphur (cream or ointment)
 - 1% gamma benzene hexachloride (Lindane) cream or lotion
 - 25% benzyl benzoate emulsion
 - 0.5% malathion lotion or cream
 - 5% permethrin cream.
- Topical treatments for scabies will only work properly if they are applied thoroughly to the whole skin. Particular care should be taken to apply the treatment to the hands, wrists, axillae, genital area and under the nails. The commonest cause of treatment failure is inadequate application.
 - All close contacts of the patient should also be treated, even if they do not have symptoms because they still may be infected.
 - It is generally better not to bathe or wash before applying topical treatments for scabies,

as this only increases absorption into the bloodstream and does not increase the effectiveness of the treatment, which only has to penetrate the epidermis, the outermost layer of the skin, to work. Most topical treatments should be washed off the skin after 8 to 12 hours.

- Many texts suggest that it is not necessary to apply treatment above the neck. While this is probably true for most cases, it is not true of all, especially in the very old and very young. If there is any evidence of scabies on the head and neck, the topical treatment should be carefully applied to the face and scalp, avoiding the eyes and mouth.
- Although it is often advised, it is not strictly necessary to wash bedding and clothing to eradicate scabies.

Careful explanation of all these points to patients will greatly increase the chances of successful treatment. A short leaflet with written instructions and explanations can be very helpful.

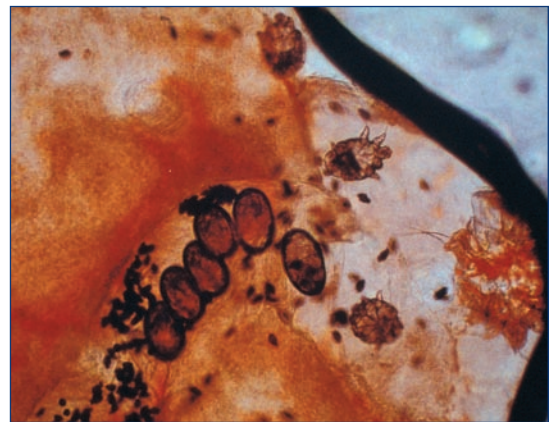


Fig. 4a: Mite and eggs viewed at low power under a microscope

Photo: Blackwell Science Ltd

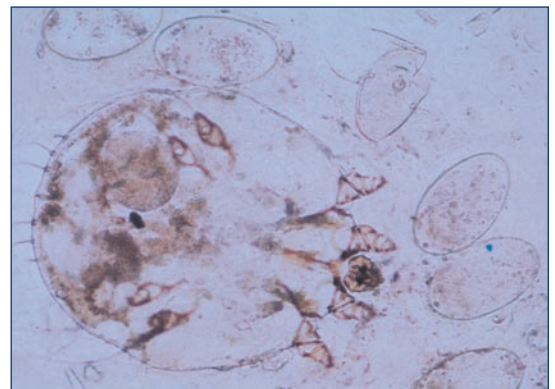


Fig. 4b: Mites, eggs and scybala viewed at low power under a microscope

Photo: English Language Book Society

Diagnosing and Treating Scabies



Fig. 5a: Scabies in a baby
Photo: Addenbrookes Hospital Medical Illustration Dept.



Fig. 5b: Soles of the same patient
Photo: Addenbrookes Hospital Medical Illustration Dept.

Sulphur ointment is effective, cheap, safe and also antiseptic. It is particularly useful for treating infected scabies in small children where the potential toxicity of other treatments can be of more concern. It needs to be applied once or twice a day, for one to two weeks, to ensure a complete cure. Because multiple applications are required, it is obviously less important to cover the whole skin with each application.

All the other treatments below are, in theory, completely effective with a single application, but this assumes perfect technique and coverage. In practice, it is probably

best to advise two applications, 5-7 days apart. This greatly reduces the chances of treatment failure from inadequate application.

Gamma benzene hexachloride (Lindane) is cheap and effective but can (rarely) be toxic, especially if applied many times. It is probably best to avoid its use in pregnant women and children less than 2 years of age.

Benzyl benzoate emulsion is less toxic than Lindane but more expensive, and it can cause irritation of the skin.

Malathion is again less toxic than Lindane and is usually well tolerated.

Permethrin cream is probably the least toxic treatment available but also the most expensive (US\$8-9 to treat one adult once).

Itching After Treatment

The itch of scabies should start to diminish within days of treatment, but it can take a few weeks to settle completely. Persistent severe itching that is not diminishing suggests treatment failure or re-infection. If itching is slow to settle, the use of 10% crota-miton cream or lotion can be useful. This agent is a weak anti-scabies treatment but also has anti-itching properties. It is safe and can be applied twice a day for a few weeks, if necessary. Inflamed and itchy small bumps (papules) in the skin sometimes persist after the successful treatment of scabies. This can be treated with topical steroid creams or ointments.

Treating Crusted (hyperkeratotic) Scabies

Crusted scabies usually needs more treatment than ordinary scabies. If a lot of crusty dead skin and debris has built up on the skin, then it can be helpful to remove this first before using anti-scabies treatments. Soaking the affected areas in water or oil, or applying salicylic acid ointment (between 2 and 10%), can help to soften crust and remove it. After this, scabies treatments can be applied weekly until it is clear that the scabies is responding - 3 or 4 applications may be required. Ivermectin tablets can also be combined with topical treatments for difficult scabies. The recommended dose is 12mg, as a single dose for an adult, and this can be repeated after a week or two if necessary.



Fig. 6b: The hand of a different patient with crusted scabies. Note the similarity to eczema with generally dry scaly skin
Photo: Blackwell Science Ltd



Fig. 6a: Crusted scabies with severe build up of keratin. Note involvement of neck and lower face.
Photo: Addenbrookes Hospital Medical Illustration Dept.

HIV Infections and AIDS: A Review 2006

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Aims

This review is an update on recent trends in the global impact and epidemiology of human immunodeficiency virus (HIV) infection - for dermatologists and others who are not acquired immunodeficiency syndrome (AIDS) experts. While sub-Saharan Africa has been most affected, epidemics are spreading in Asia and Russia. Physicians need to be informed about seroconversion disease (acute retroviral syndrome) and HIV diagnosis, as well as the impact of sexually transmitted infections (STI) on stages of HIV. Highly active antiretroviral therapy (HAART), available in industrialised countries since 1996, is now being used in many centres in Latin America, Africa and Asia. Physicians need to be aware of its use and its potentiality to prolong life despite some side effects, including dermatological ones.

Immunopathology

HIV has a high affinity for a subset of cells called CD4+ T-cells or CD4+ T-lymphocytes, which play a major role in the body's cellular immunity. The virus binds to the CD4 molecules and penetrates these cells. Within the cell, reverse transcriptase transcribes viral RNA into double stranded DNA, which is then integrated into the host cell's DNA, enabling replication to take place.

The destruction of CD4+ T-cells results in progressive impairment of the host's immune response, leading to AIDS and death. Studies have shown a strong association between the development of life-threatening opportunistic illnesses and the absolute number or percentage of CD4+ T-cells. As the number of CD4+ T-cells decreases, the risk and severity of opportunistic illnesses increase.

There are 2 strains of HIV, designated HIV-1 (with multiple groups and sub-types) and HIV-2 respectively. HIV-2 is less common, occurring mainly in West Africa and being associated with immunodeficiency that develops more slowly than is the case with

HIV-1. In this update, HIV refers to HIV-1.

Definition

The definition of AIDS is made according to criteria from case definitions drawn up by CDC Atlanta USA.

- Laboratory evidence of HIV infection: and
- CD4+ T cell count below 200 cells/microL (normal 500-1500): or
- CD4+ T cells account for fewer than 14% of all lymphocytes: or
- Presence of one or more indicator conditions (see below)

The European case definition relies on the first and last of the above.

Epidemiology

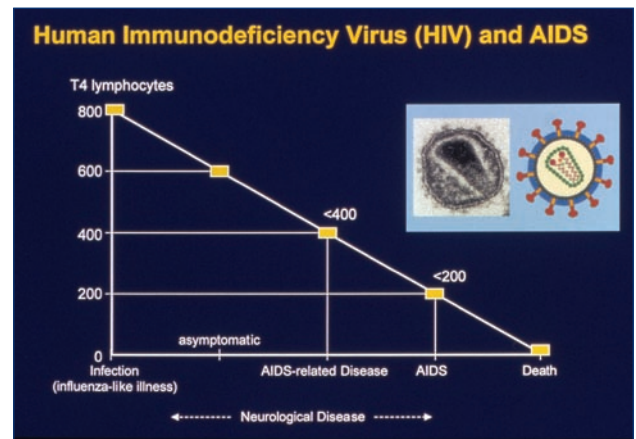
HIV infection is worldwide. By the end of 2003 over 40 million people were living with HIV. Over 20 million deaths have been caused by it. Where the infrastructure to deal with the infection is weakest, there the epidemic is at its greatest. In South Africa, it is estimated that 5.3 million are living with HIV. In Botswana, the prevalence rate is 37% in a country of 2 million. Over 2 million died of AIDS in sub Saharan Africa in 2003. To compare: in western Europe, where good treatment is easily obtained, 6000 people died of AIDS in 2003.

In Asia, about 7-8 million people are infected. Cambodia, Thailand and Myanmar have high prevalence levels. But India and China, with much larger populations, will have greater incidences.

In Latin America, 12 countries in that region have HIV prevalences of more than 1% in pregnant women. Prevalence in some countries is second only to sub-Saharan Africa, e.g., Haiti (6%), Bahamas (3.5%).

HIV Diagnosis

Primary HIV infection occurs in 50-90% of patients as an acute flu-like illness (seroconversion disease), 2-6 weeks following exposure. The two most common features are rash and fever. The rash may be maculopapular, roseola-like, vesiculopustular, or urticarial. Lymphadenopathy, fatigue, myalgia, pharyngitis, orogenital ulceration, erythema multiforme, alopecia and neuro-



Graphic: Pak Sang Lee & International Centre for Eye Health

logical presentations such as aseptic meningitis and encephalopathy may occur.

It is important to realise that the best diagnostic tool for a general physician is a high index of suspicion and to remember that HIV, like syphilis, is no respecter of persons or position. Think of sexual practice, endemic area sex contacts, percutaneous substance abuse. After pretest counselling and with informed consent, testing then has to be considered.

Remember that in primary infection, HIV-Ab seropositivity may be delayed up to 12 weeks. This means consideration of further testing for p24 antigen or HIV proviral DNA/HIV RNA measurement by polymerase chain reaction (PCR). Other parameters may be abnormal such as lymphopenia, thrombocytopenia and elevated transaminases. Again, it has to be realised in many countries even the simplest laboratory tests are difficult to obtain.

Early recognition of HIV is important as there is evidence that early intervention with combination antiretroviral therapy (HAART) may affect disease progression. Those with undiagnosed, advanced HIV/AIDS may present with opportunistic infections or tumours, like Kaposi's sarcoma, but more indolent skin presentations in the asymptomatic phase are well recognised. These include seborrhoeic dermatitis, folliculitis, recalcitrant psoriasis, recurrent herpes simplex, varicella zoster (multidermatomal or recurrent), or facial and severe genital warts and giant molluscum contagiosum.

Sexually Transmitted Infections (STIs) and HIV

All the STIs may occur in a patient with HIV, so screening for them needs to be carried out on diagnosis. It must also be remembered

that the patient will need counselling about safer sex practice. The physician needs to remember public health duties not only for his patient but possible contacts.

Some STIs may need more prolonged therapy when the patient is immuno-suppressed because of HIV. In herpes simplex infections, a patient may require higher doses of antiviral therapy to suppress recurrences. Resistance to treatment may also rarely occur. Infection with human papillomavirus causes genital warts that respond less to treatment and may recur more frequently. The incidence of human papilloma virus associated dysplasia, such as anal cancer and cervical squamous intraepithelial lesions is also increased.

Syphilis. This has caused much concern in industrialised countries where there has been a very large increase in syphilis in those groups not practising safe sex. Serologic tests for syphilis may be difficult to interpret as they may be higher or lower than expected. Clinical awareness of the condition is often missing and rashes are not seen, dismissed, or considered to be something else. The chancre, often extra genital, may be forgotten about or considered to be something else such as herpes simplex. Even *lymphogranuloma venereum* (LGV) has made a come back in HIV infected homosexual male populations in Holland, Spain, France and Germany. It was thought that treatment for syphilis, in early syphilis, would have to be increased, but it now seems present regimens, at least for early syphilis, are adequate. However, follow up is required.

Co-infection with *hepatitis B or C* is frequent in HIV infected patients. HIV and hepatitis worsens the progress to chronic liver disease.

When to Start Treatment with HAART

There is increased mortality in HIV with patients below a CD4 count of 200. That is easy enough to monitor, if the patient is known to be HIV positive and is under surveillance. The aim would be to start treatment at the 250 level, rather than to let it drop too low. High pre-treatment viral loads are also taken into consideration, but they are not obtainable in most developing countries. Even without a laboratory a practitioner with a high index of suspicion should be able to recognise those signs in a patient which are suspicious of HIV disease with a CD4 count of 200 or below, i.e., oral thrush, herpes

zoster, severe folliculitis, crops of unexpected molluscum contagiosum, recurrent herpes genitalis difficult to heal, oral hairy leukoplakia and giant mollusca-like lesions in tropical fungal infection.

Thus, all patients with CDC AIDS classification, as well as wasting, thrush and unexplained fever for more than 2 weeks should be considered for treatment. It may be considered that HAART therapy cannot be given outside western Countries. This is not so. It already is done in Brazil, Uganda, India and Thailand. There are schemes for reducing costs and political and individual active will is needed.

AIDS Indicator Conditions

CDC 1993 AIDS Surveillance
– case definition as follows:

- Candidiasis of bronchi, trachea, or lungs
- Candidiasis, oesophageal
- Cervical cancer, invasive
- Coccidioidomycosis, disseminated or extra pulmonary
- Cryptococcosis, extra pulmonary
- Cryptosporidiosis, chronic intestinal (> 1 month duration)
- Cytomegalovirus disease, other than liver, spleen or nodes
- Cytomegalovirus (CMV) retinitis with loss of vision
- Encephalopathy, HIV related
- Herpes simplex, chronic ulcer(s) (> 1 month duration) or bronchitis, pneumonitis or oesophagitis
- Histoplasmosis, disseminated or extra pulmonary
- Isosporiasis, chronic intestinal (> 1 month duration)
- Kaposi's sarcoma
- Lymphoma, Burkitt's or equivalent
- Lymphoma, immunoblastic or equivalent
- Lymphoma, primary of brain
- *M. avium* complex or *M. kansasii*, disseminated or extra pulmonary
- *M. tuberculosis*, any site
- Mycobacterium, other species disseminated or extra pulmonary
- *Pneumocystis carinii* pneumonia; PCP
- Pneumonia recurrent
- Progressive multifocal leukoencephalopathy
- *Salmonella* septicaemia, recurrent
- Toxoplasmosis of brain
- Wasting syndrome of HIV infection.

US treatment guidelines may be resourced at: http://www.aidsinfo.nih.gov/guidelines/adult/archive/AA_020402.pdf

Complications of HAART which a Dermatologist Will See

These paragraphs are written to help the practising dermatologist recognise skin side effects.

Lipodystrophy syndrome

Seen from 1998. There is peripheral fat wasting, central adiposity, hyperlipidaemia, and insulin resistance. Protease inhibitors, nucleoside reverse transcriptase inhibitors and HIV itself are all implicated. Accumulation of fat around the abdomen, breasts and dorsocervical area, leading to the so called buffalo hump are associated with symmetrical subcutaneous lipomatosis. Coupled with often severe facial, limb and buttock wasting, this distressing condition results in a major negative impact on the patient's quality of life.

Mucocutaneous reactions associated with drug therapy are more common in HIV positive persons. The best known is that of cotrimoxazole associated with prophylaxis of *Pneumocystis carinii* pneumonia, associated with a rash in up to 60% of those treated. Forscarnet for treatment of CMV retinitis causes penile ulceration.

Treatment rashes following HAART are often seen.

Non nucleoside reverse transcriptase inhibitors (NNRTI), nevirapine, efavirenz, delavirdine may cause transient pruritic maculopapular or urticarial reactions. Nevirapine may cause a rash in up to 50% of users. It may be associated with systemic features including fever, arthralgia and myalgia.

Severe Stevens-Johnson syndrome occurs in about 1% of patients. It is an absolute indication for stopping the drug. It is more common in women and even after stopping it may take some time to turn round, because of a long half life of 25-30 hours. Abacavir, a nucleoside analog reverse transcriptase inhibitor, is associated with a hypersensitivity reaction in 3-7% of users. This is accompanied by a florid, widespread maculopapular rash, fever and malaise.

That rashes and reactions may occur, usually after the start of HAART therapy is no reason for not allowing or initiating HAART. To see a patient who has been very ill recover bodily and mentally in the weeks after the start of treatment is a joy, not only for the patient, but for the physician. It gives hope to all suffering from HIV infection. □

Complications of HIV/AIDS and Antiretroviral Therapy

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The review of HIV/AIDS in this issue of Community Dermatology outlines the common presentations of the disease, many of which relate to the skin and mucosae.

Antiretroviral therapy has made a huge impact on HIV-related illness and survival, where it is available, hence the aim of the World Health Organization for 3 million people to have received antiretrovirals by 2005: the '3 x 5' campaign.

However, antiretroviral drugs, like any medication, can have side effects. Most are predictable and can be easily managed, but some may be severe and require early recognition.

Test your knowledge with the following cases...

Quiz: Questions



Case 1: What is going on?

- This man is HIV+ and has a CD4 count of 50.
- He started HAART (Highly Active Anti-Retroviral Therapy) with Triomune (stavudine, lamivudine, nevirapine) 3 weeks ago.
- He also takes a daily cotrimoxazole tablet to prevent PCP (*Pneumocystis carinii* pneumonia).
- He now complains of this itchy rash.



Fig. 1: Confluent macules over the trunk

- What do you think is the likely cause of his rash?
- Name 2 other causes....
- How would you treat him?



Case 2: Should she start treatment?

- This HIV+ woman has lost weight over the last year and now complains of feeling weak.
- She is not eating well as her mouth is sore and it is difficult to swallow.
- She has these lesions on her neck and back.



Fig. 2: Hypopigmented scarring in the left C3/4 dermatomes

- What do you think is making her mouth and swallowing sore?
- How would you treat this?
- What do you think is the cause of the skin lesions?
- What would you estimate her CD4 count to be? Would you give her antiretroviral treatment?



Case 3: What is going on?

- This man has an AIDS-defining illness and is taking 3 antiretrovirals; zidovudine, lamivudine and nelfinavir.
- He has been on treatment for 6 weeks and now complains of fatigue, dizziness and breathlessness.



Fig. 3: Pigmented plaques parallel to skin tension lines

- What is his AIDS-defining illness?
- How would you treat this?
- What is the likely cause of his symptoms?
- How would you treat this?

**QUIZ ANSWERS ON
NEXT PAGE...**

Quiz: Answers



Case 1: What is going on?

What do you think is the likely cause of his rash?

- Nevirapine drug reaction.
- Many clinics give the nevirapine at half-dose for the first two weeks, then increase the dose to allow the liver enzymes which metabolise the drug to develop; at 3 weeks he is at the peak time for getting a nevirapine rash.

Name two other causes...

- Cotrimoxazole (Septrin) drug reaction.
- Secondary syphilis.

How would you treat him?

It depends on the severity of his symptoms:

- If mild, stop cotrimoxazole first as this may be the cause. Many people have a mild reaction to nevirapine which may settle with simple measures like emollients and calamine lotion and allow you to continue the drug. If very itchy, consider a mild to moderate topical steroid, e.g., 1% hydrocortisone or 0.1% betamethasone ointment +/- antihistamines.
- If the rash is getting worse; he is systemically unwell; has associated signs of hypersensitivity such as fever, joint or muscle pain, or deranged liver function or jaundice; stop the nevirapine immediately. On average, 8% may have a severe reaction and up to 1% may proceed to Stevens-Johnson syndrome. Liver toxicity has resulted in liver failure and death in a small number of cases. There is no role for oral steroids which may increase the risk of hypersensitivity.
- Nevirapine toxicity is more likely in women and at higher CD4 counts, so should be avoided if the CD4 count is above 250 in women; or above 400 in men.
- People with pigmented skins may well have some post-inflammatory hypo- or hyper-pigmentation.
- It is important to remember other sexually transmitted infections apart from HIV, so worth offering a VDRL (Venereal Disease Research Laboratory) or RPR (Rapid Plasma Reagin) blood test for syphilis.



Case 2: Should she start treatment?

What do you think is making her mouth and swallowing sore?

- Oral *Candida*, with extension into the oesophagus making swallowing painful and difficult, with retrosternal pain and the feeling of food 'sticking'.
- Differential diagnosis includes oral and oesophageal ulceration which may be aphthous or due to viral infection such as herpes simplex or cytomegalovirus (CMV).

How would you treat this?

- Advise her to gargle three times daily after food with 5mls (1 teaspoon) 0.5% Gentian Violet solution (0.5 gram in 100ml water) for several days until improvement.*
- Eating small, regular amounts of soft food and plenty of fluids is important to maintain nutrition and avoid dehydration.
- If oral antifungal drugs are available, give oral itraconazole syrup, 20mls (200mg) or fluconazole tablet, 50-100mg daily for 1 week.

What do you think is the cause of the skin lesions?

- These are the typical scars of previous herpes zoster virus infection, here affecting multiple dermatomes.

What would you estimate her CD4 count to be? Would you give her antiretroviral treatment?

- With her herpes zoster scars, oral (and probably oesophageal) *Candida* and wasting, she is already likely to have a CD4 count of 200 or below and would certainly benefit from antiretroviral treatment. Oesophageal *Candida* is a WHO clinical stage 4 indicator.
- See the table in the article above to remind yourself of AIDS indicator conditions; or aidsmap website to review WHO clinical staging.



Case 3: What is going on?

What is his AIDS-defining illness?

- These are the typical plaque lesions of epidemic (HIV-related) Kaposi's sarcoma (KS).

How would you treat this?

- The best results are with HAART.
- Benefits may be gained from local radiotherapy for localised obstructive lesions, e.g., lymphoedema (swelling in a limb due to large lymphadenopathy); or from chemotherapy for severe or systemic disease, or for palliative reasons.

What is the likely cause of his symptoms?

- His fatigue, dizziness and breathlessness are due to anaemia as a side-effect of AZT, so must prompt a physical check and full blood count. This is more likely in patients with advanced HIV/AIDS, as in this case.
- This group of symptoms can be due to antiretrovirals in the early stages, but nausea (AZT) and diarrhoea (nelfinavir) are the more common simple, early side effects of this combination.
- Anaemia of chronic disease can also be associated with advanced HIV and KS, and KS may cause lung lesions and pleural effusions.

How would you treat this?

- He may respond to a short-term reduction in his AZT dose but if there is no improvement or if the anaemia relapses when the dose goes back up, then you may have to switch this drug to an alternative (from the NRTI; nucleoside reverse transcriptase inhibitor group).
- Blood transfusion should be reserved for the most severe cases. Good diet and iron/folate supplements will help restore his blood count.

Useful Resources

See Ramadhan Mawenzi's article in *Community Dermatology* 2005; 2: 9-10.

<http://www.aidsmap.com/hatip>
<http://www.unaids.org>



How I use Potassium Permanganate

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Introduction

Potassium permanganate (chemical formula KMnO_4) is a very useful low cost resource for the dermatology clinic. It is also referred to as Condy's crystals. It has antiseptic properties and can be helpful in managing bacterial skin infections. Potassium permanganate comes in three formulations:

1. Tablets which provide a ready measured dose, e.g., Permitabs, 400mg tablets which when dissolved in 4 litres of water provide a 0.01% solution.
2. Purple crystals which have to be measured out by the practitioner (see below).
3. Ready made solution of 0.01% potassium permanganate.

Indications for Use

Potassium permanganate is particularly helpful for managing wet and weeping skin infections, as it has drying properties. Particular examples include infected, weeping eczema and exuding lymphoedema. It is, however, also useful as a general antiseptic and may be used in the removal of crusty lesions (e.g., kerion caused by tinea capitis).



Tinea capitis and corporis (face).

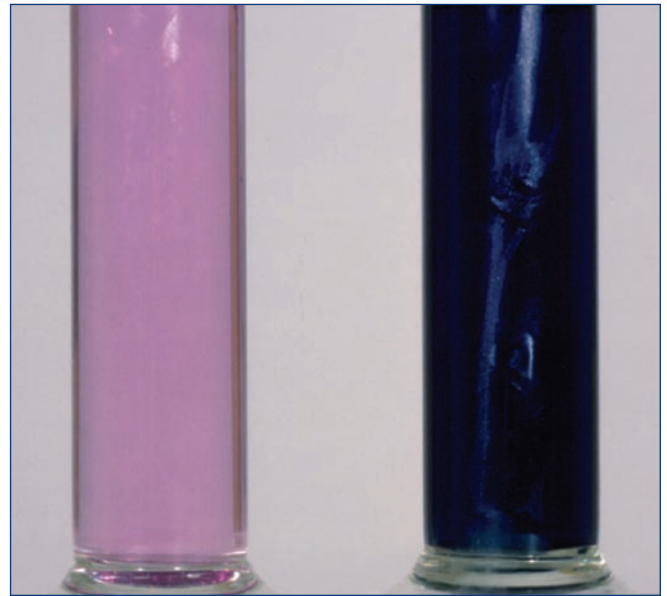
How Potassium Permanganate should be Used

Potassium permanganate should be dissolved in clean water prior to use, at a dilution ratio of 1:10,000. It is very important that the crystals are well dissolved and this is best achieved by dissolving them in a relatively small amount of very hot water, to make a concentrated dark purple solution. Stirring the solution vigorously will also help to dissolve the crystals more effectively. The solution should not be used on patients at this stage! The solution is then further diluted

to achieve the light pink colour which indicates the correct strength for safe use on patients. If the tablets are being used, this process is rather more straightforward, but complete dissolving of the tablets must still be ensured.

To get potassium permanganate solution in contact with the skin, the practitioner can choose the most appropriate approach, depending on the patient they have to help. The solution should be used either warm or at room temperature.

If limbs or the body need to be soaked, it is most appropriate to add the potassium permanganate solution to a bucket or bath and allow the patient to immerse the relevant body part for 10-15 minutes. Note: potassium permanganate can stain baths or buckets. If a small part of the skin needs treating, it is appropriate to soak gauze in the potassium permanganate and apply that to the skin. This method can also be used to reach tight skin folds associated with elephantiasis, where gauze soaked in potassium



Potassium permanganate solutions. On the left, the pale pink colour is the correct dilution. On the right, the solution is too strong and if used like this will cause brown staining of the skin and nails.

Photo: Barbara Leppard

permanganate can be eased into the skin folds caused by the swelling. Repeated applications of potassium permanganate soaked gauze can also be very helpful to soften crusty lesions which will allow for easier removal.

Potential Side Effects

There are three main side effects of potassium permanganate:

1. If the skin comes into contact with undissolved crystals it can burn the skin causing small painful ulcers. It is vital, therefore, that the crystals are completely dissolved as described above, prior to use.
2. If the concentration of potassium permanganate in the water is too strong, this can stain the skin and nails a dark brown/purple colour very quickly. However, if potassium permanganate is used frequently over a period of time, the skin and nails will change colour gradually and become a light brown/purple. This is, in fact, normal and indicates that the patient has been using the treatment correctly over a period of time.
3. A solution that is too strong can also act as an irritant causing the skin to become overly dry and sore. □

Photo: Barbara Leppard

Research Reports from the Regional Dermatology Training Centre, Moshi, Tanzania

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Professor Leppard has sent the following reports of work carried out by students at the Regional Dermatology Training Centre

Prevalence of skin diseases and associated factors in under five children at Lepurko village in Monduli district, Tanzania

Veronica Mollel

The Maasai are a people who live on the grasslands of Kenya and Tanzania. They have a different culture, lifestyle and language to the rest of the population of East Africa. This study looked at the prevalence of skin disease in children under the age of 5 years in a Maasai village near Arusha, northern Tanzania, and the possible factors influencing this.

Fifty-four bomas (groups of houses belonging to a single family) were visited, the mothers were questioned and the young children examined. Of the 225 children examined, 128 (57%) were found to have skin disease. Seventy percent (70%) of this was due to infections or infestations (scabies, pyoderma, tinea capitis, papular urticaria, measles). The factors which influenced the prevalence of skin disease were:

- Sharing a bed (no child slept alone). When more than 4 children shared a bed, 98% had skin disease.
- Frequency of washing. There was an increase in skin disease in children who were bathed once a week, compared to those who were washed every 2 or 3 days.
- Malnutrition, although no children had kwashiorkor, pellagra, scurvy or phrynodema.

None of the mothers of children with skin disease knew what their child's problem was or what had caused it - and only 50% of

mothers could name a single skin disease. Although all children over the age of 1 year were in daily contact with animals, no animal-related skin diseases were seen.

Most of the diseases found in these young children could easily have been prevented if the mothers had understood the cause of the problem. They were also amenable to treatment with cheap and readily available medicines. Health care workers with a little training could be recruited and sent to the village to give health education and simple treatments. This would be more practical than expecting the mothers to take their children to the nearest health centre which was 32 km away.

Prevalence of lymphatic filariasis and its contributing factors in Pate Island community, Lamu district, Kenya

Said Mzee

Lymphatic filariasis causes elephantiasis and hydrocoele. It is caused by infestation with filarial worms, mainly *Wuchereria bancrofti*, which are transmitted from person to person by mosquitoes. It affects 120 million people in 73 countries, including Kenya. This study was carried out by a student who was born and brought up on Pate Island off the coast of Kenya. While he was growing up he had noticed that a lot of people there had swollen legs and he was curious as to the cause.

There is now a simple test available for diagnosing lymphatic filariasis using a finger prick sample taken at any time of the day or night - the ICT card test which detects *Wuchereria bancrofti* antigens in the blood of affected individuals. This test takes less than 5 minutes to do and can be carried out in a person's home. Mzee therefore set out to look at the prevalence of lymphatic filariasis on Pate Island. He did this by examining individuals aged 15 and over in every 4th house in the 4 main villages on the island. Clinical signs of filariasis were looked for, the legs were measured and a finger tip blood sample was taken for the ICT card test. He found that 13% of the inhabitants had oedematous legs (one or both); none of the men had hydrocoele and none of the women had oedema of the genitalia or breasts. The swollen legs were mostly in individuals over the age of

50, with the greatest number over the age of 70. Only 1.3% had a positive ICT card test indicative of active filariasis. These are very interesting results and contrast with a similar study done on Mafia Island, at the same time, where the ICT card test was positive in 40% of the population. Further investigation revealed that a similar study on Pate Island was carried out in 1956 (the diagnosis being made on midnight blood films). The prevalence then was 36.6% in males and 28.4% in females. In 1957 everyone over the age of 2 was treated with diethylcarbamazine (Hetrazan, Banocide). Nowadays, the treatment would be a once yearly treatment with 2 drugs for 4 consecutive years - with ivermectin plus diethylcarbamazine or ivermectin plus albendazole. Nevertheless, it would appear that the previous mass treatment had been very effective in stopping the spread of disease. Some of the older population had been left with swollen legs but there was very little evidence of new infestation, in contrast to Mafia Island where treatment had not previously been given.

Prevalence and severity of atopic eczema and its associated factors on children aged 0-12 months attending maternal and child health clinics in South Hlollo Region, Swaziland and in Lusaka East, Zambia

Nkosinathi Maphalala & Kufekisa Mukelabai

These were 2 identical studies carried out in maternal and child health clinics in urban Swaziland and Zambia. Since virtually all babies attend maternal and child health clinics during the first year of life, this was a good place to look for the prevalence of atopic eczema. The students examined the skin of babies aged 0-12 months for evidence of atopic eczema and asked the mother or guardian about any family history of atopy. They found atopic eczema in 9% of babies in Swaziland and 8.4% of babies in Zambia, figures not very different to those found in the West. In Swaziland, this figure rose to 21.4% in babies aged 10-12 months. A family history of atopy was useful in confirming the diagnosis, as 35% of babies with atopic eczema had a positive family history of atopy. □

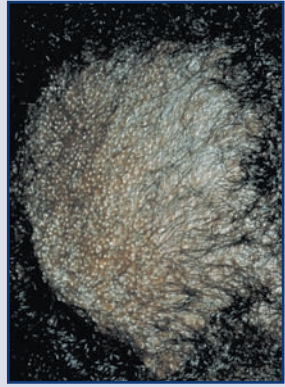
TINEA CAPITIS - SCALP RINGWORM

Tinea capitis is a fungal infection of scalp hair. It occurs only in children. It gets better spontaneously at puberty. If you see it in adults assume that the patient is HIV positive.

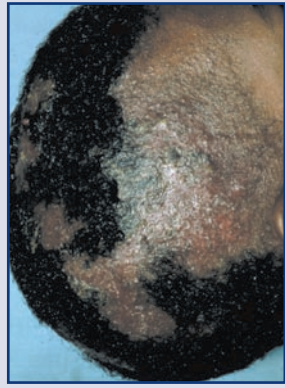
CLINICAL FEATURES



Well circumscribed bald scaly patches.



All the hairs are broken off short just after they emerge from the scalp.



The skin may be red and inflamed +/- pustules. This is called a KERION and is always due to an animal ringworm.

TREATMENT

Griseofulvin tablets 10mg/kg body weight/day for 6-8 weeks.

Take it as a single dose each day, with food because it is absorbed better with a fatty meal.

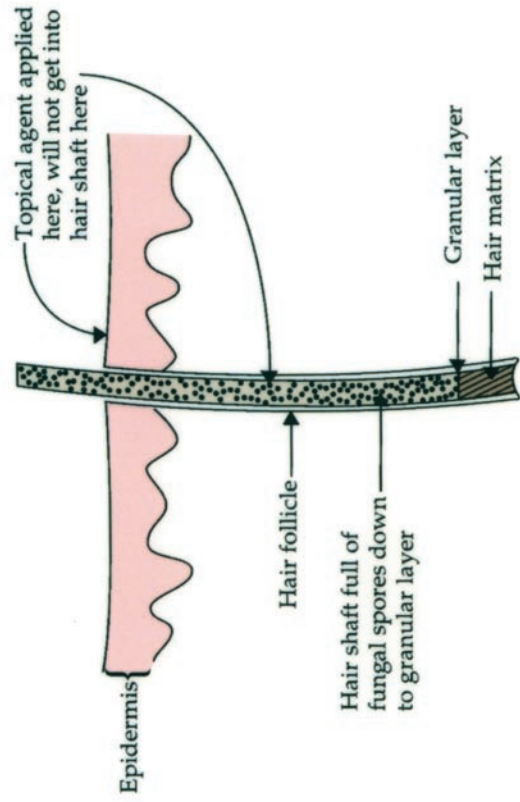
Must treat all infected children in the household or neighbourhood otherwise the treated children will be re-infected. If this is not possible do not treat at all. Scalp ringworm gets better spontaneously at puberty.



Can be spread from child to child by playing together, sharing combs or by sleeping in the same bed.

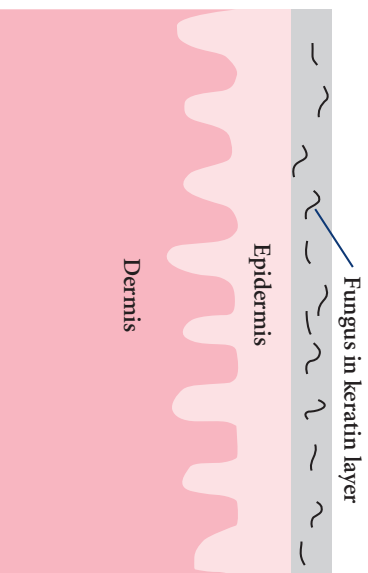


Can be from a young animal, usually a kitten or a puppy. Infections from animals spread only from animal to child and not from child to child.



TINEA CORPORA - RINGWORM

Ringworm or tinea is a fungal infection due to fungi which live on keratin (the outermost layer of the skin).



CLINICAL FEATURES

- Slightly itchy rash
- One or more scaly plaques
- Often ring shaped with raised scaly edge
- Asymmetrical (often unilateral)

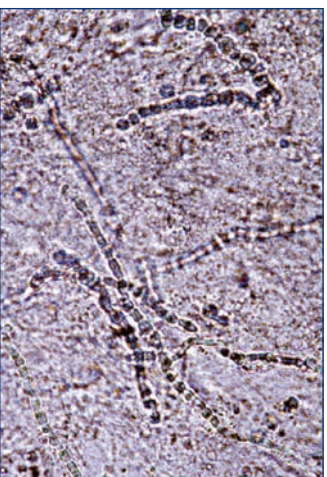


DIAGNOSIS

1. Scrape the edge of the lesion with a blunt scalpel blade (or dinner knife).



2. Place on a glass slide with a drop of 20% potassium hydroxide. Examine under a microscope (x10 magnification) and see branching hyphae.



TREATMENT OPTIONS

1. Apply Whitfield's ointment (6% benzoic acid & 3% salicylic acid in emulsifying ointment) twice a day until the rash is gone and then for a further 2 weeks. It works by removing the keratin on which the fungus lives. It has no effect on the fungus itself.

2. Imidazole creams, e. g. clotrimazole, miconazole or ketoconazole. Apply twice a day for 2 weeks. These are more expensive than Whitfield's ointment & do not work any better.



Journal Extracts

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Medicines supply in Africa

Quick JD, et al.
BMJ 2005; 331: 709-710

The *British Medical Journal* recently devoted an entire issue to 'Health in Africa'. Of potential interest to dermatology was this editorial regarding lack of access to medicines, half of the population not even having the most basic medicines. Street corner sellers often provide poor quality medicines. One solution that has been tried in Tanzania involves shops with trained staff – that these shops are inspected for quality, and receive regular supplies of properly registered medicines. The success of such ideas, however, may depend on strong government management, collaboration with private manufacturers and suppliers and, above all, a system that is suitable for each geographical area or community.

Effect of educational outreach to nurses on tuberculosis case detection and primary care of respiratory illness: pragmatic cluster randomised controlled trial

Fairall LR, et al.
BMJ 2005; 331: 750-753

Another item from the same *BMJ* issue. The content of this study is not of immediate relevance to dermatology care, but the concept of outreach education certainly is. This study concluded that quality of care could be improved by using specially trained nurses to educate primary care nurses, without the need for extra staff. This could be used along with the system that Dr Leppard provided for many years at Moshi, Tanzania, whereby dermatology was taught to individuals who then took their newly learned skills back to their home area. The main message is that all education is good, provided that the person who has been educated spreads the word to others.

Prevalence of different skin conditions in an outpatients' setting in north-western Nigeria

Onayemi O, et al.
Int J Dermatol 2005; 44: 7-11

Skin diseases in south-east Nigeria: a current perspective

Nnoruka EN.
Int J Dermatol 2005; 44: 29-33

These two papers happen to be published in the same issue of the *International Journal of Dermatology* but the editors missed an opportunity to put them on consecutive pages or to compare them. Both were performed in a similar fashion (consecutive new clinic patients), but show quite marked differences. In NW Nigeria, infectious and parasitic diseases accounted for 44% of cases, twice that (19%) in SE Nigeria. By contrast, eczemas and allergic conditions were commoner in SE (25%) compared with NW Nigeria (14%). Generalised pruritus represents a significant problem, occurring in nearly 6% in SE but only 1.2% in NW Nigeria. Both papers convey messages of a changing spectrum of disease and the need for education to be appropriate.

Macrofilaricidal activity after doxycycline treatment of *Wuchereria bancrofti*: a double-blind, randomised placebo-controlled trial

Taylor MJ, et al.
Lancet 2005; 365: 2116-2121

In the same way that head lice require gut bacteria for survival, the same is true for larval development and adult-worm fertility and viability in *Wuchereria bancrofti*, the major cause of lymphatic filariasis. This study reports that the bacteria in filaria, termed *Wolbachia endosymbionts*, responded to doxycycline (200 mg per day) for 8 weeks. At 8-14 months' follow-up, there was a significant decrease in adult worms detected by ultrasound and microfilaraemia was almost eliminated. This is a safe, effective and, importantly, cheap and readily available treatment.

Genital ulcer disease and human immunodeficiency virus: a focus

Sardana K, Seghal VN.
Int J Dermatol 2005; 44: 391-405

This is a useful review of genital ulcer disease and reasons why it predisposes to HIV infection. Syphilis, herpes, chancroid, lymphogranuloma venereum and simple tears are all discussed. In syphilis, there is a particularly strong association which is more complex than ulcers simply being a portal of entry for HIV – the inflammatory infiltrate provides receptors for HIV to enter cells, and enhances its proliferation, whilst *Treponema pallidum* increases transmission of HIV between inflammatory cells.

Increased risk of incident HIV during pregnancy in Rakai, Uganda: a prospective study

Gray RH, et al.
Lancet 2005; 366: 1182-1188

This study of over 3000 pregnant women probably confirms suspicions and other research, rather than being an unexpected finding. However, it does no harm to stress the results. The main result is that the risk of acquiring HIV infection whilst pregnant, having had a preceding negative test, is more than twice that at other times (including whilst breast feeding). Genital ulcer disease was decreased in this group compared with controls (see also abstract summary by Sardana & Seghal). The reason was felt to be changes in the genital tract or in immunity.

Skin diseases highlighting essential global public health priorities

Morrone A, et al.
Int J Dermatol 2005; 44: 384-390

This paper is not clinical but may be useful in making a political case for improved dermatology services. It lists 12 priorities based on World Health Organization recommendations. These are mainly based around reducing both individual and national poverty, reducing inequalities of access (not only based on poverty and geography, but also male:female differences), improving services and making low cost drugs available, targeting the commonest diseases, reducing cultural damage to the skin (cupping, branding, female sexual mutilation) and reducing environmental damage (pollution, infections, etc). It promotes the message, 'a healthy skin for all'.

An International Journal for Community Skin Health

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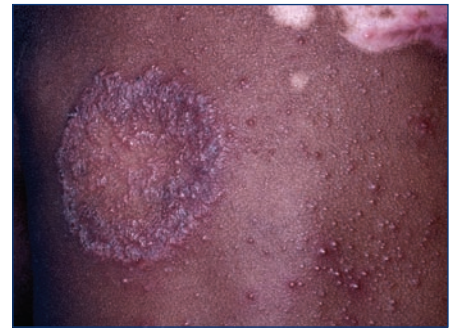
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Tinea Capitis



Tinea Corporis



Photos: Barbara Leppard

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- A glossary should be provided for technical terms
- Sections and subsections with headings are preferred
- Good-quality photographs, tables and summary boxes are encouraged
- References are the responsibility of the author(s) and should follow the presentation used in this Journal
- Material is preferred in Word format and sent by e-mail, or on disk or CD-Rom

We look forward to receiving your articles, reports and letters!

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