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Dermatology in the tropics- Education and prevention of the complications of lymphatic filariasis

Introduction

I was awarded a fellowship to enable me to travel and work within Tanzania for an eight-month period. I had applied under the category 'long-term medical conditions, treatment and rehabilitation,' as the title of my project was 'the education and prevention of complications of lymphatic filariasis.' To enable me to conduct this project as well as to gain further experience in tropical dermatology, I worked as a doctor and visiting lecturer at the Regional Dermatology Training Centre (RDTC) in Moshi, Tanzania. I therefore had both clinical and teaching commitments. My clinical responsibilities provided me with exposure to patients who presented with lymphoedema. This is a debilitating and disfiguring condition, which causes immense and irreversible swelling of the limbs. It is associated with significant morbidity as sufferers are predisposed to developing infections. Although clinicians come across this condition frequently there is a great deal of ignorance regarding its management and the potential to minimise associated complications. The commonest cause of lymphoedema in sub-Saharan Africa is lymphatic filariasis.

Lymphatic filariasis

Lymphatic filariasis is the dominant cause of lymphoedema in the tropics as well as worldwide. It is estimated that 120 million people are affected in more than 80 endemic countries. One third of those affected with the disease live in Africa and the rest in south Asia, the Pacific and Latin America. The disease can strike very early in life and in some endemic areas 30% of children are infected before the age of 4. The sub-clinical damage therefore starts at an early age although clinical disease usually appears later in life with victims developing lymphoedema.

Lymphoedema can be defined as end-stage failure of lymphatic drainage giving irreversible swelling of soft tissues due to the accumulation of a protein-rich interstitial fluid. The limbs, particularly the lower limbs are most commonly affected in lymphoedema secondary to lymphatic filariasis, but there are often urogenital complications such as scrotal lymphoedema and hydrocele. The skin of lymphoedema patients becomes extremely thickened with hyperkeratosis and papillomatosis, which results from the dilatation of upper dermal lymphatics followed by organisation and fibrosis. Some patients also experience lymphorrhoea, which can be particularly distressing as there is leakage of lymph through the skin because of engorged dermal lymphatics. With time these chronic skin changes manifest as elephantiasis. The gross lymphoedema that can arise is a major cause of disability and social stigmatisation, and a major burden on health resources.

Lymphatic filariasis is caused by thread-like worms called filariae, of which there are several species. The vector of transmission from person to person is the mosquito. The filarial parasites in their adult stage live in the lymphatic system and produce millions of very small immature larvae called microfilariae, and both adult parasites and microfilariae cause lymphatic damage. The World Health Assembly has urged member states to eliminate lymphatic filariasis as a public health problem, and in response to this the Global Programme for the Elimination of Lymphatic Filariasis (GPELF) has implemented mass drug administration campaigns in order to interrupt

transmission. However drug administration programmes are a form of primary prevention only because new infections are prevented. The residual lymphatic damage however persists in previously infected individuals giving rise to severe disabilities, especially secondary infection.

A major landmark in lymphoedema management was the development by Dr Gerusa Dreyer in Recife, Brazil, of simple strategies to minimise the incidence of secondary infection. This has formed the basis of lymphoedema management in both the west and the Tropics. However there are considerable negative attitudes towards lymphoedema management because it is a chronic, gross and irreversible condition. It is important therefore to emphasise to those caring for such patients that the point of management is really to improve the quality of life of such patients as opposed to 'curing' this condition. Teaching of lymphoedema management in the tropics centres around the importance of good skin hygiene, regular and gentle exercise and early recognition of infections. I was involved in this aspect of teaching to both clinic and ward nurses, as well as dermatology diploma students and physicians.

Tanzania

Tanzania is a politically stable and peaceful country and has been since it became independent in 1961. 99% of the population are native African, of which 95% are Bantu consisting of more than 130 tribes. The people are united by a common language, Kiswahili, and there is freedom of religion, and unlike neighbouring countries such as Rwanda and Burundi, intertribal conflicts are a thing of the remote past. It is however one of the poorest countries in the world. The economy is heavily dependent on agriculture, which accounts for half of GDP, providing 85% of exports and employing 80% of the work force. It has a population of approximately 40 million people, half of whom are below the age of fourteen. Its population growth rate is 2.6% and the fertility rate is five children per woman. The average life expectancy is only

52 years and its infant mortality rate is one of the highest in the world with 78 deaths per 1000 live births. As in much of sub-Saharan Africa it is afflicted by HIV, and in 1999 the HIV prevalence in the adult population was estimated to be 8.09% and rising.

The Regional Dermatology Training Centre (RDTC)

The RDTC is located at the foothills of mount Kilimanjaro in the town of Moshi in Northern Tanzania, close to the Kenyan border. It was founded in 1990 by the International Foundation of Dermatology. It is a collaborating centre with the World Health Organization for dermatology, sexually transmitted diseases and leprosy. It is affiliated to the Kilimanjaro Christian Medical Centre (KCMC), a large regional hospital with its own medical and nursing school, and is associated with Tumaini University Medical College. The RDTC is run by Professor Henning Grossmann who is the Principal and director, and Dr John Masenga, a Tanzanian dermatologist who completed his training in Germany and who is also dean of the school of assistant medical officers. Professor Grossmann has an interest in leprosy and Dr Masenga's interests include sexually transmitted diseases and atopic dermatitis. KCMC is staffed by approximately 60 physicians who cover all of the general services and most of the specialities. The hospital contains 420 beds and has an average daily census of about 450 patients, of which approximately 20 are in the dermatology service.

One of the primary aims of the RDTC is to service the dermatology needs of Africa. To this end it enrols 12 clinical officers/medical assistants who spend two years in training at the RDTC aimed towards the Advanced Diploma in Dermatovenereology of the University of Dar es Salaam. The students come from a number of mainly English-speaking countries of sub-Saharan Africa such as Botswana, Kenya, Lesotho, Malawi, Mauritius, Namibia, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. More recently students have also come from Mali, Ghana and Cameroon in West Africa. They have previously been trained as medical assistants

or as nurses and all have considerable clinical experience before starting their two-year dermatology programme. I had direct responsibility for their teaching and supervised their work both in clinic and on the ward. In addition I gave them formal lectures regularly each week on dermatological diseases.

The majority of the students are in their thirties with husbands, wives and children that they have left at home. In addition many of them, particularly those from Southern or Western Africa, are not able to afford to return to their home countries during holiday periods to visit friends and families. This must undoubtedly be very difficult for them and in part explains why they are such highly motivated and dedicated students. I myself was very impressed by them and found them bright and personable. However after the end of their first year in training they are required to undertake a research project, which is primarily epidemiological in nature. Given the extended period of time that this entails, this is an opportunity for them to return to their home countries to conduct their studies there. On their return they are required to write up a detailed report and present their work at a departmental meeting. A few studies of outstanding quality are chosen for presentation at the annual dermatology congress held at the RDTC yearly in January. Invariably however all the reports are interesting and topics have included the following: prevalence of skin disease in school children in Kenya and Malawi; frequency of dermatitis in copper mine workers in Zambia; misdiagnosis of fungal skin infections in a hospital in Uganda; acceptability of condom use in male government workers in Nambia; the frequency of pellagra in a refugee camp in Malawi; the role of traditional healers in treating skin disease in Tanzania; prevalence of skin disease in a prison population in Zambia; skin disease in a refugee population in northern Kenya; disability in leprosy patients in Southern Tanzania. These reports are varied, addressing skin disease in all sectors of a population and are a valuable resource of information on health issues pertaining to Africa.

The ultimate aim of the training programme is that the students will return to their home countries as dermatology officers to both practice and teach dermatology to their local communities. In this way it is anticipated that there will be an amplification of the dermatological information for other health care professionals.

The RDTC also admits three doctors each year for the M.Med.Derm. course, a 4-year residency programme in dermatology. Outside of South Africa, most sub-Saharan African countries have few doctors who have trained as dermatologists. Tanzania in fact has only two African dermatologists, one of them being Dr Masenga. The training of dermatologists is important as they will provide an invaluable role as trainers themselves in the future, as well as an important point of referral for other physicians with patients with severe skin disease.

Other than its role as a training centre, the RDTC provides both inpatient and outpatient care facilities for patients. Approximately 300 patients are seen weekly in both adult and paediatric clinics, and upto 20 patients are treated as inpatients on the ward. The vast majority of patients are from poor socio-economic backgrounds where disease burden is high. The ward patients are often very sick with infections as well as underlying HIV disease. Patients who attend clinic often travel great distances from as far as Dar es Salaam and Dodoma in the south, and even Zanzibar, an island off the coast of Tanzania. Minor skin surgery is also performed at the RDTC in an equipped surgical suite. An on-site dedicated dermatology pharmacist prepares topical medicines for the patients in a self-contained pharmaceutical laboratory. There is also a monthly albino skin care clinic.

Albino Skin Care Mobile Unit

The Kilimanjaro region of Northern Tanzania has a relatively high prevalence of albinism, an inherited condition. All the albinos develop severe sun-related skin damage by the age of 20 and many develop skin cancers by the age of 40. Since the skin cancers are neglected, largely as a result of ignorance and poor access to health care, they frequently result in death. In response to this, in 1993 Professor Barbara Leppard and Dr and Mrs Lookingbill set up an outreach programme which provided a clinical service dedicated to the albino population in the rural areas, designated as the 'Albino Skin Care Mobile

Clinic.' This involved regular visits to rural health centres by a team of doctors and nurses. Travel is by four-wheel drive as access to the communities is often difficult because of their remoteness and poor roads. At the rural health centres, the albinos congregate and are examined and treated for skin cancer.

Since its inception the albino outreach programme has continued to deliver regular care to these people. Another important aspect of its mission is to provide appropriate education and advice regarding the dangers of sun exposure in albinos, and ways of minimising this. The mobile clinic also provides regular sunscreens (generously donated by some international pharmaceutical companies) and wide-brimmed hats (designed and fashioned by a local tailor in Moshi), sunglasses and even long-sleeved shirts to those albinos who cannot afford to buy appropriate protective clothing.

In order to cover all the parts of the surrounding region and to enable visits to each health centre at least twice yearly, the albino clinic sets out every month. During my time at the RDTC I was able to join then on several occasions. My experience in training in the UK, which involves a great deal of exposure to skin cancers proved to be invaluable, and I was also able to teach the students how to recognise skin cancer. This is an important component of their training as there are pockets of albinism in many parts of Africa and the care of these people is often neglected.

'Flying Doctor' clinics

Doctors at the RDTC also participate in teaching and running of rural clinics as part of the hospital's involvement with AMREF's 'flying doctor' service. The African Medical & Research foundation (AMREF) was founded in 1957 as the East African Flying Doctor Service. It has now grown into Africa's largest indigenous non-governmental organisation (NGO) and has a number of country and field offices in Tanzania, Kenya, Uganda, South Africa,

Mozambique and Ethiopia, and major programmes in Southern Sudan, Somalia and Rwanda. The East African Flying Doctor's service provides clinical services to remote areas and emergency evacuation of patients for hospital treatment. Clinical services include teaching at rural hospitals as well as outpatient specialist and surgical clinics. I was fortunate to be able to conduct a four-day visit to a remote district hospital in the small town of Mugumu in northwestern Tanzania, close to the shores of lake Victoria. I conducted daily dermatology clinics and saw almost 120 patients during my time there. I also gave daily lectures to the entire hospital staff on various common dermatological problems, such as eczema, tinea, wound healing and HIV-related skin conditions. During my clinics I would have at least 3-4 medical officers who came to gain further experience in dermatology, and I would teach them on the patients who attended clinic. This visit provided me with a unique opportunity to see medicine practised in a poorly resourced and poorly staffed hospital. I did also see several cases of lymphoedema related mainly to kaposi's sarcoma, and was able to discuss lymphoedema management with the medical officers in clinic.

Did I achieve the aims of my fellowship?

Although I did not travel as widely within Tanzania as I hoped I do feel that I achieved more by concentrating on teaching and establishing my role within the teaching hospital. With this approach I was able to disseminate my knowledge and expertise more effectively. My fellowship culminated with a lecture I gave at the annual congress held at the RDTC in January 2003 titled 'Global strategies for the management of lymphatic filariasis.' This annual Continued Medical Education (CME) congress is attended by past graduates of the RDTC, as well as a number of overseas doctors from North America and Europe. It is an excellent opportunity to discuss difficult management issues pertaining to developing world medicine, as well as sharing interesting clinical cases.

Adequacy of the grant

The grant was adequate and covered nearly all of my expenses. Day to day living costs are very low in many countries of sub-Saharan Africa and therefore although my fellowship was much longer than the average fellowship I was able to manage with careful budgeting. Housing and food costs are very low. However travel costs can be very high.

Suggestions and advice to future Fellows

Should anyone consider a long fellowship such as mine in a sub-Saharan African country, I would advise fellows to restrict travelling to only one or two countries. There are several reasons for this. Firstly infrastructure in many countries is very poor and therefore travel times can be much longer than anticipated. Travel costs can be surprisingly expensive in comparison to costs for other things in such countries. It is also worth bearing in mind that accidents related to travel especially by road are not that uncommon, and therefore it is prudent to consider travelling arrangements carefully and not be tempted to compromise on safety in order to cut costs. Fellows should also take into consideration the costs of pre-travel immunisations and malarial prophylaxis for example, which should ideally be bought here in the UK prior to travel. They should also take with them a carefully considered first aid kit. Their GP practice nurse may be able to give them help and advice on this. Another reason for which I would advise focussing on fewer countries is that it does take more time to settle in some countries. In my case it took me a couple of months to make myself comfortable by finding a suitable place to live, organising transport and even figuring out where to buy good chicken, eggs, milk etc! It took time also to culturally acclimatise and ofcourse to learn the local language, which in my case was Kiswahili. For long fellowships to countries where English is not the first language, setting aside time to study the local language is an essential and time-consuming part of pre-departure preparations. However it was time very well spent as I found that despite

making numerous mistakes my hosts did appreciate my efforts, and by having some kind of foundation to build on I found that my language skills gradually improved throughout my stay.

For long fellowships I would also recommend taking a digital camera and laptop computer if possible. This negates the need to buy or store camera film and the laptop allows internet access enabling communication with friends and family back home, essential when one is away for a long period of time! A radio with BBC world service access is also vital to keep up-to-date with world affairs.

My dissemination plans

Since returning to full-time work as a dermatology registrar within the National Health Service in London, I have already found that the experience and skills that I have acquired have been extremely useful when seeing patients with infectious and 'tropical' conditions, and I have been able to discuss such unusual cases with colleagues. I plan to build on this experience by attending some clinical sessions at the Hospital of Tropical Medicine in London, and I have also applied for the diploma in tropical medicine at the London School of Hygiene and Tropical Medicine. I will give a talk on my Fellowship experiences at the Regional South West Thames Dermatology meeting, which is attended by dermatologists from a number of hospitals in the South of England region. The focus of this talk will be 'dermatology in Africa.'

Although I went out to Tanzanian with an interest in lymphatic filariasis and lymphoedema, I also became involved in other smaller projects. As a result I will be presenting at the 3rd World Congress of the International Academy of Cosmetic Dermatology, which will be held in Beijing, China (December, 2003). I will discuss the experience that I gained as a Dermatologist in Tanzania of the harmful use of skin bleaching agents such as potent topical corticosteroids and high concentrations of topical hydroquinone. This is a widespread and

common practice and serious cause for concern among clinicians as patients are often left with a disfiguring appearance for which there is no treatment. In addition I will quote work conducted by a current RDTC student, C Luhana, who investigated the prevalence of use of skin lightening agents and associated factors in a large population cohort in Zambia. Unfortunately he is not able to attend the congress but is a co-author on my abstract.

Lessons learned

I gained exposure in areas of medicine that I had no experience of before. The Fellowship has enhanced my clinical and teaching skills. It has also given me invaluable insight into the workings of a healthcare system in a developing country and has taught me to be resourceful with limited materials, such as diagnostic tests and medication. On a personal level I made wonderful friendships and contacts. I have enjoyed the challenges and have the satisfaction of feeling some degree of achievement. I have also experienced a new and very different culture from that here in the UK, which has taught me to appreciate and learn from a different value system.