Global Teledermatology

Carrie Kovarik, MD
Associate Professor of Dermatology, Dermatopathology, and Infectious Diseases
Case 1

- A 4 year old HIV positive male presented to a clinic in Mbeya, Tanzania for evaluation of violaceous and skin colored genital lesions and subcutaneous nodules which rapidly grew after initiation of ART, 8 weeks prior.
- Baseline CD4 was 32 cells/µL
- Patient was clinically diagnosed locally with Kaposi sarcoma and started on bleomycin and vincristine (BV). After 5 cycles of BV, chemotherapy was intensified to BV + doxorubicin based on failure to achieve complete clinical remission.
Case 1

- CXR obtained after 5 cycles of BV was concerning for pulmonary involvement of KS
- He completed 10 cycles of BVD but due to persistent skin nodules and abnormal CXR, he was started on paclitaxel.
- He completed 12 cycles of paclitaxel and had resolution of skin lesions but had progression of subcutaneous nodules and f/u CXR showed no improvement
- While receiving chemotherapy, he achieved full viral suppression and had CD4 rise to 455.
- Biopsy of a subcutaneous nodule was sent to Penn.
What is the most likely diagnosis?

A. Refractory Kaposi’s sarcoma
B. Metastatic carcinoma
C. Lymphoma
D. Parasitic infection
E. Disseminated fungal infection
What is the most likely diagnosis?

A. Refractory Kaposi’s sarcoma
B. Metastatic carcinoma
C. Lymphoma
D. Parasitic infection
E. Disseminated fungal infection
Figure 1. Biopsy Specimen Showing Neurocysticercosis.
Periodic acid–Schiff staining shows inflamed brain parenchyma with gliosis surrounding an inflamed cyst. The cyst contains a *Taenia solium* cysticercus with the scolex (S) and a fluid-filled bladder (B).
Case 2

first three photos are of upper right thigh.
pt had a bka on this leg years ago.
last picture is of right hand.
What is the most likely diagnosis?

A. Fungal infection
B. Neutrophilic dermatosis
C. Drug eruption
D. Autoimmune blistering disease
E. Bacterial infection
What is the most likely diagnosis?

A. Fungal infection
B. Neutrophilic dermatosis
C. Drug eruption
D. Autoimmune blistering disease
E. Bacterial infection
Multiple Bullous Fixed Drug

- Dx of bullous fixed drug eruption made sense, especially given history that was given to us later of a similar (less severe) presentation 1 yr prior when he was given an NSAID.

- At that time he presented with just the right anterior thigh lesion and some redness to BIL eyelids. Everything much worse this time.
Teledermatology Consultation in Developing World
Telemedicine in the Developing World

Throughout the developing world, inadequate access to physicians and subspecialty care are serious problems that telemedicine can help address.

The field of mobile telemedicine allows medical consultations to be submitted via mobile phone, enabling health care to reach rural areas of the developing world, where cell phone coverage extends beyond computer networks.
Challenges and Barriers to Use of Telederm

- **Funding**: for implementation and *sustainability*
- **Technology**: Computer literacy of the providers, local power supply, internet access, local mobile connectivity, availability of local tech resources
- Ensuring local clinicians are *supportive* of the program
- Effective *training* on the tools being implemented (rapid provider turnover, prefer to use local tech)
- *Integration* into the local healthcare system
- Use of *local* expertise
Challenges and Barriers to Use of Telederm

- **Treatment** plans being recommended must be realistic within the local socio-cultural and healthcare environment
- **Follow-up**: consultants should be available for continued collaboration
- In certain cultures, telederm may **not be an acceptable** form of healthcare (expect face to face care, no photographs).
- **Inherent challenges** of local resource limitations (medication stock outs, lack of available referrals)
- **Privacy**: Critical need for patient privacy, consent, data security
Practical Tips for Implementing a Teledermatology Initiative

- **Local Needs Assessment**: confirm clear need/local support
- **Workflow**: Review current methods and workflow being used for dermatology patients
- **Tech**: Review the locally available technological resources
- **Partners**: Identify partners that will participate in initiative
- **Platform**: Utilize info gathered to narrow down the best options for telederm platform
- If funding/resources are a major limitation, but local providers/leadership are supportive, consider starting small
For overall success, teledermatology partnerships need to benefit both sides and need to be set up with the clear involvement of local providers. Remote dermatologists need to be willing and able to offer realistic diagnosis and treatment advice by taking into consideration local cultural norms and resource limitations.
Teledermatology in Africa
African Teledermatology Project
(Uganda, Botswana, Malawi, Swaziland, Burkina Faso, and Lesotho)

Here you find our main cooperation partners and the members directory.

Case of the month

Telemedicine utilizes modern telecommunication technology to provide medical services at a distance by connecting two or more medical centers and enabling exchange of expert medical information. Telemedicine has therefore a potential to offer developing countries qualitative and quantitative improvements in medical care. The inherent visual nature of dermatology makes Teledermatology easily applicable to virtual medicine. African Teledermatology has been created to provide dermatology support to local physicians, dermatologists, and health care workers in hospitals and clinics throughout Africa. This support is provided through Teledermatology consultation services, discussion pertaining to diagnosis and management of patients with skin diseases, links to educational resources, and access to a dermatology curriculum created specifically for African sites.

African developing countries have only a very limited number of qualified dermatologists. Teledermatology has therefore the potential to offer a prompt channel for long distance consultation and consequently provide means for improving medical care of skin diseases.

The purpose of this project is to establish a virtual collaboration between African partners, USA and Austria. A unique online archive of tropical skin conditions will also emerge which should serve as an Internet source of educational material for training and updating of medical specialists and health personnel. A secondary aim of the project is to establish and secure an active channel and platform for dermatological research collaboration. The scope of this project is the integration of the various aspects of Teledermatology and Tele-dermatopathology: using a best practice model, creating an innovation- and investment-friendly environment for the broad-scaled implementation of telemedical applications in Africa.

This project has been funded by the Kommission für Entwicklungsfragen, Austrian Academy of Sciences (KEF; Kommission für Entwicklungsfragen, Österreichische Akademie der Wissenschaften) (originally Uganda-Austria Telederm Project) and the American Academy of Dermatology.

Project and Site Coordinators are

Steven Kaddu, MD
steven.kaddu@meduni-graz.at

Carrie Kovarik, MD
carrie.kovarik@uphs.upenn.edu

New!
Mobile Dermatology Application for the African Teledermatology Project

Compatible with iPhone, iPod touch and iPad
Consultations

Since the induction of the africa.telederm.org program, we have received and answered over 1800 consults from 15 countries: Tanzania, Kenya, Uganda, Malawi, Botswana, Eritrea, Liberia, Burkina Faso, Botswana, Swaziland, Lesotho, South Africa, Mozambique.

In addition, we have received, processed, and diagnoses approximately 500 conditions via skin biopsy.
Rural Telemedicine Training
<table>
<thead>
<tr>
<th>age</th>
<th>11 years</th>
<th>sex: f</th>
</tr>
</thead>
<tbody>
<tr>
<td>location</td>
<td>total body: without any specification both sides</td>
<td></td>
</tr>
<tr>
<td>clinical history</td>
<td>11 year old wasted recently tested HIV positive girl with 6 months of cough, fever, night sweats and weight loss. Her grandfather is on TB treatment and lives in the same house as her. Her mother was treated for TB years ago but again has similar symptoms. Her father died of TB when she was 4 months old. She has about half a dozen annular, well-demarcated hyperkeratotic patches on her trunk and extremities.</td>
<td></td>
</tr>
<tr>
<td>diagnosis</td>
<td>I think this is a case of TB-related pityriasis rotunda. After we have her TB and HIV care rolling, we start a trial of salicylic acid to the lesions.</td>
<td></td>
</tr>
<tr>
<td>question</td>
<td>Nice case, don't you think? Thanks for the information on a prior consultation; I wouldn't have had it on the differential otherwise.</td>
<td></td>
</tr>
<tr>
<td>answer</td>
<td>Carrie L Kovarik (7/10/2003 8:29:34 PM)</td>
<td></td>
</tr>
<tr>
<td>options</td>
<td>That is an awesome example!</td>
<td></td>
</tr>
<tr>
<td>preferred date for the answer</td>
<td>7/10/2003</td>
<td></td>
</tr>
<tr>
<td>expert</td>
<td>Carrie <a href="mailto:Kovarik@apha.upenn.edu">Kovarik@apha.upenn.edu</a></td>
<td></td>
</tr>
</tbody>
</table>
Lupus Vulgaris (Cutaneous TB)
Inadequate Pathology Access

- A 12 year-old Malawian female presented to clinic with a large soft tissue mass growing 6 wks.
- At the time of clinical presentation, she was HIV+ with a CD4=17 and was not yet on anti-retroviral therapy.
- The lesion began as 3 x 3 cm raised soft tissue mass, initially felt to be a pyogenic granuloma.
Baseline

1 week after starting doxycycline

2 weeks after starting doxycycline

Contributed by Liane Campbell, permission obtained
Epstein-Barr virus-associated leiomyosarcoma with cutaneous involvement in an African child with human immunodeficiency virus: a case report and review of the literature

Michael T. Tetzlaff¹,², Carl Nosek³ and Carrie L. Kovarik¹

¹Department of Dermatology, Hospital of the University of Pennsylvania, Philadelphia, PA, USA
²Division of Dermatopathology, Department of Pathology, MD Anderson Cancer Center, University of Texas, Houston, TX, USA, and
³Abbott Fund Children’s Clinical Center of Excellence, Baylor College of Medicine, Lilongwe, Malawi
Epstein-Barr virus-associated leiomyosarcoma with cutaneous involvement in an African child with human immunodeficiency virus: a case report and review of the literature
Access to Specialists with mHealth

- Mobile Oral Telemedicine
- Mobile Cervical Cancer Screening
- Mobile Teledermatology
- Mobile Teleradiology

Photos by Ryan Littman-Quinn
Mobile Oral Telemedicine

- The platform provides specialist consultation for triage, diagnosis, and management decisions
- Enables a country with few specialists to access patients in remote areas more efficiently
I am seeing a patient with these crusted lesions that started over the weekend. Can you advise.

Hello, if possible you should admit the patient. This can be a sign of a few life threatening conditions - most concerning is sepsis. Is the patient febrile and ill appearing?

What is the HIV status/cd4 and are they on ARVs?
Thank you