A patient presents to the ED with a tender vasculitis-like rash of the earlobe and cheek and a painful boil on his neck. Skin culture of the boil indicates infection with Staphylococcus aureus. Skin biopsy and histological examination of the purpuric cheek lesion demonstrate fibrin thrombi present in the vessels. A full blood count indicates severe neutropenia. Upon questioning, the patient admits to having smoked cocaine in the past week.

Scenarios such as this one are increasingly common occurrences. Logical Images has added Cocaine Levamisole Toxicity to VisualDx to aid clinicians in its diagnosis and treatment.

Cocaine contaminated with levamisole has been detected in the US since 2003, and the incidence of toxicity caused by this contamination has been increasing rapidly since 2008. The CDC estimates that approximately 70% of cocaine in the US may be contaminated with levamisole, at an average concentration of about 10% (DEA unpublished data 2009; levamisole has also been detected in heroin, but only in trace amounts).

Use of cocaine adulterated with levamisole – whether smoked or snorted – can lead to agranulocytosis, neutropenia, and a vasculitis-like purpuric tender skin eruption progressing to skin necrosis. Patients typically present with purpura of the external ears and cheeks. Concomitant symptoms of arthralgias, fever, and mouth pain have also been reported.

Diagnosing the condition can be a challenge. Serum and urine tests for levamisole are difficult and often unreliable. Because neutropenia is common, a bacterial or fungal infection may be the presenting feature. And, too, other treatable causes of vasculitis may exist. Several published cases have had concurrent or preceding medical histories that involve both chronic and acute infections as well as signs of chronic autoimmune disease, with other cases having no preceding medical history.

Although very suggestive, the use of cocaine before a characteristic purpuric eruption does not necessarily implicate this drug or contamination with levamisole. This diagnosis depends heavily on patient history and on ruling out other causes of vasculitis.

Levamisole is an anthelmintic drug employed by veterinarians to deworm livestock and an immunomodulator that has been used to treat cancer, autoimmune disorders, and nephritic syndrome in humans. It is also used as an adulterant (cutting agent) in cocaine.

For more images of cocaine levamisole toxicity as well as tips on diagnosing this condition and treatment information, see Cocaine Levamisole Toxicity in the following VisualDx clinical scenarios: Fever and Rash, Adult Rash, Dark Skin Rash, and Drug Eruption. Build a differential by entering findings such as purpura, eschar, or gangrene; neutropenia; cheek; and tender skin lesion. Or search the diagnosis using Look Up a Diagnosis.
pigmented skin (for a nuanced overview of this deficiency, see *J Am Acad Dermatol*. 2006 Oct;55[4]:687-90). Even in the Logical Images’ database of over 70,000 images, we find that there are insufficient images of some diseases in pigmented skin. Such underrepresentation is a complex issue: we often do not know the prevalence of diseases in different ethnicities and skin pigmentations; there may be economic and societal reasons decreasing access to optimum health care, including skin health care, for those with more deeply pigmented skin; and, finally, many expert clinicians may have difficulty creating outstanding images in dark skin. Digital photography and the understanding of skin optics can overcome these technical issues, and since the cost of a digital image is trivial, there should be fewer barriers to taking more images captured from heavily pigmented skin. In this issue we outline some of the issues and strategies to render clinical erythema (redness) more successfully in pigmented skin.

At Logical Images we are in the final stages of completing VisualDx: Essential Dermatology in Pigmented Skin, a monograph edited by Aida Lugo-Somolinos, MD, from the University of North Carolina (and previously on the faculty of the University of Puerto Rico) and Lynn McKinley-Grant, MD, of the faculty of Georgetown University, to be published by Lippincott Williams & Wilkins of Wolters Kluwer Health. These two clinicians have extensive experience caring for patients with pigmented skin, and this volume will have over 700 pictures of skin disease in darkly pigmented skin. This text and its illustrations will be important for the health professionals using the book for diagnosis and treatment but will also have the important purpose of showing a patient “their disease” as it presents in a skin type resembling their pigmentation. Using pictures to more effectively connect the patient and the physician is an essential part of exemplary medicine.

This volume complements two other books in our VisualDx: Essential Dermatology monograph series, the volume addressing skin disease in children (edited by Craig N. Burkhard, MD, and Dean Morrell, MD) and the volume on skin disease in adults (edited by Noah Craft, MD, and Lindy Fox, MD). The monograph series is a combined book-online product blending the strengths of a traditional book format with the innovative online VisualDx diagnostic system.

We also are engaged in a technique of the internet age termed crowdsourcing, where we are asking and encouraging – in a sense counting on – users of the VisualDx system to submit your own pictures of common and uncommon skin diseases in a range of darker skin types to improve overall health care delivery to patients with more deeply pigmented skin. Contact our Image Collection Manager Heidi Halton (hhalton@logicalimages.com) for details on how to upload your images and participate in this project to capture images of skin diseases in people of all skin types over the next several years.

Sincerely,
Lowell A. Goldsmith,
Editor-in-Chief

**About From the Editor-in-Chief**
This regular feature will explore issues of education and patient care and discuss how to be the best professionals for our patients.
Meet Dr. Lynn McKinley-Grant & Team

Lynn McKinley-Grant, MD, is a welcomed addition to the Logical Images Editorial Team. A practicing dermatologist at Georgetown University Hospital in Washington, DC, she is also an associate clinical professor at the Georgetown University Hospital Center Dermatology Residency program (both hospitals are in the not-for-profit regional healthcare system MedStar Health). Dr. McKinley-Grant is one of two senior editors currently working on the next book in the VisualDx Essential Dermatology series, VisualDx: Essential Dermatology in Pigmented Skin.

This visually rich book will cover skin conditions in darker skin tones, with attention to unique diagnosis and treatment considerations, an area in which most major dermatology resources are deficient. Like the first two books in the series – VisualDx: Essential Pediatric Dermatology and VisualDx: Essential Adult Dermatology – this book is designed for use at the point of care and in conjunction with the online system VisualDx.

Dr. McKinley-Grant brings an impressive array of experience to the project. Before a career in medicine she worked as a college counselor and director of an academic program for underserved older college students. “I felt a strong desire to help those who needed it most,” she says. Her shift to medicine began at Harvard Medical School. She trained and was Board Certified in Internal Medicine at Boston City Hospital and then in Dermatology at New York University.

Cultural diversity is a common thread in Dr. McKinley-Grant’s career. She was an Albert Schweitzer Fellow in Gabon, West Africa. Before working at Georgetown University she ran a successful private practice and was an associate clinical professor of dermatology and an attending physician at the Washington Hospital Center. "In my private practice my patients came from all over the world, making for a very culturally diverse population." While treating patients and teaching, she worked with a colleague on a major textbook, Dermatology in Skin of Color.

Using the clinical exam, particularly the skin exam, to diagnose systemic internal diseases is one of Dr. McKinley-Grant’s main interests. "Diagnosing inflammation, infection, and malignancy can be difficult in pigmented skin because the erythema produced by these conditions presents as many shades of red. Healthcare providers need more training in recognizing erythema in brown skin," she explains. She is currently working on bringing the class "Enhancing Clinical Care through The Arts" to Georgetown University to train doctors and clinicians in observational skills using formal art to develop color and detail recognition.

For VisualDx: Essential Dermatology in Pigmented Skin, Dr. McKinley-Grant has two junior editors, Ivy Lee, MD, and Arden Fredeking, MD, as part of her team. They helped coordinate a group of residents to contribute to the project. Recently, Dr. Lee graduated her residency and accepted a position in the dermatology faculty at University of California, San Francisco, starting autumn 2010.

“Our residents and medical students are from all parts of the country and have heritage from six of the seven continents. They’re dedicated to medicine and patient care,” says Dr. McKinley-Grant. Their experiences along with her expertise bring a valuable contribution and perspective to the field of dermatology in pigmented skin.

When Dr. McKinley-Grant manages to find personal time, she enjoys spending it on her outside interests and hobbies: family and friends, international travel, reading, and the performing arts as well as community service – mentoring students and tattoo removal for former gang members.

About Expert Contributors

Logical Images relies on its worldwide medical editorial board of practicing physician scholars to keep our clinical content objective, accurate, and current. Our ever-expanding team of over 100 physician experts writes, edits, consults, authenticates, and reviews to bring you authoritative medical information in concert with comprehensive visuals.

This regular feature spotlights Expert Contributors from various medical and scientific research fields, so you can get to know us better.

Featured Case Study:

VisualDx Teaching Moment in Resident Clinic: Kaposi Sarcoma

A 42-year-old man presented to the university resident dermatology clinic in Rochester, NY, complaining of skin lesions that had developed during the past month. The patient’s medical history was significant for a spontaneous small bowel perforation 4 months prior. The dermatology resident presented the patient as looking ill, with palpable purpura, and felt the physical examination was consistent with vasculitis. Upon examining the patient with the resident, the attending physician pointed out the gray to black quality of the purpuric skin lesions. In his opinion this was consistent with Kaposi sarcoma; the vascular proliferation of Kaposi sarcoma can result in almost black-appearing plaques and nodules. In the residents room they immediately reviewed the image set in VisualDx for AIDS-associated Kaposi sarcoma, and together the resident and the attending physician scanned the spectrum of images. By seeing dozens of images in aggregate, including multiple images of similar black-purple lesions in other case examples, the resident was able to immediately see and learn this variant of Kaposi sarcoma and was grateful for the “teaching moment.” The ability to consult a large spectrum of images while evaluating patients reinforces a teaching point as words could never do alone. Teaching to the variants of disease presentation with VisualDx is easy to do, and the images have been welcomed by the residents in the dermatology clinic. A biopsy confirmed Kaposi sarcoma in the patient. The bowel perforation was suspected to be caused by visceral Kaposi sarcoma. The patient had never had HIV testing.
What’s New:

More mHealth!
iPad App Now Available, Android App Coming This October

We have had great success with the launch of VisualDx Mobile for the iPhone and iPod Touch, recently named by iMedicalApps as one of the top 5 medical apps for the iPad. This recognition and the recent uptake of iPads in medical universities prompted us to focus efforts on VisualDx Mobile for the iPad – now available on the App Store.

VisualDx Mobile for the iPad takes full advantage of the iPad’s high-resolution, backlit-LED screen. The app’s thousands of medical images are strikingly rich and crisp, allowing for a full-screen or zoom view that gives a clinician greater visibility into recognizing patterns when comparing to their patient’s presentation. Additionally, the app has been developed using a split-screen pane so the user can see the differential as they add each patient sign and symptom, or view multiple images of each disease side-by-side with clinical text.

With development of VisualDx Mobile for the Android moving along swiftly (expected release in October), we will be turning our attention to researching the best approach for Blackberry and other mobile platforms. We expect development to begin this fall.

How Do I Get VisualDx Mobile for iPhone, iPod Touch, or iPad?

• Individual subscribers go to the App Store on your device.
• Institution users, open VisualDx on a computer at your institution and follow the instructions.

VisualDx Results in Your UpToDate Searches – Opt In Now

Provide added clinical and educational value to your clinicians’ UpToDate searches. Current subscribers or trial participants to both products can now opt in to receive results from VisualDx integrated within their UpToDate typical search.

Once an institution has opted in, UpToDate users simply perform searches as they typically would. When their results return, VisualDx links will be identified by an orange VDx icon. VisualDx links will appear for a range of diagnoses and associated findings that relate to dermatologic conditions, drug reactions, and infections.

This integration streamlines the login and search process for clinicians, giving them one-click access to clinical and diagnostic support – including the unique capability to see the differential with the VisualDx Differential Builder. Simplify accessibility with single sign-on and one-click search of these two expert resources. Opt-in today. Contact: dreinhart@logicalimages.com

Snapshot on Images:

Reading Red

Is it always easy to see a red rash? No! Red rashes can be difficult to detect and describe depending on the degree of endogenous pigmentation in the skin. Think back to kindergarten, where you used the red crayon on papers of different colors and could make purples and even browns. A similar phenomenon happens in the skin.

Purpura, a well-known sign of life-threatening disease, appears as purple-red discoloration in lighter skin tones but can appear brown or almost gray in skin with more pigmentation. Likewise, many inflammatory and infectious diseases present with erythema, or redness of the skin, and the change in appearance can be very subtle in darker skin. At right: Similar ‘red’ papular drug eruptions are shown in patients with varying degrees of skin pigmentation (Panel A shows the least intrinsic pigmentation, Panel F the most). Although the basic reaction has prominent erythema, the degree of perceived redness varies based on the underlying skin pigmentation.

Detection of early erythema can save lives and decrease health care costs, and it depends on the clinician’s ability to recognize shades of red as well as distinguish subtle color variations across the skin. High-tech solutions for measuring skin redness are being developed, but on the front lines, close visual observation – and excellent lighting – are still very important. So, too, is listening: often, the best aid comes from the patient who says, “My skin is now red.” Listen to that patient!

Logical Images is committed to aiding the clinician in visual diagnosis in all skin tones. VisualDx now contains even more images of darker skin as well as new lesion illustrations, and we have teamed up with two authors with decades of experience caring for patients of all skin types to develop the companion book VisualDx: Essential Dermatology in Pigmented Skin. VisualDx – along with this companion book – will ensure that red will be read in all skin types.

A. B. C. D. E. F.
ART and Kaposis Sarcoma: Mostly Good News

Antiretroviral therapy alone is generally effective in controlling early-stage Kaposis sarcoma.

HIV-infected patients with Kaposis sarcoma (KS) often receive both antiretroviral therapy (ART) and chemotherapy, making it difficult to determine which treatment modality is actually controlling the tumor. Now, investigators in London have evaluated clinical outcomes in 254 consecutive HIV-infected patients with KS, most of whom did not receive chemotherapy.

At the time of KS diagnosis, 175 patients had limited disease (i.e., a tumor confined to the skin or lymph nodes, minimal oral disease, or both), and 79 had advanced disease (i.e., tumor-associated edema or ulceration, extensive oral KS, or visceral KS). Eighteen patients (7% of the cohort) were diagnosed with KS while on suppressive ART regimens; these patients generally were older (mean age, 43) and had higher CD4 counts (median, 277 cells/mm³) than the rest of the cohort.

Initial treatment consisted of ART alone for most patients with limited disease—and ART plus chemotherapy for those with advanced disease. Of the 163 patients treated with ART alone, only 22% subsequently required systemic chemotherapy. The actuarial 5-year survival rate for all patients in the cohort was 89%; among those treated with ART alone, only one death was attributed to KS. The type of antiretroviral regimen (protease inhibitor–based vs. nonnucleoside reverse transcriptase inhibitor–based) did not seem to influence KS-free survival.

Comment: This large cohort study demonstrates that most HIV-infected patients with KS have good outcomes and that early-stage KS can generally be treated effectively with ART alone. Consistent with previous reports (JW AIDS Clin Care Oct 29 2007), this study shows that KS can develop even in patients who are on suppressive ART and have relatively high CD4-cell counts. Whether the incidence of KS in such individuals will increase over time remains to be seen.

– Rajesh T. Gandhi, MD

Published in Journal of Infectious Diseases September 9, 2009

Citation(s): Bower M et al. The effect of HAART in 254 consecutive patients with AIDS-related Kaposis sarcoma. AIDS 2009 Aug 24; 23:1701.

About the Journal Watch and VisualDx Partnership

Journal Watch is an online and print resource produced by the publishers of the New England Journal of Medicine that provides clinically focused perspectives of important research articles and medical news to physicians and other health care professionals, helping them to stay informed while saving time. Partnerships with publications such as Journal Watch allow VisualDx to broaden and enhance its range of disease information and diagnosis texts. With the help of Journal Watch, we look forward to bringing our customers the best possible clinical information to help them make more accurate diagnoses.

Have suggestions for new content? Need tips from other users? Want to be the first to hear about new features?

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