ridges and less within the furrows of the dermatoglyphs. Subsequent histopathologic analysis of those lesions demonstrated atypical melanocytes containing melanin granules within the crista profunda intermedia. Similarly, in their retrospective analysis of Japanese patients with melanocytic lesions, Saida et al found the parallel ridge pattern more diagnostically accurate of melanoma in situ than “irregular diffuse pigmentation.”

Melanocytic nevi, subcorneal hemorrhage, exogenous pigmentation, and lentiginosis and drug-induced hyperpigmentation can demonstrate a dermoscopic parallel ridge pattern. Benign dermoscopic attributes include a parallel furrow pattern, a lattice-like pattern, and/or the lack of disruption of the acrosyringia within the epidermal ridges.

Our patient’s history suggested recent onset, an uncommon feature in ALM. Because we did not specifically inquire about exogenous pigment exposures, our initial evaluation failed to reveal information that may have allowed for earlier exclusion of ALM. Our case serves as a reminder to clinicians of the importance of a thorough history. Exogenous tissue dyeing should be considered in the differential diagnosis of acral pigmented lesions, particularly if the clinical history suggests the lesion is of recent onset.

A. Bianca Stashak, BS  
Rachel Laarman, MD  
Garth R. Fraga, MD  
Deede Y. Liu, MD

Author Affiliations: Midwestern University, Arizona College of Osteopathic Medicine, Glendale, Arizona (Stashak); Department of Medicine (Dermatology), University of Kansas Medical Center, Kansas City (Laarman, Liu), Department of Pathology and Laboratory Medicine, University of Kansas Medical Center, Kansas City (Fraga).

Corresponding Author: Deede Y. Liu, MD, Department of Medicine (Dermatology), University of Kansas Medical Center, 3901 Rainbow Blvd, Kansas City, KS 66160 (dliu@kumc.edu).

Published Online: July 30, 2014. doi:10.1001/jamadermatol.2014.567.

Conflict of Interest Disclosures: None reported.


Cutaneous Embolization of Doxorubicin Drug-Eluting Beads

Transarterial chemoembolization (TACE) with drug-eluting microspheres (DEMs) is emerging as the therapy of choice by many interventional oncologists and radiologists for unresectable liver tumors. Improvements in drug delivery systems have been made by modification of the embolic agents and the introduction of microcatheters, allowing for precise drug delivery to tumors. Currently, DEMs are being used as the drug delivery system for TACE. We report herein a case of cutaneous embolization of doxorubicin-impregnated DEMs after DEM TACE treatment for breast carcinoma metastasized to the liver.

Report of a Case | A woman in her 60s with a history of metastatic breast carcinoma presented with a painful pruritic erup-
tion on her abdomen. One week earlier, she had undergone doxorubicin DEM TACE treatment for liver metastasis with doxorubicin DEM (100-300 μm/75 mg doxorubicin) (LC Beads; Biocompatibles UK Ltd). On physical examination, her right abdominal skin had tender reticulate erythematous nodules coalescing into plaques. Laboratory abnormalities were noted, including a white blood cell count of 17,700/μL and elevated transaminase levels (to convert white blood cells to ×10⁹/L, multiply by 0.001). Punch biopsy histologic findings were consistent with a drug reaction characterized by a lymphocytic infiltrate with eosinophils in the reticular dermis.

At 1 week follow-up, her symptoms persisted with some skin ulceration (Figure, A), and an excisional biopsy was performed. Histologic analysis showed purple foreign material present within vessels and inflammation with focal necrosis within the adipose tissue (Figure, B). No fibrin clots or malignant cells were noted. An embolic process of the doxorubicin pellets in the vessels of the adipose tissue was suspected.

The excisional biopsy specimens and DEM were submitted for x-ray analysis. The element and atomic percentages were noted. The doxorubicin DEM showed carbon (65.77%), oxygen (27.91%), sulfur (1.88%), sodium (3.52%), and chloride (0.92%) elements. The skin specimen revealed carbon (76.2%), oxygen (20.14%), sodium (2.89%), and scant sulfur (0.77%) content. The sodium from the skin specimen likely corresponded to the sodium chloride within the microspheres. The finding of similar atomic percentages between the same elements in both samples supports the idea that the beadlike material visible in the skin and the DEM were from the same source. Our patient’s pruritus was treated with lidocaine cream; her skin lesions improved; and her laboratory findings returned to baseline.

### Discussion

The advantages of DEM TACE include delivery of higher doses of chemotherapy and prolonged tumor contact time while reducing the systemic toxic effects of chemotherapeutic agents. DEM TACE is being used for treatment of unresectable hepatocellular carcinoma, metastatic breast cancer, metastatic colon cancer, neuroendocrine tumors, cholangiocarcinoma, and metastatic melanoma, among others. The most common adverse effects after the procedure are nausea, vomiting, pain, and elevated transaminase levels.

Embolic agents have improved dramatically with the development of microspheres. Embolization with microspheres alone is approved by the US Food and Drug Administration for hypervascular tumors and arteriovenous malformations. DEMs are being used for chemoembolization of malignant tumors. Microspheres are hydrophilic, and the size is precisely calibrated.

There are 2 commercially available DEMs: DC/LC Beads (Biocompatibles UK Ltd) and HepaSphere (Biosphere Medical Inc). The negative charge on both of these microspheres allows positively charged drugs like doxorubicin or irinotecan to be loaded into the beads. Then, prior to injection of the doxorubicin DEM, an angiogram is performed to evaluate degree of hepatic tumor perfusion and extrahepatic perfusion. A microcatheter is then positioned for injection of the doxorubicin DEM, and the drug is delivered.

The patient described herein represents a case of cutaneous embolization of DEM. We hypothesize that embolization into the subcutaneous fat occurred through the development of collateral vasculature in our patient. We suspect that this will become more common as smaller DEMs are being used for treating tumors.

Elizabeth Grieshaber, MD  
Thomas Nicotri, MD  
Rachel Reina, MD  
Katherine Rupley, BS  
Alun Wang, MD, PhD
Eczematous Reaction to Intravenous Immunoglobulin: An Alternative Cause of Eczema

Report of a Case | A man in his 70s presented with eczematous plaques on his face, trunk, and extremities, including erythema, fissures, and scales on his palms and soles (Figure 1). There were no blisters, erosions, or any mucosal lesions. The patient’s medical history revealed peripheral neuropathy due to Waldenström macroglobulinemia. Several days prior to the onset of skin lesions, he had been treated with high-dose intravenous immunoglobulin (IVIG) (Intratect; Biotest), 1g/kg/d for 2 days, for control of his neuropathy. There was no history of IVIG treatment, atopic dermatitis, respiratory allergies, and/or asthma. His other medications at that time, which had remained unchanged for at least 2 years, consisted of acetylsalicylic acid, simvastatin, and tamsulosin.

A skin biopsy was performed on lesional skin. Histologic analysis showed spongiosis and lymphocytic infiltrates (Figure 2A). No acantholysis was present. Direct immunofluorescent (IF) microscopy showed intercellular deposits of C3 throughout the epidermis and granular deposits along the basement membrane (Figure 2B), but no IgG or IgA was detected. Indirect IF microscopy showed intercellular IgG deposits on monkey esophagus (Figure 2C) but not in rat or monkey bladder epithelium. No IgA deposits were detected in these tissues.

No serum antibodies against desmoglein-1, desmoglein-3, desmocollin-1, or envoplakin were detected by enzyme-linked immunosorbent assay or indirect IF microscopy on transfected HEK293 cells (Euroimmun). Findings of serum antinuclear antibody titers were negative. Initially, topical corticosteroids (class III and subsequently class II) and skin emollients were administered, but the skin lesions persisted.

After switching his treatment regimen to oral methylprednisolone (0.3 mg/kg/d), the patient’s skin lesions cleared within 2 weeks. Following tapering and without any further treatment, no recurrence was observed during a follow-up of 3