munication represents a practice gap, and it behooves dermatologists to step in and fill this gap.

The JAMA network, including JAMA Dermatology, offers the Patient Page to provide essential, credible information about common and obscure medical conditions from experts in the field. This content is free and accessible at all times. Since beginning quarterly publication of the JAMA Dermatology Patient Page in 2013, those pages have been viewed a combined total of 5094 times on the JAMA Dermatology website as of December 12, 2013. The morphea page1 alone has reached 957 people via Facebook and has received 60 likes, comments, and shares. We provide accurate education about dermatologic diseases to guide our patients with diseases like morphea who are at high risk of stumbling across misinformation on the Internet about systemic sclerosis that could cause increased anxiety and unnecessary fear. One of our core roles as physicians is to serve as teachers, for our students, our colleagues, and first and foremost for our patients. The Patient Page is a step along that path, but as Bhatia suggests, the mobile apps represent a way for dermatologists to educate their patients.

Misha Rosenbach, MD


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**OBSERVATION**

**Periosteal Ganglia Presenting as Subcutaneous Nodules on the Tibia**

Herein we describe a case of periosteal ganglia presenting as asymptomatic subcutaneous nodules on the anterior lower extremity.

**Report of a Case** | A woman in her 40s presented with a 3-month history of asymptomatic grouped subcutaneous nodules on the left shin. The lesions appeared spontaneously without any preceding trauma. Physical examination of the left anterior lower extremity revealed grouped, soft, immobile nodules without overlying epidermal changes (Figure 1A). A punch biopsy of a characteristic nodule induced extrusion of a gelatinous, clear, myxoid material (Figure 1B). Histopathologic findings revealed normal skin and subcutaneous tissue with deep soft-tissue mucinous debris that was separated from the overlying skin. Magnetic resonance imaging of the left lower extremity showed a lobulated cystic lesion overlying the anterior tibia, with no communication with the knee joint (Figure 2). The absence of diffusion restriction ruled out an underlying abscess. No underlying bony abnormalities were identified. These findings confirmed a diagnosis of a periosteal gan-

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**Figure 1. Periosteal Ganglia of the Tibia**

A. The ganglia presented as grouped and immobile nodules without overlying epidermal changes on the left anterior lower extremity. B. A punch biopsy of a nodule on the left lower extremity demonstrated a periosteal ganglion of the tibia, with extrusion of a gelatinous, clear, myxoid material.

**Figure 2. Imaging of Periosteal Ganglia of the Tibia**

Magnetic resonance imaging of the left lower extremity demonstrated a lobulated cystic mass overlying the anterior tibia.
men, these lesions also have been reported in children. Periosteal ganglia typically involve the tibia, but reports have also described involvement of the medial malleolus, femur, ilium, radius, and ulna. Duration before presentation varies from several weeks to years. Lesions can be asymptomatic or tender, and a history of trauma is variable. 

Mucoid degeneration of the periosteum is the most frequently proposed pathogenesis for the formation of periosteal ganglia. Fibroblasts are thought to form intercellular mucin, which coalesces to form cystic lesions. Accumulation of mucoid material compresses the surrounding tissue, thereby inducing further fibroblast proliferation, collagen production, and ultimately an encapsulating fibrous wall. The central cystic contents are composed of an acellular mucinous or gelatinous fluid. Although communication with the underlying joint space has not been reported, cases have shown varying degrees of underlying cortical erosion with scalloping and spiculated bone reactions. Choi and colleagues described a case with an underlying interosseous component. However, as in our patient, these cysts frequently have no underlying connection to the cortical bone.

Several imaging modalities to evaluate periosteal ganglia have been described. Plain radiographs, although helpful in detecting underlying bony changes, are nonspecific and do not differentiate pretibial ganglion cysts from other surface tumors. Computed tomography is helpful in further discerning characteristics of the soft-tissue mass, but magnetic resonance imaging is the modality of choice. Magnetic resonance imaging demonstrates a homogeneous signal intensity, which appears isointense to muscle on T1-weighted images and has a high signal intensity when compared with fat on T2-weighted images.

Definitive treatment of periosteal ganglia is by surgical excision. Some authors recommend excising an adjacent margin of normal periosteum to prevent recurrence. Although recurrence after surgical excision has been described, this may represent continued mucoid degeneration rather than incomplete excision.

The clinical differential diagnosis for pretibial subcutaneous masses or nodules is broad and includes erythema nodosum, nodular pretibial myxedema, subcutaneous sarcoidosis, periosteal chondroma, parosteal lipoma, subperiosteal hematoma, subperiosteal abscess, periosteal aneurysmal bone cyst, chondromyxoid fibroma, or periosteal osteosarcoma. Although uncommon and rarely encountered by dermatologists, periosteal ganglion cysts remain an important condition to consider in the differential diagnosis of subcutaneous pretibial lesions. This case highlights the need for dermatologists to recognize this uncommon diagnosis to facilitate appropriate workup and referral.

Nguyen N, Ferguson MD, Asarch MD, Tschantz MD, Stone MD

**Discussion** | Periosteal ganglia are uncommon single or multiloculated subcutaneous cystic nodules. These lesions are rarely encountered by dermatologists and are usually seen in the orthopedic setting. Although described mainly in men, these lesions also have been reported in children. Periosteal ganglia typically involve the tibia, but reports have also described involvement of the medial malleolus, femur, ilium, radius, and ulna. Duration before presentation varies from several weeks to years. Lesions can be asymptomatic or tender, and a history of trauma is variable.

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**Acute Generalized Exanthematous Pustulosis Induced by Sorafenib**

Sorafenib (Nexavar; Bayer HealthCare AG) is an oral multikinase inhibitor approved by the US Food and Drug Administration for the treatment of unresectable hepatocellular carcinoma and advanced renal cell carcinoma. It inhibits multiple tyrosine kinases, including C-RAF and B-RAF, vascular endothelial growth factor receptors, and platelet-derived growth factor receptor (PDGFR).

Acute generalized exanthematous pustulosis (AGEP) is a rare skin eruption associated principally with drugs. To our knowledge, only 1 report of sorafenib-induced acute localized exanthematous pustulosis (ALEP) has been published. Herein, we report the first case of AGEP induced by sorafenib.

**Report of a Case** | A woman in her 50s presented with a history of multifocal hepatocarcinoma previously treated unsuccessfully with radiofrequency, arterial embolization, and selective hepatic radioembolization. After the appearance of lung metastases, treatment was begun with sorafenib (400 mg every 12 hours). Two weeks later, the patient developed hand-foot skin reaction (HSFR), so the treatment was suspended with resolution of the lesions. Treatment with the drug was reintroduced at half dose with good results, and full doses were then administered. Ten days later, the HSFR reappeared, and sorafenib treatment was suspended again. After 3 weeks, sorafenib treatment was restarted at half dose.