Bullous Sweet Syndrome Associated With an Aseptic Splenic Abscess

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The estimated time to complete this activity is 1 hour.

GOAL

To understand Sweet syndrome to better manage patients with the condition

LEARNING OBJECTIVES

Upon completion of this activity, you will be able to:

1. List the major and minor criteria used to diagnose Sweet syndrome.
2. Discuss the possible mechanisms leading to Sweet syndrome.
3. Evaluate extracutaneous manifestations of Sweet syndrome.

INTENDED AUDIENCE

This CME activity is designed for dermatologists and general practitioners.

CME Test and Instructions on page 252.

This article has been peer reviewed and approved by Michael Fisher, MD, Professor of Medicine, Albert Einstein College of Medicine. Review date: October 2009.

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Sweet syndrome is a rare disorder characterized by fever and painful erythematous plaques containing dense dermal neutrophilic infiltrates. Extracutaneous manifestations include alveolitis, sterile osteomyelitis, and arthritis. We present a patient with a bullous presentation of Sweet syndrome who developed an aseptic splenic abscess.

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Sweet syndrome, also known as acute febrile neutrophilic dermatosis, is a rare disorder characterized by fever and painful erythematous plaques containing dense dermal neutrophilic infiltrates that

favor the face and upper extremities.[1] Associated findings include peripheral blood neutrophilia, malaise, and arthralgia. The syndrome can be classified into several categories, including classic (or idiopathic), malignancy associated, drug induced, or pregnancy associated. Several extracutaneous manifestations have been associated with Sweet syndrome. Alveolitis; sterile osteomyelitis; and renal, hepatic, and central nervous system involvement have been reported, as well as arthritis.[2]

We present a patient with a bullous presentation of Sweet syndrome who developed an aseptic splenic abscess. Based on a PubMed search of the literature for bullous Sweet syndrome splenic abscess and neutrophilic dermatosis abscess, our patient is the first case of bullous Sweet syndrome associated with a visceral abscess.

Case Report

A 56-year-old woman presented at the hospital with a chief complaint of nonexertional chest pain and shortness of breath of 2 days' duration. Additional symptoms included fever, chills, and diffuse body aches of 3 days' duration. The patient had a medical history of stable angina as well as hypertension. She reported that she ran out of her hypertension medicine 2 weeks prior to presentation. The patient denied a history of other medical disorders as well as new drug use, including over-the-counter or herbal medications.

The patient was admitted and diagnosed with unstable angina and placed on metoprolol tartrate, aspirin, and clopidogrel bisulfate. While in the hospital, she remained febrile; however, fever was originally attributed to a viral illness, as she had a white blood cell count within reference range and multiple blood and urine cultures were negative for infection. Early in the hospital course (day 2), the patient reported diffuse abdominal pain and subsequent computed tomography revealed a splenic abscess. Shortly before the scan, the patient began developing tender erythematous plaques on her right arm (Figure 1A) that quickly progressed to tense bullae (Figure 1B). New lesions developed over the next few days despite aggressive intravenous antibiotic use. Computed tomography–guided drainage of the splenic abscess revealed purulent material; however, cultures of the abscess were negative for infection. A skin biopsy specimen revealed a superficial and deep perivascular infiltrate with neutrophils and eosinophils, extravasated red blood cells, edema of the papillary dermis, and subcorneal collection of serum and neutrophils (Figure 2). Based on the clinical and histologic findings, the patient was diagnosed with a bullous presentation of Sweet syndrome. A complete workup, including a bone marrow biopsy, failed to reveal a systemic malignancy. The patient was started on intravenous corticosteroids with prompt improvement in skin lesions and systemic symptoms. Repeated images of the spleen showed marked reduction of the splenic abscess.

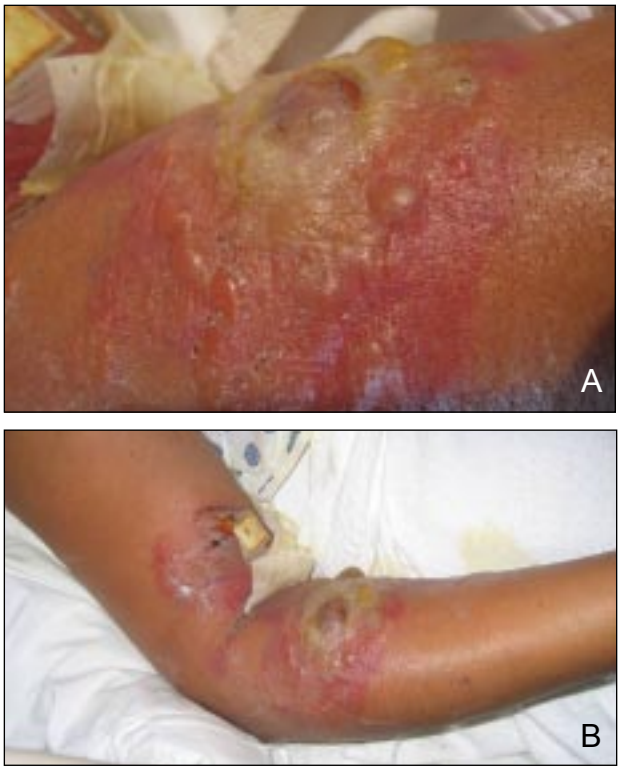

Figure 1. Tender edematous plaques on the right arm (A) that quickly progressed to tense bullae (B).

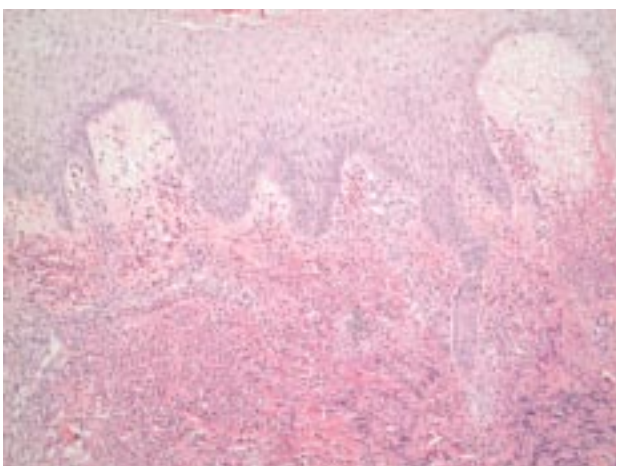

Figure 2. Biopsy results showing papillary dermal edema with an infiltrate of neutrophils (H&E, original magnification ×10).

Comment

Sweet syndrome is diagnosed if the patient satisfies both of the major criteria: the abrupt onset of painful

erythematous plaques or nodules, and histopathologic evidence of a dense neutrophilic infiltrate without leukocytoclastic vasculitis. The patient also must have 2 of the following 4 minor clinical findings: pyrexia (temperature >38°C); a preceding upper respiratory or gastrointestinal tract infection, or an associated hematologic or visceral malignancy; excellent clinical response to corticosteroids; or laboratory values showing an elevated erythrocyte sedimentation rate (>20 mm/h), elevated C-reactive protein (>3.1 mg/L), leukocytosis (>8000 cells/μL), or more than 70% neutrophil bands.[3,4]

The pathogenesis of Sweet syndrome remains undefined. Similar mechanisms that attract neutrophils to the skin may cause them to concentrate in extracutaneous sites. Various mechanisms have been proposed, including a hypersensitivity reaction to either bacterial, viral, or tumor antigens, leading to cytokine production that stimulates neutrophil activation and infiltration.[5] The theory of a hypersensitivity reaction is supported by the rapid response to corticosteroids. An infectious etiology, a T cell–mediated immune response, certain HLA haplotypes, and antibodies to neutrophilic cytoplasmic antigens have been postulated in the pathogenesis of Sweet syndrome.[1] Additional research is needed to identify mechanisms that lead to the accumulation of neutrophils in various organ systems.

Extracutaneous Manifestations of Sweet Syndrome

Organ System	Extracutaneous Manifestations
Bone	Acute sterile arthritis, arthralgia, sterile osteomyelitis (chronic recurrent multifocal osteomyelitis)
Central nervous system	Acute benign encephalitis, aseptic meningitis, cerebrospinal fluid abnormalities, computerized axial tomography abnormalities, electroencephalogram abnormalities, encephalitis, Guillain-Barré syndrome, idiopathic hypertrophic cranial pachymeningitis, idiopathic progressive bilateral sensorineural hearing loss, neurologic symptoms, neuro-Sweet disease, paresis of central origin, polyneuropathy
Eyes	Blepharitis, conjunctival erythematous lesions with tissue biopsy showing neutrophilic inflammation, conjunctivitis, episcleritis, glaucoma, iritis, limbal nodules, periocular swelling, peripheral ulcerative keratitis, retinal vasculitis, scleritis, uveitis
Kidney	Mesangiocapillary glomerulonephritis, urinalysis abnormalities (hematuria and proteinuria)
Intestines	Neutrophilic ileal infiltrate, pancolitis (culture negative)
Liver	Hepatic serum enzyme abnormalities, hepatomegaly
Heart	Aortic stenosis (segmental), aortitis (neutrophilic and segmental), cardiomegaly, coronary artery occlusion, heart failure, myocardial infiltration by neutrophils
Lungs	Bronchi with neutrophilic inflammation, pleural effusion showing abundant neutrophils, progressive pharyngeal mucosal infiltration and edema resulting in upper airway obstruction, and chest roentgenogram abnormalities
Mouth	Aphthouslike superficial lesions (buccal mucosa, tongue), bullae and vesicles (hemorrhagic: labial and gingival mucosa), gingival hyperplasia, necrotizing ulcerative periodontitis
Muscles	Myalgia (in up to half of the patients with idiopathic Sweet syndrome), myositis (neutrophilic), tendinitis, tenosynovitis
Spleen	Splenomegaly

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To our knowledge, our patient is the first case of an aseptic splenic abscess associated with a bullous presentation of Sweet syndrome. Bullous lesions in Sweet syndrome are quite uncommon. Oftentimes, intense edema of the papillary dermis may mimic early blister formation[5]; however, bullae were evident in our patient both clinically and histologically. It is important to note that atypical skin lesions, such as bullae, particularly are associated with an underlying malignancy.[2] Most paraneoplastic cases are associated with a hematologic malignancy, especially acute myelogenous leukemia; however, solid tumors also have been reported.[3] Cutaneous lesions of Sweet syndrome may present before, during, or after the discovery of a malignancy[1]; therefore, it is important to follow any patient with Sweet syndrome, especially a bullous presentation, for the development of malignancy.

Extracutaneous involvement in Sweet syndrome is not uncommon. A host of organ systems can be affected by the neutrophilic infiltrate (Table).[6] In our patient, a splenic abscess was discovered shortly after the onset of cutaneous findings. Aspiration specimens from the abscess revealed purulent discharge; however, infectious etiologies were ruled out with multiple bacterial and fungal cultures. The rapid resolution of the abscess with corticosteroids additionally favored a diagnosis of Sweet syndrome–associated aseptic splenic abscess. In a review of the literature from 1991 to 2000, Vignon-Pennamen[7] reported that aseptic neutrophilic abscesses have occurred in the lymph nodes, spleen, pancreas, liver, and digestive tract of patients with Sweet syndrome and other neutrophilic dermatoses. Both the cutaneous and extracutaneous manifestations promptly resolved with treatment.[7]

Conclusion

Few cases of bullous Sweet syndrome have been reported in the literature. Perhaps atypical lesions, such as bullae, that occur in Sweet syndrome may prove to be more closely associated with extracutaneous involvement than the classic cutaneous findings. Patients with bullous Sweet syndrome should be closely monitored for malignancy as well as extracutaneous involvement. Conversely, when the dermatologist is asked to consult a systemically ill patient with fever, rash, and visceral lesions, Sweet syndrome should enter into the differential diagnosis.

REFERENCES

1. Cohen PR. Sweet's syndrome—a comprehensive review of an acute febrile neutrophilic dermatosis. *Orphanet J Rare Dis*. 2007;2:34.
2. Fett DL, Gibson LE, Su WP. Sweet's syndrome: systemic signs and symptoms and associated disorders. *Mayo Clin Proc*. 1995;70:234-240.
3. von den Driesch P. Sweet's syndrome (acute febrile neutrophilic dermatosis). *J Am Acad Dermatol*. 1994;31:535-556.
4. Walker DC, Cohen PR. Trimethoprim-sulfamethoxazole–associated acute febrile neutrophilic dermatosis: case report and review of drug-induced Sweet's syndrome. *J Am Acad Dermatol*. 1996;34(5, pt 2):918-923.
5. Voelter-Mahlknecht S, Bauer J, Metzler G, et al. Bullous variant of Sweet's syndrome. *Int J Dermatol*. 2005;44:946-947.
6. Cohen PR, Kurzrock R. Sweet's syndrome revisited: a review of disease concepts. *Int J Dermatol*. 2003;42:761-778.
7. Vignon-Pennamen MD. The extracutaneous involvement in the neutrophilic dermatoses. *Clin Dermatol*. 2000;18:339-347.