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Case Report

Sweet Syndrome Accompanying Inflammatory Bowel Disease in a Child

Anahita Sanaei Dashti[1],
Esmaeel Sadeghi[2],
Perikala Vijayananda Kumar[3]

Abstract

Acute neutrophilic dermatosis, first described in 1964 by Robert Douglas Sweet, is characterized by sudden onset fever, neutrophilic leukocytosis, and well demarcated erythematous papules, nodules, and plaques with dense neutrophilic infiltrates on histologic evaluation.

Here is a report of a 7-year-old girl who presented with high grade fever, and discrete erythematous papular skin eruptions, which gradually increased in number and involved the face, trunk, extremities, palms, soles, hard palate, and palatal tonsils. The skin eruptions evolved to pustules and after coalescing caused large crusted plaques, with mild tenderness but without any pruritus. White blood cells were 36900/ml with 92% neutrophils. Skin biopsy test was compatible with acute febrile neutrophilic dermatosis, so prednisolone (1 mg/kg/day) was started that led to a rapid defervescence and significant improvement of dermatosis. After a few days, the patient presented with fever and arthritis of right elbow, both ankles, and wrists, so she was re-admitted. She also developed bloody diarrhea during the hospital stay. Colonoscopy and intestinal biopsy were performed, which confirmed the diagnosis of ulcerative colitis. Prednisolone, sulfasalazine, and naproxen were prescribed. The fever and diarrhea stopped after a few days and joint swelling decreased. She was discharged 2 weeks after the admission with a rather good general condition. Inflammatory bowel disease can be one of the several conditions accompanying sweet syndrome.

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Keywords ● Sweet syndrome ● acute neutrophilic dermatosis ● inflammatory bowel disease

[1]Pediatric Infection Research Center (PIRC),
Mofid Children Hospital,
Shaheed Beheshti University of Medical Sciences,
Tehran, Iran.
[2]Pediatric Infectious Diseases,
Nemazee Hospital,
[3]Department of Pathologist,
Shaheed Faghihi Hospital,
Shiraz University of Medical Sciences,
Shiraz, Iran.

Correspondence:
Anahita Sanaei Dashti MD,
Pediatric Infection Research Center (PIRC), Mofid Children Hospital,
Shaheed Beheshti University of Medical Sciences, Tehran, Iran.
Tel/Fax: +98 21 22924490
Email: anahita_sam@yahoo.com
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Introduction

Acute neutrophilic dermatosis, first described in 1964 by Robert Douglas Sweet,[1] is characterized by sudden onset fever, neutrophilic leukocytosis, and well demarcated erythematous papules, nodules and plaques with dense neutrophilic infiltrates on histologic evaluation. The individual lesions are often pseudovesicular or pseudopustular but may be frankly pustular, bullous or ulcerative.[1]

The condition is more common in female patients and the mean age of its onset is the mid fifties to late fifties, although case reports in neonates as young as 10–day-old have been published.[2] Here we report a child with classic features of Sweet syndrome who had accompanying features of inflammatory bowel disease.

Case Presentation

The patient was a 7-year-old girl from south of Iran (Bandar-e-Lengeh city) who was admitted three times in the pediatric ward of Nemazee Hospital.

In the first admission, she presented with productive cough, fever, and respiratory distress starting from a few days before admission. She underwent bronchoscopy, which revealed the presence of thick secretions and inflammation in the trachea. Gram stain and culture of the secretions yielded no organism. She received clindamycin and discharged after a few days. Laboratory data were: erythrocyte sedimentation rate (ESR)=78mm/hour, C-reactive protein (CRP)=192mg/L, white blood cells (WBC) count=18200/μL, neutrophils=74%, and lymphocytes=26%.

Twelve days after discharge, she was re-admitted with high grade fever, and discrete erythematous papular skin eruptions, starting from 7 days before admission. Papular lesions gradually increased in number and involved the face, anterior aspect of trunk, upper and lower extremities, palms, soles, and also the hard palate and palatal tonsils. Most of papules rapidly evolved to pustules and after coalescing, caused large crusted plaques over the face and extremities, with mild tenderness but without any pruritus (figure 1).

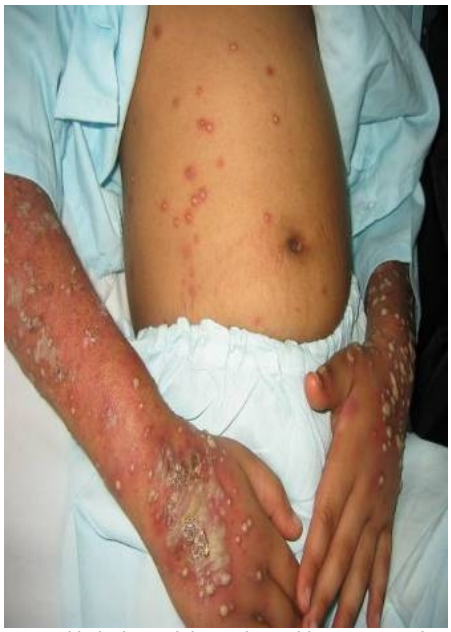

Figure 1: Skin lesions of the patient with Sweet syndrome.

Despite the high grade fever, she was not toxic and had no complaint regarding central nervous system, joints, respiratory or cardiovascular system.

Laboratory data on re-admission were: WBC: 36900/μL (neutrophils 92%, lymphocytes 5%, monocytes 3%), ESR:117 → 192mm/hour, and CRP:192 → 48mg/L.

Serum immunoglobulins levels and nitroblue tetrazolium (NBT) test showed normal range values and HIV antibody was negative.

Chest radiography, abdominal sonography, echocardiography, and bone marrow examination were all normal.

Throat secretions and blood cultures were repeated three times with negative results. Gram staining and culture of the skin lesions were repeated for six times, which revealed no organism. Tzanck smears of the pustules were also negative.

Because of the high grade fever and widespread skin eruptions, we prescribed parenteral vancomycin, ceftazidime and topical mupirocin without any benefit. Eventually a skin biopsy was performed that showed ulceration, dermal edema, and perivascular neutrophilic infiltration. There was mild lymphocytic and histiocytic cell infiltration in the dermis. However there was no true vasculitis (figure 2). The histological diagnosis was compatible with acute febrile neutrophilic dermatosis. Prednisolone (1 mg/kg/day) was started that led to rapid defervescence and significant improvement of dermatosis in a few days, without any new eruption. She was discharged in a satisfactory condition.

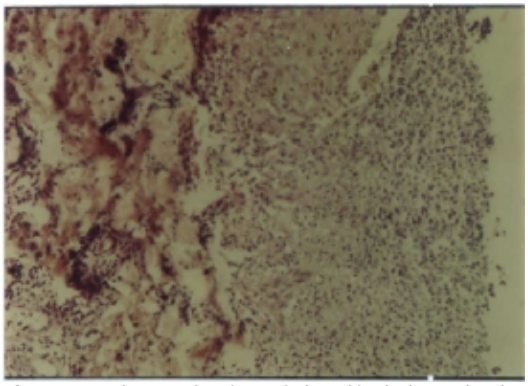

Figure 2: Microscopic view of the skin lesions showing perivascular infiltration of polymorphonuclear cells. (H& E staining×10).

Ten days after discharging from the second admission, she presented with fever and arthritis of right elbow, both ankles, and both wrists and was admitted again. She also developed bloody diarrhea during the hospital stay. Colonoscopy and intestinal biopsy were performed, which confirmed the diagnosis of ulcerative colitis.

Laboratory data on the third admission were: ESR=72 mm/hour, CRP=192mg/L, and WBC=18400/µL (neutrophil 75%, lymphocytes 17%, monocytes 8%). ANA, anti-dsDNA, anti-neutrophil cytoplasmic antibodies (ANCA), and anticardiolipin antibodies (ACLA) were all negative. Joint tap evaluation showed sterile fluid with normal profile. Joint sonography showed fluid in joints plus synovial thickening.

Prednisolone, sulfasalazine and naproxen were started orally in standard doses (1 mg/kg/day, 10mg/kg/day, and 50 mg/kg/day respectively). The fever and diarrhea stopped after a few days and joint swelling decreased. She was discharged 2 weeks after the admission with a rather good general condition. She has been also visited in a monthly period in the outpatient clinic. Her general condition was favorable after 12 months follow-up. In the last follow-up visit ESR was 26mm/hour and CRP was negative.

Table 1 depicts diseases that are reported to be associated with acute febrile neutrophilic dermatosis.

Discussion

The etiology of Sweet syndrome is unknown. It is presumed to be a type of hypersensitivity reaction which leads to stimulation of a cascade of cytokines that precipitate neutrophil activation and infiltration. T-cell mediated immune response has also been postulated.[3-7]

Many patients present with a febrile upper respiratory tract infection, tonsillitis, or flulike syndrome, 1-3 weeks before the onset of skin lesions. The most common infection in such patients is upper respiratory tract infection.[8] The present patient also had an episode of upper respiratory tract infection and tracheitis 3 weeks before the onset of skin lesions. Hazen and Cohen separately reported cases of Sweet syndrome after URI.[9,10]

Sweet syndrome has been associated with a variety of conditions such as malignancies, rheumatologic disorders, glycogen storage disease, congenital dyserythropoiesis, Fanconi anemia, erythema multiform, drugs reactions, and inflammatory bowel disease.[11,12] Our patient developed inflammatory bowel disease a few weeks after skin lesions, and responded dramatically to sulfasalazine.

Sweet syndrome accompanied by inflammatory bowel disease has been reported in the literature.[8] Azeka and co-workers reported ten patients with Sweet syndrome. Of them one patient had ulcerative colitis.[13]

Two major and six minor criteria for diagnosis of sweet syndrome have been proposed. A definitive diagnosis requires the presence of both major and at least two minor criteria. The major criteria are abrupt onset of tender erythematous or violaceous plaques and predominantly neutrophilic infiltrates in the dermis without leukocytoclastic vasculitis. The minor criteria include fever, arthralgia, conjunctivitis, and underlying conditions such as malignancy, leukocytosis, and lack of response to antibiotic

Table 1: Various diseases that are associated with Sweet syndrome

Malignancy	**Hematologic malignancies:** • myeloid chronic myelogenous leukemia, Myelodysplasia, acute myeloid leukemia (AML) • nonmyeloid hematologic malignancies: Hodgkin disease, cutaneous T-cell lymphoma, non-Hodgkin lymphoma, hairy cell leukemia, multiple myeloma **Non-hematologic malignancies:** genitourinary, breast, and gastrointestinal cancers, osteosarcoma, oral cancer/tonsil cancer, ovarian cancer, thyroid cancer, lung cancer, pheochromocytoma, and rectal carcinoma
Immunologic Diseases	Rheumatoid arthritis Systemic lupus erythematosus Dermatomyositis Sjögren Syndrome Behçet disease Non-specific connective disease Inflammatory bowel disease
Infections	Upper respiratory tract infections: Streptococcal pneumonia is the most commonly described infection. Typhus, toxoplasmosis, Tonsillitis, hepatitis, vulvovaginitis, Salmonella, Staphylococcus species, Yersinia enterocolitica, Entamoeba coli, Helicobacter pylori, Borrelia burgdorferi, Tuberculous mycobacteria, Mycobacterium chelonae, coccidiomycosis, HIV, cytomegalovirus, hepatitis A, hepatitis B.
Drug-related	Trimethoprim-sulfamethoxazole, trans retinoic acid, minocycline, G-CSF, lithium, furosemide, hydralazine, carbamazepine, oral contraceptives, the Mirena intrauterine device, COX- inhibitors, azathioprine, doxycycline, diazepam, diclofenac, nitrofurantoin, propylthiouracil, lenalidomide, bortezomib, abacavir, imatinib and vaccinations (eg, for bacille Calmette-Guérin, smallpox, streptococcus pneumonia, influenza).
Miscellaneous	Accompanying spinal surgery, or pregnancy sarcoidosis, erythema nodosum, relapsing polychondritis, or thyroiditis (Grave's disease and Hashimoto's thyroiditis). polycythemia vera, erythema nodosum .
Idiopathic	Without no apparent underlying condition

treatment and response to corticosteroid therapy.[7,11] Our patient had two major and four minor criteria. Fever, leukocytosis, and lack of response to antibiotic developed in the beginning and arthralgia was late-onset manifestation, which confirmed the diagnosis of acute neutrophilic dermatosis.

Sweet syndrome may have diverse clinical manifestations including cutaneous and extracutaneous ones; gastrointestinal, pulmonary, cardiovascular, nephrologic, ophthalmologic, musculoskeletal and central nervous system.

Musculoskeletal manifestations are among the frequent signs or symptoms of Sweet's syndrome. Up to 62% of the patients have musculoskeletal manifestations including myalgia, arthralgia, and arthritis.[14] Nolla and colleagues presented three patients with Sweet syndrome and arthritis and found that arthritis was predominantly asymmetric, not deforming, and usually involved large joints. Joint manifestations might occur before or after the dermatosis.[15] They concluded that Sweet syndrome should be considered in the differential diagnoses of any patient with erythematous skin lesions and arthritis. Also there are other reports regarding joint manifestations of Sweet syndrome in the literature.[16,17] Our patient developed multiple joint arthritis and arthralgia with a slow response to steroids, which ultimately recovered completely.

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Conflict of Interest: None declared

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