Acute respiratory distress syndrome complicating generalized pustular psoriasis (psoriasis-associated aseptic pneumonitis)

Nicolas Kluger, MD, Didier Bessis, MD, Bernard Guillot, MD, and Céline Girard, MD
Montpellier, France

Generalized pustular and/or erythrodermic psoriasis may have severe or even lethal complications. A peculiar noninfectious acute respiratory distress syndrome (so-called "sterile pneumonitis") has been described in generalized pustular psoriasis and/or erythrodermic psoriasis. We report a new case in a 14-year-old girl with a long history of pustular psoriasis and review the published work on this complication. The girl developed sterile pneumonitis during a disease flare-up, and high-dose corticosteroid therapy was quickly initiated. Within a few days, her clinical and radiological status was dramatically improved. The pathogenesis of aseptic pneumonitis is unknown, but various proinflammatory cytokines have been implicated, especially tumor necrosis factor-alpha, which could play a role in the recruitment of leukocytes to the lung. This complication has rarely been reported but should be more widely known as the differential diagnoses include congestive heart failure, acute lung infection related or unrelated to immunosuppressive therapy, and drug hypersensitivity reaction. Early recognition would avoid delays in the correct management of this potentially lethal complication, which requires high-dose systemic corticosteroid therapy. (J Am Acad Dermatol 2011;64:1154-8.)

Key words: acute respiratory distress syndrome; lung; pneumopathy; psoriasis.

Psoriasis is most often a chronic and benign condition. However, on rare occasions it may follow a more severe course,[1] with generalized pustular and/or erythrodermic psoriasis giving rise to severe or even lethal complications.[1] Noninfectious acute respiratory distress syndrome (termed "sterile pneumonitis" by Landry and Muller[2] in 1972) in generalized pustular psoriasis and/or erythrodermic psoriasis is an exceptional complication that has rarely been reported in the literature.[2-10] Dermatologists should be aware of the condition, however, as the differential diagnoses include congestive heart failure, acute lung infection related or unrelated to immunosuppressive therapy, and drug hypersensitivity reaction. Early diagnosis would ensure that this potentially lethal complication is correctly managed, notably with high-dose systemic corticosteroid therapy. We report a new case in a 14-year-old girl with a long history of pustular psoriasis who developed sterile pneumonitis during a flare-up of the disease.

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Reprint requests: Céline Girard, MD, CHU de Montpellier, 80 avenue Augustin Fliche, FR-34295 Montpellier Cedex 5, France. E-mail: celine-girard@chu-montpellier.fr.
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CASE REPORT

A 14-year-old girl was admitted with an exacerbation of pustular psoriasis and erythroderma in June 2009. She had been diagnosed with pustular psoriasis at the age of 18 months. Her history disclosed recurrent severe attacks of generalized pustular psoriasis, usually on a twice-a-year basis; the attacks were often triggered by oropharyngeal and/or ear infections. Despite her young age and the risks related to acitretin, the patient had been treated for psoriasis flare-ups by courses of oral acitretin, 10 to 30 mg daily, for the preceding 10 years. Her parents had provided informed consent, given the unusual severity of the attacks. In April 2009, the disease flared again despite the use of acitretin 20 mg daily, which prompted a course of oral methotrexate, 10 mg weekly. At this time, the patient had plaque psoriasis of the scalp, trunk, upper and lower limbs, without pustulation. Laboratory findings were unremarkable. Within a month, widespread pustules on a background of erythema had developed. She was hospitalized in June 2009 in the pediatric unit for hyperthermia over 39°C and painful extensive pustular plaques. Upon admission, the laboratory findings showed mild

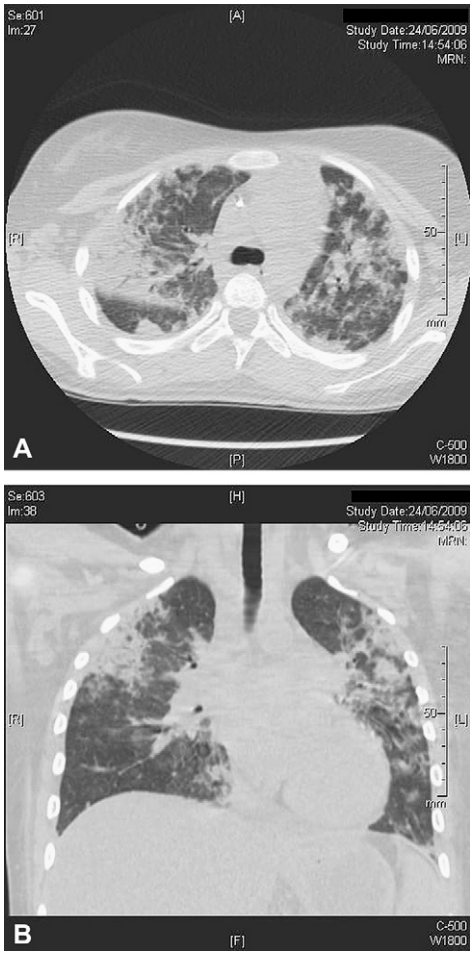

Fig 1. **A** and **B**, Computed tomographic scan of the chest shows bilateral interstitial infiltrate and alveolar findings. Note predominance of infiltrate in upper lobes and right-sided pleurisy.

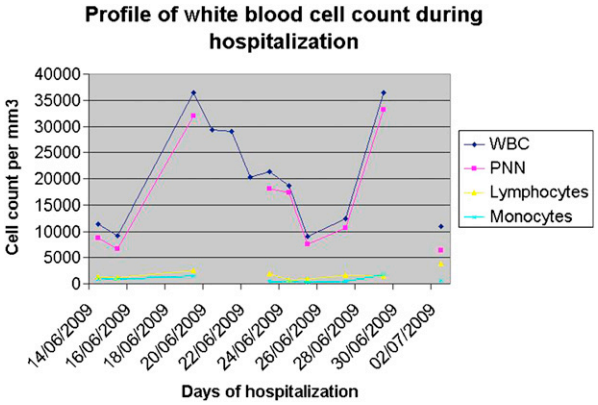

Fig 2. Laboratory findings and evolution of leukocytosis during hospitalization. Note that the second peak in neutrophil leukocytosis is related to intravenous pulsed high-dose corticosteroid. *WBC*, White blood cells; *PNN*, polymorphonuclear leukocytes.

neutrophil leukocytosis (8,744/mm^3, normal range (N) < 8,000/mm^3) with elevated C-reactive protein (CRP) (83 mg/L, N < 5 mg/L). Renal function as well as serum albumin and calcium levels were normal.

Infection of the psoriatic lesions was suspected because of the fever, inflammatory syndrome, and leukocytosis. Intravenous oxacillin was initiated and was then rapidly changed to cefotaxime and vancomycin chlorhydrate, as the neutrophilic leukocytosis reached a peak of 32,000/mm^3 at day 5, and CRP was 237 mg/L and procalcitonin was 73.5 ng/mL (N < 0.5 ng/L) at day 6. Meanwhile, methotrexate had been stopped a few days before admission, and acitretin had been reintroduced at a dose of 25 mg daily. The skin biopsy specimen of a pustule showed subcorneal pustules, spongiosis of the epidermis, and pericapillary lymphocytic infiltration, which supported the diagnosis of pustular psoriasis. At day 9, painful cutaneous erythroderma prompted the patient's transfer to the burn intensive care unit. Within 48 hours (day 11), her respiratory function deteriorated markedly with polypnea and arterial hypoxia in a context of apyrexia. Chest x- ray and computed tomographic (CT) scan (Fig 1, *A* and *B*) showed bilateral alveolar condensation of the upper lobes and mild right-sided pleurisy, as well as enlarged axillary and mediastinal lymph nodes. No underlying lung fibrosis was noted. Neutrophil leukocytosis, CRP, and procalcitonin had decreased to 17,400/mm^3, 121 mg/L, and 3.73 ng/mL, respectively (Fig 2). Skin, blood, and pharynx cultures were all negative for bacteria or virus. Sputum culture was not performed as the patient did not have a productive cough. For these reasons, bilateral infectious interstitial pneumonitis was not considered as the first diagnosis. On the basis of the data at hand, a diagnosis of sterile pneumonitis directly related to the generalized pustular psoriasis was suspected. At day 11, intravenous pulsed corticosteroid therapy (500 mg/d for 3 days) was initiated with a combination of antibiotics (piperacillin-tazobactam and ciprofloxacin). Noninvasive ventilation with continuous positive airway pressure was necessary. Acitretin was withdrawn at day 12, given an exceptional case report of pulmonary hypersensitivity, although this was considered unlikely.[11] Boluses were followed by oral corticosteroid (prednisone 1 mg/kg daily, 50 mg daily). Within 72 hours, at day 13, respiratory symptoms improved and noninvasive ventilation could be stopped. Removal of the central venous catheter was followed by asystolic cardiac arrest, which necessitated resuscitation. Air embolism was assumed to be the cause of the cardiac arrest. Chest CT scan showed the complete disappearance of alveolar condensation. The patient was eventually transferred to the Department of Dermatology and then discharged