

# DERMATOPATHOLOGY UNIT

## UPP | Department of Dermatology

### UPMC Dermatopathology "Case of the Month" Presentations

#### UPP - Department of Dermatology, Dermatopathology Unit

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*Angela S. Casey MD, Joseph C. English III MD, John McSorley MD, Muammar Arida MD, Hina Sheikh MD, Thaddeus Mully MD, Drazen M. Jukic MD, PhD*

### APRIL 2006 CASES OF THE MONTH

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## CLINICAL FINDINGS

### CASE ONE

#### Clinical History

SG is a 38-year-old white female with a history of mild to moderate plaque-type psoriasis, which had been treated off and on over the years with topical steroids. She complained of a diffuse rash involving approximately 95% of her body surface area, which had been present for several months and had recently been treated with a 2-week prednisone taper. Her review of systems was significant for fever, chills, decreased po intake, and general malaise.

#### Physical Exam

When she presented to our clinic, SG had generalized erythroderma with severe and extensive scaling, palpable lymph nodes in the cervical, axillary, and inguinal areas, and tachycardia. She also had diffuse thinning of her hair. A punch biopsy was obtained, and the patient was started on a prednisone taper and admitted into the hospital.

#### Histopathology

The skin biopsy showed regular psoriasiform hyperplasia of epidermis with dermatitis coupled

with large microabscesses of Monroe, spongiform pustules of Kogoj and squirting papillae with associated bleeding in the thinned suprapapillary plate. There was some spongiosis and a few Civatte bodies. A second biopsy was performed when the patient developed a new pustular erythematous plaque on her chest, and showed similar findings to the first biopsy but with fewer pustules and more spongiosis.

## **Hospital Course**

The patient was sent to the ER and blood cultures were obtained which grew out methicillin-resistant staphylococcus aureus; the patient was started on a 4-week course of Vancomycin. After pathology results were reviewed, the patient was continued on a prednisone taper, and appropriate labs were obtained, and the patient was started on Cyclosporine 100 mg po bid along with topical steroids and selenium sulfide wash. The patient continued to improve dramatically until she left AMA and had a flare, as she was no longer taking her medications. After returning to our hospital, she was restarted on her prednisone taper, cyclosporine, and Soriatane 25 mg po qd was initiated. Vancomycin was also restarted. The patient again had significant improvement and was discharged in stable condition after a couple of weeks.

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## **CASE 2**

### **Clinical History**

MW is a 22-year-old white male with a history of Ewing's sarcoma treated with radiation and secondary acute myelogenous leukemia treated with chemotherapy and allogenic stem cell transplant with subsequent graft-versus-host disease and infections. He was treated with vancomycin for a staphylococcus aureus infection and subsequently developed a rash, which was mildly uncomfortable according to the patient's mother. The rash was treated with topical steroids and the patient had some relief of his symptoms.

### **Physical Exam**

On exam, MW is a somnolent young man who is very ill appearing and has a cushingoid appearance. Physical exam was remarkable for the presence of numerous erythematous 1 to 7 cm scaling plaques, some of which contained 1-2 mm pustules scattered diffusely over all body surface areas, sparing the palms, soles, face, and mucous membranes. A punch biopsy was performed.

### **Histopathology**

Examination of this specimen reveals a perivascular mixed cell infiltrate of lymphocytes, neutrophils, and a few eosinophils. Lymphocytes and a few neutrophils extend to the epidermis where there is slight psoriasiform hyperplasia, spongiosis and an intraepidermal collection of neutrophils. Rare necrotic keratinocytes are noted at the dermoepidermal junction. A PASD stain is negative for fungi. Hospital Course The patient was started on topical desonide, which produced mild improvement of his symptoms. Subsequently, he was taken off of Vancomycin, which was thought to be the cause of his cutaneous symptoms, and his skin findings improved significantly.

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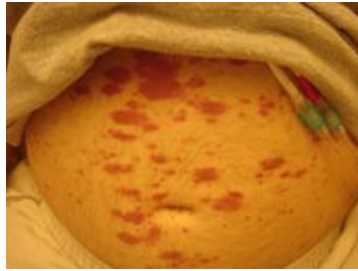
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### Figures & Images

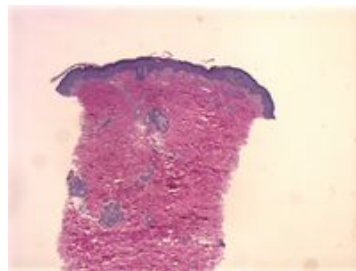
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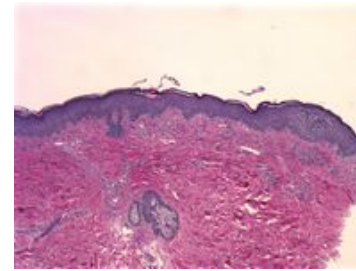
AGEP - arm



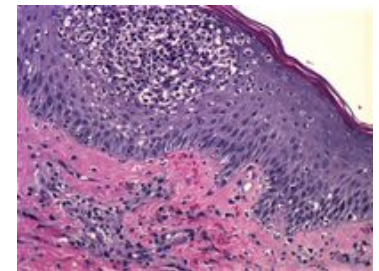
AGEP -abdomen



AGEP -histo 1



AGEP -histo 2



AGEP -histo 2



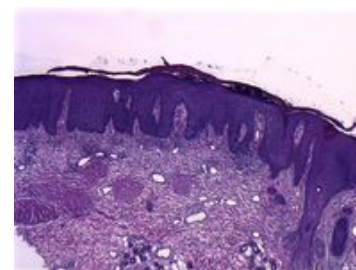
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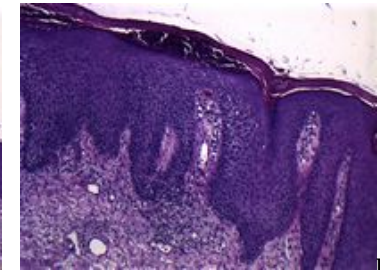
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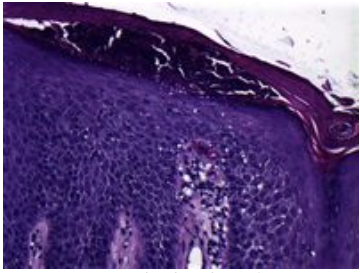


psoriasis histo 1

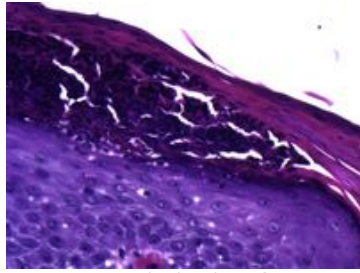


histo 2

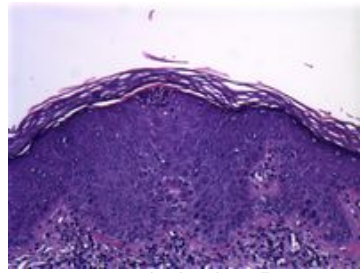
psoriasis



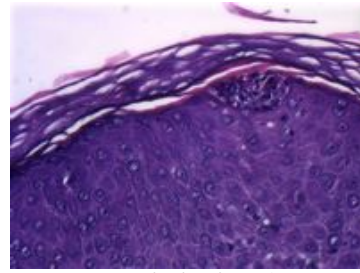
psoriasis histo 3



psoriasis histo 4



psoriasis histo 5



psoriasis histo 6

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## DISCUSSION & DIAGNOSIS

### Diagnosis

***CASE 1 : Generalized pustular psoriasis presenting as diffuse erythroderma***

***CASE 2 : Acute generalized exanthematous pustulosis***

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### Discussion

Generalized pustular psoriasis (GPP) and acute generalized exanthematous pustulosis (AGEP) can have similar clinical findings ranging from scattered scaly and/or pustular erythematous plaques to generalized erythroderma. While GPP is seen most commonly following infection or corticosteroid use, AGEP is usually triggered by certain medications. The von Zumbusch type of presentation is the most common variant of pustular psoriasis and presents with an explosive onset and a mortality as high as 30%. GPP typically presents weeks to months after infection or exposure to corticosteroids while AGEP appears 1-2 days following the causative medication.

Compared to psoriasis vulgaris, GPP generally has much more prominent skin change and

burning sensation and also commonly presents with subungual and mucosal involvement with neutrophils (Iizuka). It is postulated that the excessive wound healing that takes place in pustular psoriasis could lead to an acute inflammatory reaction causing systemic manifestations such as fever, chills, and rigors (Iizuka). Complications of GPP include infection, hypoproteinemia, and hypocalcemia (Iizuka). GPP may be seen in the setting of patients with a previous history of psoriasis or those with no previous history of psoriasis. GPP in patients with a history of psoriasis occurs more frequently after a history of corticosteroids as was the case in our patient (Iizuka) while it is most commonly triggered by infections (staph and strep) in patients with no previous history of psoriasis. The most common HLA types associated with GPP include A1, B37, and DRw10 (Iizuka).

The most commonly used treatments for GPP include acitretin (Soriatane) (Lee and Koo), acitretin in combination with cyclosporine (Lee and Koo), Prednisone tapers, and topical steroids.

AGEP is a generalized pustular eruption that has been reported in association with a number of drugs, most commonly beta-lactam, cephalosporin, and macrolide antibiotics (Mengesha and Bennett). Numerous other medications have been reported to cause AGEP, including, but not limited to carbamazepine, furosemide, acetaminophen, allopurinol, itraconazole, quinidine, diltiazem, trimethoprim-sulfamethoxazole, gentamicin, vancomycin, doxycycline, nystatin, erythromycin, terbinafine, chemotherapy drugs, and thalidomide (Weedon). Given that our patient had not been on any beta-lactam or macrolide antibiotics for some time prior to the eruption, Vancomycin was the most likely cause of his symptoms. Latency periods between drug intake and AGEP symptoms are usually short; symptoms typically occur 1-2 days after drug intake. Typically, previous sensitization is assumed. In contrast to AGEP, the development of pustular psoriasis typically occurs over weeks from exposure to infection or corticosteroids (Roujeau; Gupta)

It is interesting to note that AGEP manifests as a primarily neutrophilic inflammatory response to a drug stimulus as opposed to the more common eosinophilic response of drug reactions (Britschgi). However, the presence of eosinophils is typically noted in AGEP as discussed below. A drug-specific CD4 and CD8 immune reaction results in preferential CXCL8 production by T cells, thereby inciting a PMN-mediated inflammatory response by massive release of inflammatory cytokines/chemokines and by drug-specific cytotoxicity (Britschgi).

Histopathologically, GPP demonstrates the presence of intraepidermal pustules at various stages of development; cyclic transepidermal migration of neutrophils result in Kogoj's spongiform pustules within the epidermis and Munroe's microabscesses just below the stratum corneum (Terui). Kogoj's spongiform pustule is regarded as a pathognomonic finding in pustular psoriasis, however, spongiform pustules may also be seen in AGEP (Iizuka). Early in the course of GPP, the epidermis is only slightly acanthotic, while later in the disease course, psoriasiform hyperplasia is seen. Neutrophils migrate from the dilated papillary dermal vessels and aggregate under the stratum corneum and upper malpighian layer. Later, these are replaced by scale crusts with collections of neutrophils between parakeratotic layers. AGEP

also shows the presence of superficial intraepidermal pustules with mild spongiform pustulation at the margins, but the spongiform pustulation is not as pronounced as that seen in pustular psoriasis (Weedon). There is some exocytosis of neutrophils and scattered apoptotic keratinocytes. The papillary dermis is edematous with a heavy mixed infiltrate with eosinophils; eosinophils are rarely seen in pustular psoriasis (Weedon), helping to distinguish these two entities.

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