

Diffuse Pustular Eruption Following Computed Tomography

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A 31-year-old man presented with a rapidly progressive, burning rash of 1 day's duration, along with malaise, nausea, and dizziness. At the time of presentation, he was hemodynamically stable and afebrile. Laboratory analysis revealed mild leukocytosis with neutrophilia. A complete metabolic panel was within normal limits. He had no chronic medical conditions and was taking no medications or supplements. One day prior to onset of the rash, he underwent contrast-enhanced (iopamidol) computed tomography of the abdomen. Physical examination revealed large edematous plaques on the face, neck, and trunk (top) that were studded with numerous pinpoint pustules (bottom). He also had subtle facial edema. There was relative sparing of the flexural sites and no involvement of the palms, soles, or mucous membranes. A shave biopsy was obtained from a pustular area on the neck.

WHAT'S THE DIAGNOSIS?

- acute generalized exanthematous pustulosis
- drug-induced hypersensitivity syndrome
- exfoliative erythroderma
- generalized pustular psoriasis
- subcorneal pustular dermatosis (Sneddon-Wilkinson disease)

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The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

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THE DIAGNOSIS:

Acute Generalized Exanthematous Pustulosis

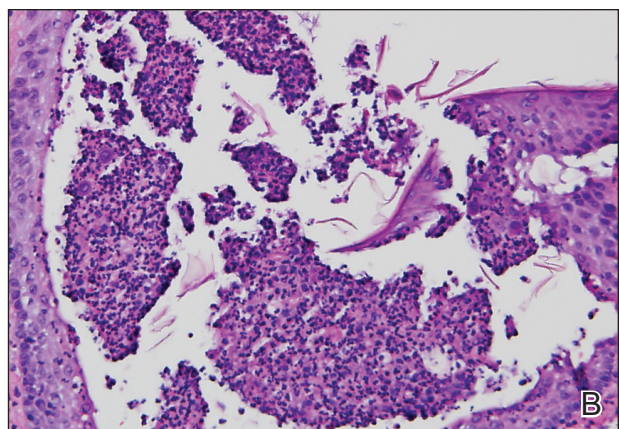
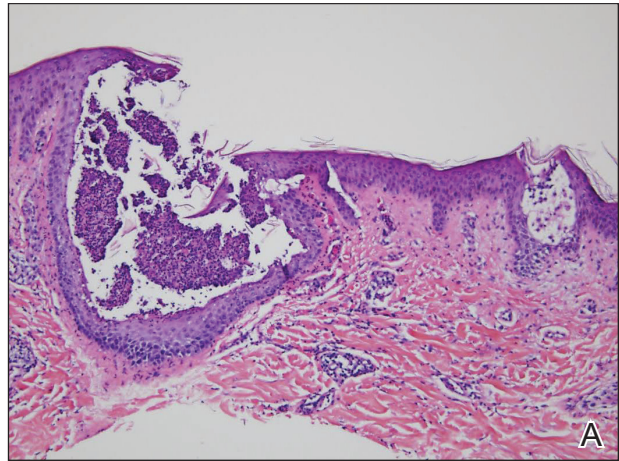
Histopathology demonstrated spongiosis with subcorneal pustules and an overlying basket-weave pattern stratum corneum. There was mild papillary dermal edema with scattered dermal neutrophils and rare eosinophils (Figure). The patient's clinical presentation and histopathology were consistent with acute generalized exanthematous pustulosis (AGEP). The inciting agent in this case was the contrast medium iopamidol. The patient was treated with a short course of prednisone, triamcinolone cream, diphenhydramine, and acetaminophen. Within 1 week the pustules and erythema had resolved.

Acute generalized exanthematous pustulosis is an uncommon T cell-mediated cutaneous reaction characterized by widespread progressive erythema with numerous nonfollicular pinpoint pustules. The patient usually is well appearing; however, he/she often will have concurrent fever and facial edema. Mucous membranes rarely are involved. Laboratory results typically are notable only for leukocytosis with neutrophilia.

The pustular eruption typically occurs within 1 to 2 days after exposure to an inciting agent¹; however, this latent period can range from 1 hour to nearly 4 weeks in some studies.² Systemic medications are the cause in approximately 90% of cases, with antibiotics being the most common category. Frequently implicated medications include β -lactams, macrolides, quinolones, sulfonamides, proton pump inhibitors, hydroxychloroquine, terbinafine, nonsteroidal anti-inflammatory drugs, diltiazem, ketoconazole, and fluconazole. Acute generalized exanthematous pustulosis also has been rarely reported following contact with mercury, viral and bacterial infections, and spider bites.³

Iodinated contrast agents have long been known to cause immediate and delayed adverse cutaneous reactions. However, one consensus study indicated that these reactions occur in only 0.05% to 0.10% of patients.⁴ Although rare, iodinated contrast media (eg, iopamidol, iohexol, ioversol, iodixanol, iomeprol, iobitridol, iopromide) have been reported as a cause of AGEP. A PubMed search of articles indexed for MEDLINE using the terms *acute generalized exanthematous pustulosis*, *contrast*, *iodine*, and *iodinated* revealed 10 adult cases reported in 6 articles in the English-language literature.^{1,5-9} The most recent articles focus on methods to identify the causative agent. If the etiology of the reaction is unclear, patch or intradermal testing can help to confirm the causative agent. These tests also can help determine similar agents to which the patient may cross-react.^{4,5}

It can be difficult to differentiate AGEP from other cutaneous drug reactions and other nonfollicular pustular conditions. Drug-induced hypersensitivity syndrome typically presents with facial edema and a morbilliform rash.



Histopathologic analysis of a biopsy from the pustular area on the neck demonstrated spongiosis with subcorneal and intraepidermal pustules as well as a basket-weave pattern stratum corneum (A and B)(H&E, original magnifications $\times 10$ and $\times 40$).

Although it can present with pustules, the latent period is longer (2–6 weeks), and there frequently are signs of multiorgan involvement including hepatic dysfunction, eosinophilia, atypical lymphocytosis, and lymphadenopathy. Patients with generalized pustular psoriasis often have a history of plaque psoriasis; the pustules are more concentrated in flexural sites; the eruption is gradual in onset; and histologically there tends to be features of psoriasis including parakeratosis, Munro microabscesses, and dilated blood vessels.¹⁰ Subcorneal pustular dermatosis also is more concentrated in flexural sites and frequently has an annular or serpiginous configuration. The onset also is gradual, and it follows a more chronic course than AGEP. Exfoliative erythroderma presents with widespread erythema and superficial desquamating scale. It often occurs in association with systemic symptoms and can

be the result of a drug reaction or underlying inflammatory dermatosis such as psoriasis, mycosis fungoides, or pityriasis rubra pilaris.

Acute generalized exanthematous pustulosis usually resolves spontaneously within 2 weeks and is associated with a superficial desquamation as it clears. Appropriate treatment includes discontinuing the offending agent; monitoring for systemic involvement; and treating the patient's symptoms with antihistamines, analgesics, topical steroids, and emollients. In more severe or persistent cases, treatment with systemic steroids and tumor necrosis factor α inhibitors has been attempted, though their efficacy remains unclear. We report a case of iopamidol-induced AGEP that highlights the importance of eliciting a history of contrast exposure from a patient with suspected AGEP.

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