Image Diagnosis: Hemorrhagic Bullae in a Primary Varicella Zoster Virus Infection

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CASE REPORT

A 47-year-old man, 20 pack-per-year smoker, and heavy alcohol drinker, with an episode of pulmonary tuberculosis 10 years previously, presented to the Emergency Department with 7 days of cough, mucous sputum, and abdominal pain. Additionally, he presented with 5 days of a pruriginous skin rash that started on the thorax but rapidly disseminated to the entire body, and with 3 days of fever. Physical examination revealed dyspnea, polypnea, fever, dispersed ronchi bilaterally upon chest auscultation, and dispersed papules, pustules, and hemorrhagic vesicular lesions on the skin and oral mucosa (Figures 1 and 2).

A thoracic computed tomography scan showed peribronchovascular parenchymatous densities with areas of ground-glass opacity, suggesting an infectious process with endobronchial dissemination (Figure 3). Fiberoptic bronchoscopy showed scattered ulcerated and vesicular lesions in the airway lining. Blood tests showed cytolytic hepatitis and rhabdomyolysis. Despite treatment with acyclovir, ceftriaxone, and azithromycin, the patient deteriorated rapidly and exhibited severe acute respiratory distress syndrome, with a PaO2/FiO2 ratio of 95 mmHg. At this point our patient was transferred to the intensive care unit to be started on mechanical ventilation, hemodialysis for acute kidney injury, norepinephrine cardiovascular support for septic shock, and extracorporeal membrane oxygenation, which he continued for 20 days. The sepsis workup from admission was sterile for bacteria, fungi, and mycobacteria; serology studies for hepatitis B virus, hepatitis C virus, and human immunodeficiency virus were negative; and no relevant immunosuppression factors could be identified. Serologic tests were positive for varicella zoster virus (VZV)-specific immunoglobulin G and immunoglobulin M, determined by enzyme-linked immunosorbent assay and enzyme-linked fibrinolytic assay. The serum was also positive for VZV deoxyribonucleic acid, determined by polymerase chain reaction. Because our patient had no known history of chickenpox, and had never been vaccinated for VZV, we made the diagnosis of primary VZV infection. By day 35 after admission, our patient had improved sufficiently and was transferred to the medical ward.

DISCUSSION

Chickenpox is usually a benign disease, but in immunocompromised individuals it can lead to clinical complications with significant morbidity and mortality. VZV infection causes primarily chickenpox, which is characterized by a typically disseminated skin rash. Lung infection because of VZV is uncommon, and it usually occurs two to seven days after the appearance of skin rash. The initial cutaneous lesions of varicella often involve the scalp, face, and/or trunk and are pruritic, erythematous macules. The maculopapular phase of infection evolves to a vesicular phase, during which fluid-filled vesicles...
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appear in existing or new erythematous lesions, leading to the typical "dewdrop on a rose petal"3 appearance. In the case we report here, the skin lesions were not the typical dewdrop on a rose petal appearance because of the hemorrhagic content. Hemorrhagic vesicles in chickenpox are very unusual and are generally associated with severe immunodeficiency.4,5

This was a case of VZV pneumonia in a young adult patient with an unusual skin rash and acute respiratory distress syndrome, which has a high severity even for this age group. Our patient had no known history of contact with infected persons or evidence of congenital or acquired immunodeficiency beyond what was caused by chronic alcohol and tobacco abuse. Some components of tobacco smoke are known to suppress important pathways of the innate respiratory immune system.6 Clinical studies have also shown that the incidence of acute respiratory distress syndrome is much higher in patients with a known history of alcohol abuse.7 This case highlights the impact these two habits can have as immunosuppressant factors.8,9 Primary infection by VZV in adults and immunocompromised individuals may have a more severe presentation and serious complications. Prompt and accurate diagnosis is essential to prevent life-threatening sequelae.10

Disclosure Statement
The author(s) have no conflicts of interest to disclose.

References

Key to Success
The power of making a correct diagnosis is the key to all success in the treatment of skin disease; without this faculty, the physician can never be a thorough dermatologist, and therapeutics at once cease to hold their proper position, and become empirical.

— Louis A Duhring, MD, 1845-1913, American physician and professor of dermatology