Avoiding a Perfect Storm: Delving into the Consequences of a Complex case of Superimposed Cellulitis after a Herpes Zoster infection

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Introduction:

Cellulitis is an acute bacterial infection causing inflammation affecting the deep dermis layer as well as the surrounding subcutaneous tissue that does not contain an abscess. In this case study we aim to describe the clinical presentation of a middle aged Hispanic woman who developed a superimposed cellulitis infection following a flare-up of a zoster infection. Herpes Zoster is typically considered a typically benign infection but in immunocompromised individuals severe complications of the infection include bacterial superinfections, coagulopathies including disseminated intravascular coagulation, and central nervous system manifestations including encephalopathy with long term detrimental outcomes [1]. Management of Herpes Zoster Virus complications in immunocompromised patients has been a historically challenging task as there is limited reference data because of the unique presentation of each patient and their varying levels of immunocompetence adds an extra layer of variability to each patient's presentation. Our patient's past medical history of Polycystic Ovarian Syndrome, uncontrolled diabetes mellitus type 2, and hypertension created an immunocompromised state predisposing her to an acute cellulitis infection following her most recent flare-up of shingles rash. Social determinants that contributed to her disease progression were her lack of healthcare access including regular check-ups for glucose monitoring and suboptimal treatment for her chronic medical conditions [2]. This is a recurrent theme in patients in a similar situation located in the US-Mexico border where social determinants exponentially affect the healthcare outcomes of patients and often lead to severe outcomes that increase morbidity and mortality in this highly vulnerable population [3].

Case Description:

Our patient is a 37-year-old Hispanic woman who presented to the clinic complaining of a rash in her left lower abdominal region, as well as systemic symptoms including a fever and an episode of chills. Her past medical history includes Polycystic Ovarian Syndrome (PCOS), Diabetes Mellitus type 2, hypertension, and hyperlipidemia. She has a history of a Zoster virus rash that flared-up 2 weeks ago that had not resolved and stated that it had progressively worsened and became more erythematous leading to increased pruritus. At the time of her flare-up she was treated with Acyclovir 800 mg Q5h which she said provided minimal resolution of her symptoms. Physical examination revealed a wound covered with a bullous pustular lesion with a warm erythematous portion in the right flank. Her vital signs revealed a low grade fever of 100.8 F and a tachycardic state with a pulse 112 bpm. Further evaluation included a point of care ultrasound (POCUS) to rule out a potential abscess, results were unremarkable . Her most recent laboratory values included a CBC significant for a WBC of 19 and a hemoglobin A1c of 13.6. Patient was treated with an antibiotic regimen including topical clindamycin and 1 dose of intramuscular injection of Ceftriaxone 750 mg. After the administration of the antibiotics available to us at the outpatient center, the patient was told to check in at the emergency room

for closer monitoring and possible continuation of IV antibiotic treatment. The patient declined and decided she was going to monitor the symptoms herself because she stated she couldn't cover the costs of a prolonged hospital stay. She was then advised to report to the emergency room if she noticed worsening symptoms including crackling or crepitation as well as worsening systemic symptoms such as high fevers, chills, or severe abdominal pain. She was seen at the clinic 1 week later to follow up on the progression of the rash and symptom resolution following the completion of her antibiotic regimen. Fig. 1 depicts the localization of the rash when the patient arrived at clinic Day 1. Following antibiotic treatment and appropriate symptomatic monitoring after 1 week, Fig. 2 reveals resolution and subsequent abdominal scarring. During the patient's follow up, we discussed the importance of continuation of care for her chronic medical conditions to prevent further complications in the future including her predisposition to CAD and susceptibility to infections, her hyperglycemic monitoring, and compliance to treatment regimen.

Discussion:

This case highlights the unique clinical presentation of cellulitis post-shingles infection in a middle-aged Hispanic woman with multiple unmanaged chronic conditions. The summation of which led to a weakened immune response and superimposed cellulitis infection. This case highlights the potential for superimposed bacterial infections to occur on compromised skin. This case emphasizes the importance of prompt intervention and appropriate health care maintenance to prevent further complications. Limited access to healthcare services can hinder disease management and increase the risk of complications in underserved populations [2] . This case underscores the significance of addressing healthcare disparities and improving access to comprehensive healthcare resources, particularly for individuals with multiple unmanaged chronic conditions, in order to mitigate risk of disease progression and enhance overall patient outcomes.

Conclusion:
This case illustrates the impact of social determinants on disease progression in a middle-aged Hispanic woman with limited healthcare access and under-managed chronic conditions who developed superimposed cellulitis following HZV infection. The conclusion emphasizes the need for timely intervention, improved healthcare resources, and addressing healthcare disparities to mitigate complications which ultimately leads to improved patient outcomes, especially in underserved populations with limited resources.

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