**Title:** Case Report of a Rare Case of Herpes Zoster and Liver Failure in an Elderly Woman

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**Abstract:** Varicella-zoster is a common infection that presents as either a primary infection in children. Varicella or as generalized herpes zoster due to immunosuppression and decline in VZV-specific cell-mediated immunity. We wish to present a case of a 60-year-old with herpes zoster, who had received cyclosporine earlier for lichen planus and was subsequently treated with oral steroids for a recurrence of the lichen planus. We speculate that immunosuppression; due to oral steroids could be a factor in reactivating the VZV. Treatment with intravenous acyclovir was planned but could not be initiated because her condition proved to be fatal, due to the acute liver and multi-organ failure and we conclude that liver function tests must be done in elderly patients with generalized herpes zoster and that possibly an early treatment with intravenous acyclovir.

Keywords: Varicella-zoster; immunosuppression; Acute liver failure

**Introduction:**

Hepatitis secondary to generalized herpes simplex or generalized herpes zoster is a rare clinical presentation and around 30 cases of co-infection occurring in immunosuppressed as well as immunocompetent patients have been reported worldwide**. 1, 2**

The primary infection latent in the dorsal nerve root ganglia and may be reactivated as a secondary infection, as Herpes Zoster, when specific cell-mediated immunity (CMI) declines. Herpes Zoster may also occur along with the primary infection in patients with impaired immunity. **3** Herpes Zoster is 20 to 100 times more common in an immunosuppressed **4** and is characterized by unilateral, painful vesicular rash, limited to a single dermatome. Disseminated Herpes Zoster can involve mucous membranes, lungs, central nervous system, the cardiovascular system (CVS), bladder, skeletal system, and the gastrointestinal system including ulcers, hepatitis, and pancreatitisand is usually fatal. **5 - 7**

**Case Report:** A 60yr old woman was in comatose condition admitted to our ICU, referred for the generalized rash on her body. The rash was generalized, vesicular and pigmented, generalized, at places with a cluster of tiny vesicles around a large vesicles the patient had a history of lichen planus, so the assumption was that the present rash could be an exacerbation of lichen planus for which she was treated with.

Cyclosporine about four years later, she developed a rash and itching over the arms, neck, breasts, back and toes, which was seen as a recurrence of generalized  lichen planus and treated with oral betamethasone, by a physician, but the rashes  increased,  she complained of abdominal pain, had vomiting, and an altered sensorium and was treated with proton pump inhibitor (PPI), painkillers, meropenem, clindamycin, and fluconazole, at a local hospital, but with no improvement in her condition she was suspected to have acute liver failure and was transferred to our hospital.

On admission she was in shock, was intubated put on the ventilator and sustained low-efficiency dialysis (SLED). The previous medications for bacterial sepsis were continued with the addition of Dopamine, Adrenaline, and CRPT.

On clinical examination, she was drowsy but arousable. There was a visible rash on the trunk and oral ulceration, which resembled lichen planus at places, but on a closer look, appeared vesicular without umbilication.
The vesicular rash was biopsied and a Tzanck smear and biopsy confirmed the diagnosis of a herpes infection, either herpes simplex or zoster but it was difficult to differentiate between the two, which is the limitation of the Tzanck smear and histopathology in varicella, herpes zoster and herpes simplex **8**.

Ultrasound showed a pseudo oedematous gall bladder with mild ascites. The computerized tomography showed fat stranding surrounding the pancreas, suggestive of pancreatitis.

Laboratory investigations showed Amylase 128.1 U/L, Lipase 110.7 U/L, HB/PCV 17.1/480, total leukocyte count 24210 cells/mm3, platelet count of 44000 µl, RBS 9/6, BISN 12, Creatinine 0.52, Alkaline Phosphatase 531 IU/L, Alanine Aminotransferase 3968 IU/L, Aspartate Aminotransferase 5482 IU/L,
Treatment with intravenous acyclovir was planned but before it could be administered the patient died, with acute liver failure, multi-organ failure, and progressive septic shock.

**Discussion:** Adults above the age of 50 years are at an increased risk for developing herpes zoster, probably due to the immunosenescence associated with advancing age. Age, stress, immunocompromised status, and immunosuppressive drugs are known factors for viral reactivation and are predisposing factors for visceral involvement and any other factor affecting the cell-mediated immunity may play a role in the reactivation of VZV. **5**

This was a rare case of varicella-zoster virus (VZV), and, with multiple organ involvement including hepatitis, pancreatitis, and acute liver failure. The vesicular rash was also confirmed as varicella-zoster, from circumstantial evidence, when 2 to 3 resident doctors of ICU ward who attended the patient developed chickenpox and corroborated with the Tzanck smear test. However on review of literature of few cases of lichen planus was found to be associated with co morbidity as chronic liver diseases.**6** Her treatment for lichen planus with betamethasone could possibly have precipitated the generalized VZV infection. The intravenous acyclovir as planned could not be used since she died due to her liver and multiorgan failure.

Besides her age, lichen planus, previous treatment with cyclosporine and or the corticosteroids might be considered as possible immunocompromising factors responsible in reactivating the generalised VZV subsequently leading to acute liver failure and multiorgan failure and fatality (211 words)

# Conclusion: Elderly patients with herpes zoster must be carefully evaluated, especially for liver functions and though acute liver failure due to the varicella-zoster is rare, it is usually fatal, especially in presence of predisposing immunologic impairment. When there is a high level of suspicion, acyclovir therapy should be initiated immediately and not be delayed.

# Also, varicella-zoster immunoglobulins (VZIG) may modify history of VZV infection but only when administered within72 hours after exposure. 9

**Legends for Figures**

Figure 1: Multiple hyperpigmented violaceous grouped papules with few showing overlying fluids filled vesicle seen on the anterior aspect of the abdomen.

1a: Multiple hyperpigmented violaceous papules

Figure 2: Single erythematous crusted plaque with scale crust seen on back with surrounding similar tiny vesicles overlying erythematous base

2a: Erythematous crusted plaque

2b: Vesicle

Figure 3: Tzanck smear image showing basketweave stratum corneum with evidence of acantholytic epithelial cells with few necrotic eosinophilic cells.

(Haemotoxylin and Eosin 10X)

3a: Multi nucleated giant cell

3b: Necrotic epithelial cells

Figure 4: Tzanck smear showing the newly forming multinucleated syncytial giant cells of herpes. (Haemotoxylin and Eosin 10X)

4a: Ballooning degeneration

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