

Zoster Duplex Unilateralis - A Series of Ten Immunocompetent Cases

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Abstract

Varicella-Zoster Virus (VZV) causes Herpes Zoster (HZ) or Shingles. VZV is also responsible for the causation of Chickenpox. Chickenpox is the primary infection; a self-limiting illness usually observed in children. Reactivation of the latent VZV causes HZ. Multi dermatome involvement is rare in an immunocompetent person.

Keywords: Herpes Zoster; Immune Competent; Multidermatome; Superficial Cervical Plexus; Trigeminal Nerve

Introduction

Varicella-Zoster Virus (VZV) is a Human Herpes Virus which affects children predominantly causing Varicella (Chicken pox) [1]. Sensory ganglion of host is the site where virus usually remains dormant. Advancing age, severe stressors, immune suppression, infection, and adverse effects of medicines are few probable causes leading to reactivation of virus [2]. Initial infection with VZV typically presents as a self-limited, diffuse, vesicular and pruritic rash; after the acute illness period, the host develops immunity to VZV. In HZ, initially symptoms (burning or catchy pain) followed by vesicular eruptions or vice-versa, presenting unilaterally in a single dermatomal distribution is the phenomenal process [3]. Few of the complications of immune competent HZ may include Encephalitis, Pneumonitis, Hepatitis, multi-dermatomal zoster (extensive skin involvement in several adjacent dermatomes) or non-adjacent dermatomes (Zoster Duplex Unilateralis or Bilateralis) [1,4].

Thoracic (45%), Cervical (23%), and Trigeminal (15%) are the commonly affected dermatomes in descending order of frequency. Ophthalmic division (V1) of the Trigeminal nerve is affected about twenty times more commonly than the Maxillary (V2) and Mandibular (V3) divisions. Less than thirty cases have been reported so far across the world of immune competent persons getting affected with multi dermatome involvement [5].

Methodology

This study consisted of 10 patients who reported to Dermatology clinic in Kota (Rajasthan) over a period of 6 months to 1 year. Detailed case history of these patients was recorded. One patient visited Commercial Sex Workers (CSWs) on a regular basis. Another patient visited CSWs on occasional basis. Both patients had Non-Reactive HIV Serology on Laboratory Test. Case history was then followed with proper clinical examination. All of them shared a common history of mild to moderate to severe pain and blisters. Few of them also complained of burning sensation and weakness. Only one patient presented with co-morbidities in the form of associated Hypertension. The characteristic physical examination finding of all patients were the papulovesicular rash. The rash was typically unilateral (with 4 cases wherein it crossed the midline) and its distribution was spread across nearby dermatomes. Three cases reported far off associations (Zoster Duplex Unilateralis). Clinical examination revealed clusters of intact and/or ruptured vesicles ranging from 0.5 to 2 mm in size, roughly ovoid in shape. Some were tender on palpation. No regional lymph node involvement was found. Routine investigations included

Complete Blood Count, which showed values within normal limits. Serology test was also done to check the HIV status of patients (Two of them refused undergoing the investigation). History and clinical examination confirmed the diagnosis of Herpes Zoster with multiple dermatome involvement in these patients. The patients were treated with Standard Treatment Protocol (STP) (mentioned later) and were put on periodic follow-up. In the first follow up (between 1 and 2 weeks), one patient complained of increased pain perception. He was asked to continue the same medicines and review after a week. In the second follow up of the same patient (between 2 and 3 weeks), 2 new vesicles (one in C4 and T2 segment of dermatome on the Left axial half) were observed. Patient was asked to continue the STP (except Valacyclovir and Omeprazole) for another one week and was asked to review in a week. In the third follow up, pain drastically reduced and no new lesional activity was observed. Another patient had no pain in the 1st week but complained of severe bothering pain in the 2nd week leading to disturbed sleep. Pain Killers and other medicines were not helpful. Patient started consuming Tablet Alprazolam 0.25 mg HS which was partially helpful (as the patient woke up past midnight due to severity of pain). Finally Tablet Prednisolone 10 mg was added to the protocol which proved beneficial in 4 - 5 days with drastic improvement in severity by 1 month from 1st visit.

Case	Ag/Sex	Dermatomes Involved	Axial Half	Follow Up (1-2 Weeks)	Follow Up (2-3 Weeks)	Follow Up (Beyond 3 Weeks)	HIV Status
1	40/M	S2, S3, S4	Right	Lost To Follow up	-	-	Refused
2	38/M	C3, C4, C5, T1, T2	Left	Pain perception increased. Continued P-M combination and D-S Combination for 2 weeks	2 new vesicles observed one each in C4 and T2 segment of chest region.	Significant improvement in pain perception.	Non-Reactive
3	42/M	C8, T1, T2, T4, T8	Left	Partial improvement in pain perception. P-M and D-S combination continued.	No new activity noted. P-M and D-S combination continued.	No new activity noted. Medicines tapered slowly.	Non-Reactive
4	40/M	V3, C2, C3, C4, C5, C6, C7, C8, T1, T2	Right	Pain slightly reduced. P-M and D-S combination continued.	Lost to Follow up	-	Refused
5	18/M	T1, T8 (Just crossing the midline)	Left/Right	Symptoms resolved completely	-	-	Non-Reactive
6	60/F	L2, L4, L5	Left	-	-	Post Herpetic Neuralgia	Non-Reactive
7.	57/M	T8, T9, T10	Left/Right	Symptoms resolved completely	Uneventful	Uneventful	Non-reactive
8.	90+/F	V1, V2	Left	Symptoms resolved completely	Uneventful	Uneventful	Non- Reactive
9.	42/M	V3, C2, C3, C4, C5, C6, C7, T1 (Just crossing the midline)	Right/Left	Symptoms resolved completely	Uneventful	Uneventful	Non-Reactive
10.	68/M	C5(R), T1(R), T8(L)	Right/Left	Pain initiated after 1 st week along with superadded fungal infection	Pain persisted. Disturbed sleep. Patient was put on Prednisolone 10 mg at night time. Fungal infection subsided with anti-fungal treatment before initiating oral steroid.	Pain subsided gradually after 1 month from initial visit. Medicines stopped accordingly.	Non-Reactive

Table 1: Showing all the cases.

Clinical overview

Herpes Zoster usually affects one or two adjacent dermatomes (localized zoster). As mentioned above, thoracic dermatome is the most commonly affected. Unilateral presentation is the characteristic feature in majority of HZ cases. If three or more dermatomes are involved, it is called as Disseminated zoster commonly seen in immunocompromised patients. In such a scenario, Varicella and Disseminated zoster are difficult to distinguish. The eruption invariably accompanies pain and occasional itching or tingling sensation. As mentioned earlier, symptoms may precede eruptions by several days. Sometimes, lesions are the only manifestation, followed a few days later by the symptoms. Occasionally, headache, photophobia (sensitivity to bright light), and malaise in the prodromal phase may be noted depending on the dermatome affected (if the head and neck or nearby area is affected). Grouped vesicles on an erythematous base with clear or pus filled fluid is considered as spot diagnosis. New vesicles may be noted till the fifth day of occurrence with progressive drying and crusting over by one to two weeks. Complete healing may take up to four weeks of time. Pigmentary changes and scarring on the skin may be permanent.



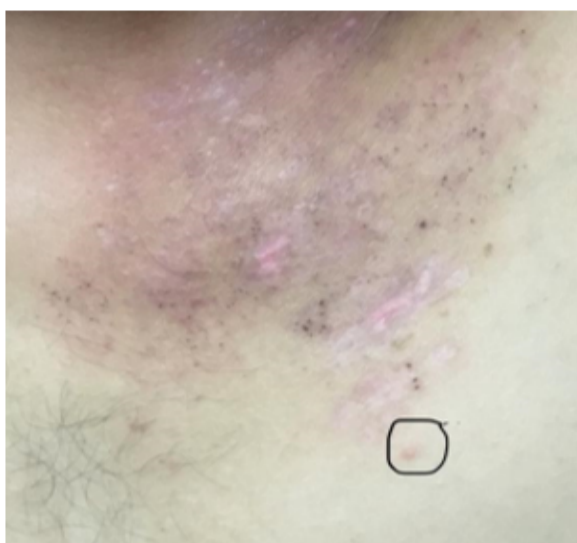
Case 1: Showing multiple grouped vesicles affecting S2, S3 and S4 dermatome on right side of the gluteal region.



Case 2a and 2b: Showing multiple grouped vesicles on erythematous base affecting C3, C4, C5 and T1 spinal nerves on the Left side of the Chest involving the shoulder blade extending behind the ear.



Case 2c



Case 2d

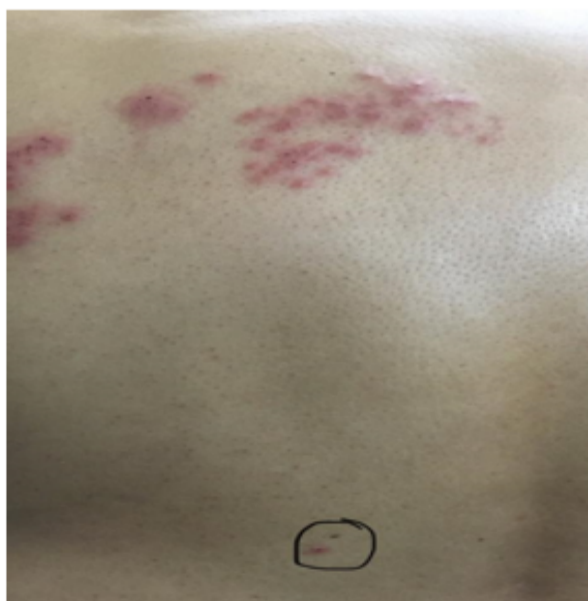
Case 2c and 2d: Showing new lesions in C4 and T2 dermatome after 15 days from initial visit.



Case 3a



Case 3b



Case 3c



Case 3d

Case 3a and 3d: Showing multiple grouped vesicles on erythematous base affecting C8, T1, T2, T4 dermatomes on Left side of the body. c Showing single vesicle in T8 dermatome. d Showing involvement of multiple dermatomes.



Case 4a



Case 4b



Case 4c



Case 4d

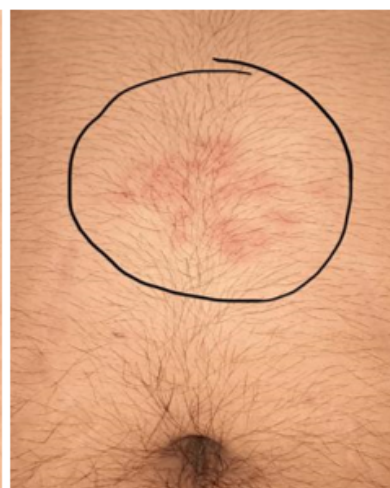
Case 4a and 4d: Showing multiple grouped vesicles on erythematous base with crusting in few lesions were seen affecting V3, C1, C2, C3, C4, C5, C6, C7, C8, T1, and T2 spinal nerves on Right side of the body.



Case 5a



Case 5b

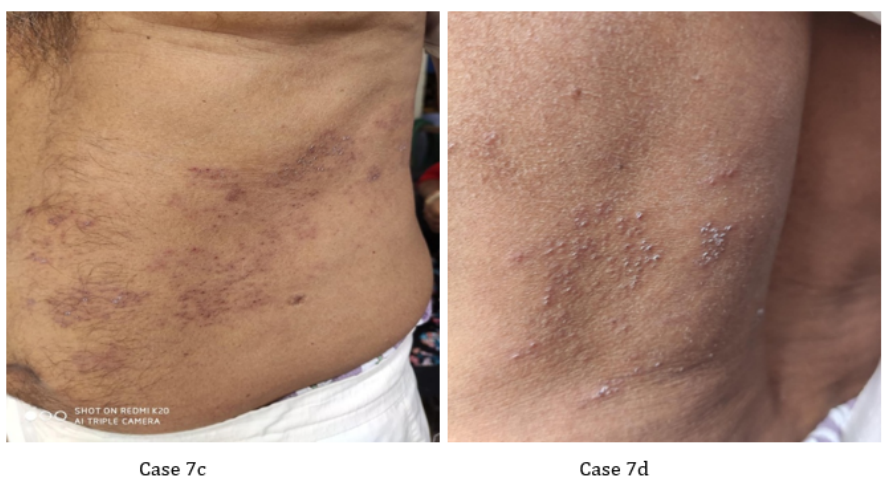


Case 5c

Case 5a and 5c: a and b: Showing multiple grouped vesicles on erythematous base with crusting in few lesions affecting C8, T1, T2, T4 and T8 spinal nerves on Left side of the body. c Lesion just crossing the midline.



Case 6a and 6b: Showing multiple grouped vesicles on erythematous base affecting L2, L4 and L5 dermatome on Left leg. PHN followed later.



Case 7a and 7d: a and b: Showing grouped vesicles on erythematous base affecting T8, T9 and T10 dermatomes on Left side; just crossing the midline anteriorly. c and d: Showing crusting after a week.



Case 8a

Case 8b

Case 8a and 8b: Showing grouped vesicles on erythematous base affecting V1 and V2 regions of Trigeminal Nerve on Left side.



Case 9a

Case 9b



Case 9c

Case 9d



Case 9e

Case 9a and 9e: Showing grouped vesicles on erythematous base affecting V3, C2, C3, C4, C5, C6, C7 and T1 on the Right side with just crossing the border on left side.



Case 10a



Case 10b



Case 10c



Case 10d

Case 10a and 10d: Involvement of T8 Dermatome on the Left side. b: Involvement of T1 dermatome on the Right side in the middle finger. c: Involvement of C5 Dermatome on the Right side on the Flexor aspect of the forearm. d: Involvement of C5 Dermatome on Medial aspect of Right side with superadded fungal infection.

Standard treatment dosage and management:

1. Tablet Valacyclovir 1 gm thrice a day after meals for 7 - 10 days.
2. Capsule Omeprazole 20 mg twice a day half an hour before meals for 7 - 10 days.

3. Tablet Diclofenac(D)-Serratiopeptidase(S) once or twice a day after meals depending on the severity of pain.
4. Tablet Pregabalin(P) 75 mg -Methylcobalamin(M) 1500 mcg twice a day after meals.
5. Calamine application for 7 - 10 days.
6. Ice pack application (to reduce the severity of pain).
7. Tablet Prednisolone 10 mg after meal (as per the requirement).

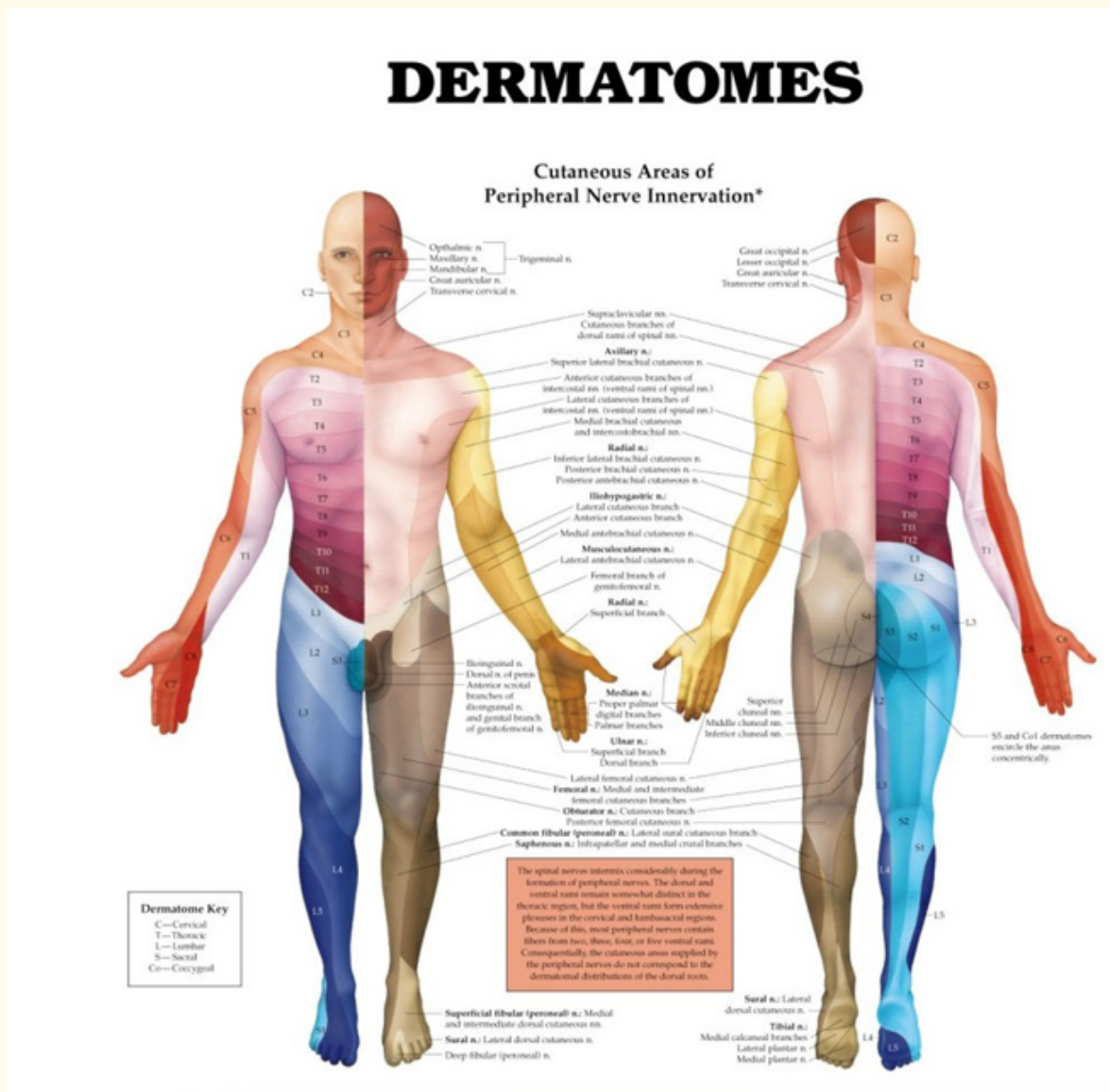


Figure: A pictorial representation of dermatomes throughout the body.

Discussion

The term “Herpes Zoster” originated from a combination of the Ancient Greek word “herpein” meaning “to creep” and zoster meaning a waist-belt or girdle for men, implying the eruption of a rash in a classic belt-like pattern around the waist. The term “Shingles” also has a similar meaning.

In HZ, about 20 lesions may be visible adjacent to the affected dermatome. Multiple, adjacent, affected dermatomes is called Multi dermatomal zoster, and spread to a nonadjacent dermatome is known as Zoster duplex unilateralis or bilateralis [6] (as observed in our study). HZ is usually a self-limiting, localized infection in immune competent patients. Subconjunctival Hemorrhage, Vesicular Conjunctivitis, Corneal Hypoesthesia, Epithelial and Stromal Keratitis, Anterior Uveitis, Keratouveitis, Iris atrophy, Pupillary distortion, Ocular hypertension, Glaucoma, Neurotrophic Keratopathy, Oculomotor nerve palsy, Optic neuritis [7], Acute dacryoadenitis [8], Orbital abscess [9], Orbital apex syndrome [10] extending up to soft palate [11] are few of the major reported complications associated with Post Herpetic Neuralgia.

Routine laboratory investigation i.e. Complete Blood Count was within normal limit in all the cases. Spot test and Enzyme Linked Immune Sorbent Assay (ELISA) test for Human Immune deficiency Virus (HIV) was conducted and reported Non-Reactive. Serological testing is useful for identifying acute infections, but usually are not undertaken due to the cost factor in a developing country like India. Polymerase Chain Reaction for VZV DNA detection, VZV IgG and IgM antibodies in serum are confirmatory tests. IgG and IgM antibodies both usually appear within 5 days of occurrence of the infection. IgM disappears in 2-4 weeks (suggestive of recent infection) whereas IgG antibody usually persists for an indeterminate time (suggestive of past infection). Direct Fluorescent Antibody (DFA) test is helpful in detecting the HSV 1/2 or VZV antigen using fluorescein-tagged antibodies. Sensitivity for DFA is 50% - 100% whereas Specificity is 100% [12]. Viral culture is a time-consuming procedure, requires intensive labour with experienced expertise, specialized facilities, and more-over its result is dependent on subjective interpretations. Nucleic Acid Amplification test requires specialized and advanced facilities.

Cutaneous	Visceral	Neurological	Ocular
<ul style="list-style-type: none"> • Cutaneous VZV dissemination • Bacterial superinfection • Scarring • Cellulitis • Zoster gangrenosum • Septicaemia 	<ul style="list-style-type: none"> • Neural extension of VZV infection • Bronchitis • Oesophagitis • Gastritis • Colitis • Cystitis • Myositis • Pericarditis • Pleuritis • Peritonitis • Visceral VZV dissemination • Pneumonia • Hepatitis • Myocarditis • Pericarditis • Arthritis 	<ul style="list-style-type: none"> • Post-herpetic Neuralgia • Aseptic meningitis • Meningo-encephalitis • Transverse myelitis • Ascending myelitis • Peripheral nerve palsies • Diaphragmatic paralysis • Cranial nerve palsies • Sensory loss • Deafness • Cicatricial lid scarring • Vestibular dysfunction • Granulomatous cerebral angiitis 	<ul style="list-style-type: none"> • Loss of corneal sensation • Panophthalmitis • Keratitis • Scleritis • Uveitis • Chorioretinitis • Iridocyclitis • Optic neuropathy • Ptosis • Mydriasis • Secondary glaucoma • Acute retinal necrosis • Progressive outer retinal necrosis

Table 2: Complications of Herpes Zoster [13,14].

Conclusion

Less than thirty cases of multi dermatome involvement in immune competent persons have been reported so far in the literature. The author is of the opinion that immune status must be ascertained quickly if atypical involvement is seen and antiviral drugs (oral or parenteral) should be started as quickly as possible to prevent complications. Quick Ophthalmology visit to rule out any eye involvement should be undertaken at the earliest. Rapid diagnosis and initiation of appropriate therapy will help clinicians in avoiding the occurrence of more atypical presentations of VZV infection even in immune competent persons (as mentioned above in the table).

Looking at the current scenario of COVID-19 pandemic, one should carefully monitor HZ patients for at least 1 month even after complete resolution of all the symptoms so as to avoid unwanted complications.

The author is of the view that such presentations in the near future may become the new normal of HZ.

Note: All the patients were subjected to blood investigations as mentioned earlier. Two patients refused for the same and eight patients were Non-Reactive to HIV serology. Considering both the patients as otherwise healthy with no associated co morbidities and no History of Extra Marital Contact (as told by them), it was presumed that they would have been Non-Reactive to HIV (if given a chance for the test).

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. Patients understand that their names and initials will not be published and due efforts will be made to conceal their identity.

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