

Herpes zoster and diabetes

Sanjay Kalra,¹ Aastha Chawla²

Abstract

This review is a succinct description of the relationship between herpes zoster and diabetes. It makes a strong case for screening for diabetes in all patients of herpes zoster, and for using insulin to achieve optimal glycaemic control in persons with concomitant diabetes and herpes zoster. It highlights potential impact of dipeptidyl peptidase 4 inhibitor therapy and statin usage on herpes zoster incidence.

Keywords: Glucose, Herpetic neuralgia, insulin, Varicella zoster virus.

Herpes Zoster

Herpes zoster (HZ) is a painful neuropathic condition which occurs due to reactivation of the latent varicella zoster virus (VZV) in cranial nerve or dorsal root ganglia, with viral spread to the affected dermatome, through its dermatome. It is more frequent in the elderly, in females, in whites, in persons with a positive family history of HZ, in those with a history of chickenpox in utero or in early infancy, and in immunocompromised individuals.¹ HZ is characterized by an extremely painful, self-limiting vesicular rash, which may be complicated by secondary infection. Other complications include pneumonia, encephalitis, myelitis, retinitis, hemiparesis, hepatitis and disseminated intravascular coagulopathy.² At times, post-herpetic neuralgia, i.e., pain persisting at least 90 days after onset of rash, may cause disabling symptoms.

Herpes Zoster and Diabetes

HZ is a common co-morbid conditions in immune-compromised persons. HZ occurs because of reactivation of the VZV, which occurs due to decline in VZV-related cell-mediated immunity (CMI).³ As persons with diabetes mellitus have significantly lower VZV related CMI, the incidence of HZ is much higher in them.⁴⁻⁶ Similar reports are available from Pakistan as well.⁷ Post-herpetic pain is also more prevalent in persons with diabetes.⁸

¹Department of Endocrinology, Bharti Hospital, Karnal, ²Department of Diabetology, North Delhi Diabetes Centre, New Delhi, India.

Correspondence: Sanjay Kalra. Email: brideknl@gmail.com

Herpes Zoster and Diabetes

Pharmacotherapy

Certain drugs which are commonly used in diabetes and related conditions are thought to increase the risk of HZ. These include dipeptidyl peptidase inhibitors (DPP4i) and statins.^{9,10} Both classes of drugs are known to have immunomodulatory effects.¹¹ DPP4i decrease the induction and activation of cytokines causing T cell proliferation. Statin use can decrease proinflammatory cytokines such as tumour necrosis factor- α , interleukin (IL)-1 β , IL-6, and IL-8,¹² depress T-cell activation by antigen-presenting cells, regulate T-cell apoptosis, and reduce chemotactic effects of neutrophils.

A single case report of a woman with type1 diabetes on subcutaneous insulin infusion pump suggests HZ as a pre-disposing factor for insulin induced lipoatrophy as well.¹² This report, however, does not impact therapeutic strategies for HZ.

Management of Herpes Zoster

Antiviral therapy is the mainstay of HZ infection, and should be started as soon as possible after diagnosis. Antiviral drugs, including acyclovir, famciclovir and valacyclovir, decrease pain, inhibit viral replication and shedding, promote healing of lesions, and attenuate the severity of discomfort and neuralgia.^{1,2} Analgesics, neurotropic membrane stabilizers (pregabalin, gabapentin), and tricyclic antidepressants (amitriptyline) are useful adjuvants. Corticosteroid use is controversial, and should be avoided in persons with diabetes.

Glucose Monitoring in Herpes Zoster

Current treatment guidelines do not recommend screening for diabetes in HZ.¹³ However, keeping in view the high prevalence of diabetes, glucose levels must be screened for at diagnosis of HZ. Repeat screening may be done at one week, to rule out stress hyperglycaemia.

Glycaemic Management in Herpes Zoster

There is no data on the preferred glucose lowering drugs of choice in diabetes complicated by HZ, or HZ complicated by stress hyperglycaemia. There is a single case report of HZ-induced pancreatitis being treated by subcutaneous insulin.¹⁴

Available data suggest that DPP4i should be avoided in active HZ. It would also be prudent to avoid drugs with a higher risk of drug-drug interactions. At the same time, rapid and sustained glycaemic control is necessary for optimal management of viral infection.

We suggest insulin as the drug of choice in active HZ infection in persons with diabetes. Insulin has the advantage of rapid action, no drug-drug interactions, easy dose adjustment, and low risk of hypoglycaemia, if used judiciously. The potent anti-inflammatory effects of insulin¹⁵ are an added advantage. Insulin is strongly recommended for management of diabetes complicated by other infections as well.¹⁶ The choice of insulin regime will vary according to degree of hyperglycaemia, and other practical factors. In our experience, premixed insulin twice daily suffices in the vast majority of type 2 diabetes patients. A small proportion of patients may need basal bolus insulin for adequate glucose control.

References

- Cohen JI. Herpes zoster. *NEJM* 2013; 369:255-63.
- Heininger U, Seward JF. Varicella. *Lancet*. 2006;368:1365-1376
- Okamoto S, Hata A, Sadaoka K, Yamanishi K, Mori Y. Comparison of varicella-zoster virus-specific immunity of patients with diabetes mellitus and healthy individuals. *J Infect Dis* 2009; 200:1606-1610.
- Aldaz P, Díaz JA, Loayssa JR, Drona MJ, Oscáriz M, Castilla J. Herpes zoster incidence in diabetic patients. *An Sist Sanit Navar* 2013; 36:57-62.
- Hata A, Kuniyoshi M, Ohkusa Y. Risk of herpes zoster in patients with underlying diseases: a retrospective hospital-based cohort study. *Infection* 2011; 39:537-544.
- Guignard AP, Greenberg M, Lu C, Rosillon D, Vannappagari V. Risk of herpes zoster among diabetics: a matched cohort study in a US insurance claim database before introduction of vaccination, 1997-2006. *Infection*. 2014; 42:729-35.
- Lal DM, Rashid A, Anwar MI. Frequency of undiagnosed diabetes mellitus in patient with herpes zoster. *J Pak Assoc Dermatol* 2015; 25:182-5.
- Suaya JA, Chen SY, Li Q, Burstin SJ, Levin MJ. Incidence of herpes zoster and persistent post-zoster pain in adults with or without diabetes in the United States. In *Open forum infectious diseases* 2014 Sep 1 (Vol. 1, No. 2, p. ofu049). Oxford University Press.
- Chen HH, Lin CL, Yeh SY, Kao CH. Short-term dipeptidyl peptidase-4 inhibitor use increases the risk of herpes zoster infection in Asian patients with diabetes. *QJM*. 2015:hcv096.
- Chung SD, Tsai MC, Liu SP, Lin HC, Kang JH. Herpes zoster is associated with prior statin use: A population-based case-control study. *PLoS one*. 2014; 9(10).
- Klemann C, Wagner L, Stephan M, von Hörsten S. Cut to the chase: A review of CD26/dipeptidyl peptidase-4 (DPP4)'S entanglement in the immune system. *Clinical & Experimental Immunology*. 2016 Feb 1.
- Chantelau EA, Prator R, Prator J. Insulin-induced localized lipoatrophy preceded by shingles (herpes zoster): a case report. *J of Med Case Rep*. 2014; 8:223-8.
- Dworkin RH, Johnson RW, Breuer J, Gnann JW, Levin MJ, Backonja M, et al. Recommendations for the management of herpes zoster. *Clinical Infectious Diseases*. 2007; 44(Supplement 1): S1-26.
- Wang Z, Ye J, Han YH. Acute pancreatitis associated with herpes zoster: Case report and literature review. *World J Gastroenterol: WJG*. 2014; 20:18053.
- Dandona P, Chaudhuri A, Mohanty P, Ghanim H. Anti-inflammatory effects of insulin. *Current Opinion in Clinical Nutrition & Metabolic Care*. 2007; 10:511-7.
- Kalra S, Unnikrishnan AG, Raza SA, Bantwal G, Baruah MP, Latt TS, et al. South Asian Consensus Guidelines for the rational management of diabetes in human immunodeficiency virus/acquired immunodeficiency syndrome. *IJEM* 2011; 15:242.