

Herpes Zoster: Hand Dominance the Missing Link to Unilaterality?

Sir,
Herpes zoster (HZ) occurs as reactivation of varicella zoster virus following primary infection or vaccination. It is classically unilateral in its presentation appearing along the distribution of the cranial or spinal sensory nerves, with an occasional spill into the neighboring dermatomes. Rarely, it may be bilateral or disseminated. Affliction of a dermatome depends on the viral load in that region during the viremia of varicella.

Appearance of many patients with left-sided dermatome involvement led us to evaluate HZ cases presenting to our skin center at a tertiary care hospital. A prospective study over a period of 1 year from January 1 to December 31, 2013 was conducted on patients presenting at either the outpatient department or admitted either for HZ or had developed it in addition to their primary disease, considering a null hypothesis that there was no relationship between the side affected and the hand dominance of the patient.

Of a total of 84,835 patients reviewed at the skin center in the study period, 457 (0.54%) had HZ. Males 260 (57%) and females 197 (43%) accounted for the total cases. Maximum number of patients were between 20 and 40 years (72%, 339), followed by those between 40 and 60 years (24%, 113) and more than 60 years (3%, 14), with the least <20 years of age (1%, 5). Most right-handed patients manifested HZ on the left side (61%) [Table 1]. The right-handed individuals accounted for 95% of the

total cases. Of the left-handed, 62% manifested HZ on the right side [Figure 1]. Statistical analysis with Fisher's test revealed a two-tailed $P = 0.0302$ proving a statistically significant involvement of the contralateral side in HZ compared to hand dominance.

Table 1: Distribution of herpes zoster side with hand dominance

| Hand dominance | Herpes zoster on right-sided dermatome | Herpes zoster on left-sided dermatome | Total |
|----------------|--|---------------------------------------|-------|
| Right handed | 167 | 266 | 433 |
| Left handed | 15 | 9 | 24 |
| Total | 182 | 275 | 457 |

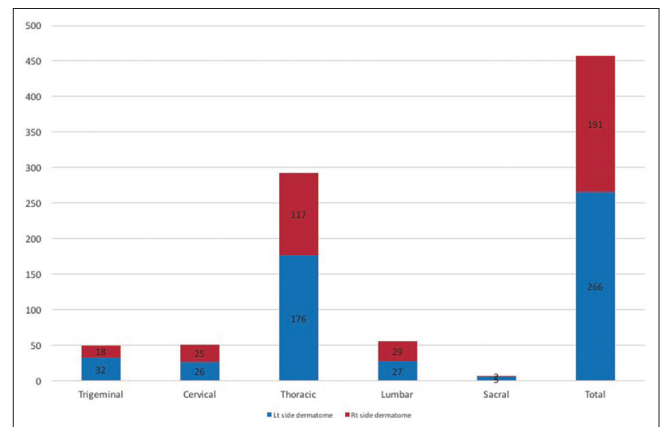


Figure 1: Herpes zoster and area of involvement

Dermatome involvement in HZ has been explained based on higher regional viremia during varicella, with the most common dermatomes consistently reported in the thoracic region, as was in our case.^[1,2] Unilaterality in HZ, however, is not yet fully explained. It has been postulated that the two sides of the brain may be differently involved in the modulation of immune responses.^[3] Lesions of right or left neocortex-induced opposite effects on various immune parameters including mitogen-induced lymphoproliferation, interleukin-2 production, macrophage activation, or natural killer cell activity in rodents.^[4] Cell-mediated hypersensitivity has also been reported to be higher on the involved side of HZ.^[5] Primarily left-sided involvement in larger series of HZ has been reported, with Ertunç *et al.* reporting greater incidence of the left side of the body affected in the right-handed females.^[6] Psychiatric, medical, and neurological disorders are increasingly showing a consistent relationship to handedness.^[7] Hand dominance is usually determined, as in this series, by the predominant side used for skilled motor actions, such as writing. Left-hand dominance is reported to be 13–20% of the general population, which was lower at 5% in our study population. However, reports of handedness and cerebral dominance have been reported to be variable as although more than 90% of right-handed individuals have left brain dominance for language and motor skill so are about 70% of left-handed individuals.^[8] Prevalence of this left hemispherical dominance possibly explains why 38% of our left-handed cases still manifested HZ on the left side rather than their contralateral side. None of our cases was ambidextrous.

This series to the best of our knowledge is the largest series of HZ which demonstrates hand dominance and contralateral eruption of HZ. Thus, it reflects that cerebral dominance plays an important role in neuroimmunomodulation, thus affecting the immune responses of the skin of the contralateral half of the body.^[9]

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Conflicts of interest

There are no conflicts of interest.

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