

# Characteristics of Japanese Patients With Disseminated Herpes Zoster: A Retrospective Study of 20 Cases

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## Research Article

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# Abstract

## Background

The risk of herpes zoster is increased among older and immunocompromised patients. However, it had been reported that Japanese tend to have a low BMI and that the patient characteristics of cellulitis is different from that of other countries. Due to the different characteristics of the Japanese population, we investigated for other characteristics unique to the Japanese population.

## Method

We retrospectively examined cases of disseminated herpes zoster hospitalization between April 1, 2005, and March 31, 2018.

## Results

The mean patient age was  $68.35 \pm 15.76$  years (mean  $\pm$  SD). Recurrence was observed in only one patient. Hypertension was observed in 35%, hyperlipidemia in 25%, cancer in 30%, and autoimmune disease was found in 20% of patients. Based on the results of this study and previous reports, herpes zoster was more likely to occur among older immunosuppressed patients. In contrast to previous reports of hypertension occurrence in approximately 6% of Japanese patients, our findings indicated 35%. In addition, in contrast to the previously reported rate of hyperlipidemia of approximately 2% in the Japanese population, our results showed 25%. This suggested that hypertension and hyperlipidemia were also the risk factors for disseminated herpes zoster in Japanese patients.

## Conclusion

Hypertension and hyperlipidemia were the proposed risk factors for disseminated herpes zoster in Japanese patients, in addition to age and immunodeficiency.

## Background

Disseminated herpes zoster is a common dermatological disease. Herpes zoster is caused by the varicella-zoster virus (VZV)[1]. Occasionally, VZV causes disseminated herpes zoster and requires hospitalization [2, 3]. Age and immunodeficiency have been identified as the risk factors for herpes zoster [4]. In particular, age is reportedly a significant risk factor. The risk of herpes zoster infection begins to increase after the age of 50 years, and 50% of people develop herpes zoster by the age of 85 years [5–8]. However, the risk factors for recurrent cellulitis are reportedly different from those in other countries due to the different characteristics of Japanese patients [9].

In this study, we hypothesized that the background of disseminated herpes zoster was different from that of other countries. We investigated other characteristics of disseminated herpes zoster that were unique to Japanese patients.

## Methods

We retrospectively examined cases of disseminated herpes zoster hospitalization between April 1, 2005, and March 31, 2018. Herpes zoster was clinically diagnosed by dermatologists. We received written informed consent for this study from all inpatients on admission. All patients were treated with acyclovir. We have confirmed in follow-up that the disseminated herpes zoster had improved. No statistical analysis was performed in this study.

## Results

Twenty patients were hospitalized for generalized herpes zoster during the target period. Table 1 shows the patient background. The mean patient age was  $68.35 \pm 15.76$  years. Recurrence was observed in only one patient. Hypertension was observed in 35%, hyperlipidemia in 25%, cancer in 30%, and autoimmune disease in 20% of patients. Table 2 shows the results of the blood tests. The blood test results were unremarkable.

Table 1  
Characteristics of patients

Patient characteristics	Disseminated herpes zoster (n = 20) (mean $\pm$ SD <sup>†</sup> )
Age (years)	68.35 $\pm$ 15.76
Sex (Male: Female)	11:9
Episode of recurrence (+:-)	1:19
Medical history	
Liver dysfunction (+:-)	2:18
Diabetes mellitus (+:-)	2:18
Hypertension (+:-)	7:13
Hyperlipidemia (+:-)	5:15
Cancer (+:-)	6:14
Autoimmune disease (+:-)	4:16
Immunosuppressant use (+:-)	2:18
Surgical history	5:15
<sup>†</sup> standard deviation.	

Table 2  
Blood test results of patients

<b>Blood test (normal range)</b>	<b>Disseminated herpes zoster (n = 20) (mean ± SD<sup>†</sup>)</b>
Hemogram	
White blood cells (/μL) (3500~9200)	4913 ± 1109
Platelets (/μL) (155000–365000)	204100 ± 70040
Hemoglobin (g/dL) (11.3~16.6)	13.39 ± 1.226
Electrolyte	
Sodium (mEq/L) (136–146)	138.6 ± 4.760
Potassium (mEq/L) (3.5–5.4)	3.882 ± 0.3842
Chloride (mEq/L) (96–108)	103.0 ± 4.195
Renal function	
Blood urea nitrogen (mg/dL) (8~22)	15.65 ± 5.480
Creatinine (mg/dL) (0.35–1.11)	0.8139 ± 0.1756
Liver function	
Total bilirubin (mg/dL) (0.3–1.2)	0.6182 ± 0.1940
Aspartate transaminase (U/L) (8–38)	24.00 ± 4.733
Alanine transaminase (U/L) (4–44)	19.50 ± 7.394
Diabetes and coagulation	
Glucose (mg/dL) (65–110)	93.00
Nutrition and inflammation and others	
Total protein (g/dL) (6.3~8.1)	7.267 ± 0.6658
Albumin (g/dL) (3.9~5.1)	4.150 ± 0.4994
Lactate Dehydrogenase (U/L) (119–229)	219.4 ± 20.53
Creatine kinase (U/L) (61–255)	86.80 ± 39.19
C-reactive protein (mg/dL) (~0.3)	1.087 ± 1.275
† standard deviation.	

## Discussion

We examined the results of 20 cases of disseminated herpes zoster infection. The recurrent case of disseminated herpes zoster involved a patient with dermatomyositis taking prednisolone (17.5 mg). Therefore, he was considered to be in an immunosuppressive state. Based on previous reports, disseminated herpes zoster may recur in immunocompromised patients [5–8].

The results in Table 1 suggest that herpes zoster was more likely to occur in older immunosuppressed patients. This finding was similar to that of previous reports [4]. In contrast to a previous report stating that hypertension occurred in approximately 6% of Japanese patients [10], our results showed that 35% of patients in this study had hypertension. Similarly, in contrast to the previously reported rate of hyperlipidemia of 2% in Japanese patients, our results indicated 25% [11]. This suggested that hypertension and hyperlipidemia were also risk factors for disseminated herpes zoster in Japanese patients.

This study was limited because it was a single-center, retrospective study. Additionally, JR Tokyo General Hospital plays a central role in the region, and patients who visited this hospital were examined at this hospital. However, in Japan, patients are free to choose which hospital to visit. Therefore, they may not have reported previous hospitalizations.

## Conclusion

In conclusion, hypertension and hyperlipidemia were the proposed risk factors of disseminated herpes zoster in Japanese patients, in addition to age and immunodeficiency.

## Declarations

### ICMJE Criteria Authorship Statement

Both authors met the International Committee of Medical Journal Editors authorship criteria (ICMJE criteria). Both authors were attending physicians for this patient. Yuta Norimatsu wrote the manuscript.

### Author statement

Authorship statement: Both authors meet the International Committee of Medical Journal Editors authorship criteria (ICMJE criteria).

### Authors' contributions

All authors were attending physicians for this patient. Yuta Norimatsu wrote the manuscript.

### Availability of data and materials

The datasets generated during the current study are available from the Yuta Norimatsu on reasonable request.

### **Ethics approval and consent to participate**

All study participants provided informed consent, and the study design was approved by the ethics review board of the JR Tokyo General Hospital. This study complied with the principles of the Declaration of Helsinki.

### **Consent for publication**

We obtained written signed consent from the patients to publish their clinical details.

### **Competing Interests**

The authors declare that they have no competing interests.

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