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ORIGINAL RESEARCH

Complications and Antiviral Strategies in Herpes Zoster: A Retrospective Evaluation of 50 Patients Treated in a Secondary Care Setting

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Purpose: To evaluate clinical characteristics, antiviral treatment patterns, complication rates, and the role of vitamin B12 supplementation among patients with herpes zoster (HZ) managed in a secondary care setting.

Patients and Methods: Fifty adults with clinically diagnosed HZ (July 2019–October 2020) were included. Demographics, comorbidities, dermatomal involvement, laboratory findings, antiviral therapy (acyclovir, valacyclovir, brivudine), vitamin B12 use, and complications were recorded. Patients were stratified by age (<65 vs ≥65 years). Categorical variables were compared using chi-square or Fisher's exact test, and continuous variables with *t*-test or Mann–Whitney *U*-test. Ninety-five percent confidence intervals (CIs) were calculated.

Results: The mean age was 63 ± 16 years, and 58% of patients were female. Diabetes and hypertension were the most common comorbidities. All patients received antiviral therapy within 72 hours of symptom onset. Postherpetic neuralgia (PHN) occurred in 8% of patients, and 2% developed secondary bacterial infection. Complication rates were 0% with acyclovir, 5.3% with valacyclovir, and 21.1% with brivudine (p = 0.112). No statistically significant difference in complication rates was observed between patients who received vitamin B12 and those who did not (p = 1.00). Complications occurred more frequently in patients aged ≥65 years compared with those <65 years (16% vs 4%; p = 0.35). ALT levels were significantly lower in patients aged ≥65 years (p = 0.015).

Conclusion: Early antiviral therapy was associated with a low incidence of PHN. Although brivudine was associated with a higher complication rate, causality cannot be established. The role of vitamin B12 remains uncertain. Larger prospective studies are warranted.

Plain Language Summary: Shingles, also known as herpes zoster, is a painful rash caused by the reactivation of the chickenpox virus later in life. It most often affects older adults and people with chronic health conditions. The main complication is long-lasting nerve pain, called postherpetic neuralgia (PHN), which can greatly affect daily life.

In this study, we reviewed the medical records of 50 patients treated for shingles at a secondary care hospital. All patients started antiviral therapy within three days of rash onset, and most also received pain medications. Vitamin B12 was prescribed for some patients, reflecting common practice in our country.

We found that only 8% of patients developed PHN and 2% had a bacterial skin infection. Patients who received brivudine appeared to have more complications compared with those treated with acyclovir or valacyclovir, but the difference was not statistically significant. Vitamin B12 supplementation did not appear to change outcomes.

These findings suggest that starting antiviral treatment early may help lower the risk of long-term nerve pain after shingles. However, since this was a small, single-center study, the results should be interpreted with caution. Larger studies are needed to confirm these findings and to clarify whether additional treatments, such as vitamin B12, play a role in preventing complications.

Keywords: herpes zoster, antiviral therapy, postherpetic neuralgia, brivudine, valacyclovir, vitamin B12, complications

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Introduction

Herpes zoster (HZ) results from reactivation of latent varicella-zoster virus (VZV) in the dorsal root ganglia and typically manifests as painful, unilateral vesicular eruptions restricted to a single dermatome.[1,2] Multidermatomal involvement is rare and occurs predominantly in immunosuppressed patients.[3] Diagnosis is primarily clinical.

The most common complication is postherpetic neuralgia (PHN), a neuropathic pain syndrome caused by inflammation and necrosis of affected sensory fibers.[4,5] Major risk factors for HZ include immunosuppressive states (eg, HIV infection, malignancy), advanced age, physical trauma, and family history. Female sex, psychological stress, diabetes mellitus (DM), rheumatoid arthritis, cardiovascular and renal disease, systemic lupus erythematosus, and inflammatory bowel disease have been reported as less prominent but notable risk factors.[6]

Incidence rises markedly with age: approximately 1.2–3.4 per 1000 in younger adults versus 3.9–11.8 per 1000 in those aged ≥65 years. This increase reflects the age-related decline in cell-mediated immunity.[7–9]

Although not included in international guidelines, vitamin B12 is occasionally used in routine practice for HZ in our country. This prompted us to hypothesize that vitamin B12 supplementation might influence complication rates and warranted its evaluation in this study.

This study describes the demographics, predisposing factors, treatments, and complications of HZ patients managed at a secondary healthcare center during a period of increased HZ presentations. Immunosuppressed patients were excluded to allow evaluation in a general outpatient population. The findings underscore the importance of immunization in high-risk populations.

Materials and Methods

This retrospective, single-center descriptive study included 50 adults (≥18 years) presenting to the Infectious Diseases and Clinical Microbiology Outpatient Clinic of a secondary care hospital between July 2019 and October 2020 with a clinical diagnosis of HZ. Electronic medical records were reviewed. Patients with incomplete records or uncertain diagnoses were excluded. Immunosuppressed patients (eg, malignancy, immunosuppressive therapy) were included; subgroup analyses were performed where applicable.

Variables analyzed included complete blood count, blood urea nitrogen, creatinine, glucose, C-reactive protein (CRP), alanine aminotransferase (ALT), aspartate aminotransferase (AST), vitamin B12, HBsAg, Anti-HBs, Anti-HCV, Anti-HIV, and chest X-ray results. Data on antivirals, analgesics, vitamin B12, involved dermatomes, and complications were recorded. HZ diagnosis was clinical. PHN was defined as pain persisting ≥1 month after rash onset and counted as a complication. Secondary bacterial infections were treated with appropriate antibiotics.

Ethics

This retrospective study was approved by the Non-Interventional Clinical Research Ethics Committee of Pamukkale University Faculty of Medicine (Approval No. 02, January 21, 2025) and conducted in accordance with the Declaration of Helsinki; the requirement for informed consent was waived by the Ethics Committee owing to the retrospective, anonymized design.

Statistical Analysis

IBM SPSS Statistics v30.0 (IBM, Armonk, NY) was used for all analyses. Categorical variables are n (%); continuous variables mean ± SD or median (min–max). Normality was assessed with Kolmogorov–Smirnov. Independent-samples *t*-test or Mann–Whitney U was used as appropriate; chi-square or Fisher's exact test for categorical comparisons. Missing data were handled by case-wise deletion. No a priori power analysis; all eligible patients were included, and small sample size acknowledged. Two-sided $p<0.05$ was considered significant.

Results

Fifty-six patients were screened; six were excluded due to missing records, leaving 50 for analysis. Twenty-nine (58%) were female. The mean age was 63±16 years (range 20–89); median 65. Mean age did not differ by sex (64±14.1 in females vs 61±17.6 in males; p=0.576) (Table 1).

Table 1 Distribution of Patients' Demographic, Laboratory, and Clinical Characteristics

Variables (N=50)	n (%) [%95 CI]	Mean ± SD [%95 CI]	Median (Min–Max)
Gender			
Female	29 (58) [44.3–71.7]		
Male	21 (42) [28.3–55.7]		
Age		63 ± 16 [58–67]	65 (20–89)
<65	25 (50) [36.1–63.9]		
≥65	25 (50) [36.1–63.9]		
Season			
Autumn	14 (28) [15.6–40.4]		
Winter	14 (28) [15.6–40.4]		
Spring	6 (12) [3.0–21.0]		
Summer	16 (32) [19.1–44.9]		
Complication	5 (10) [1.7–18.3]		
Postherpetic Neuralgia (PHN)	4 (80) [44.9–100.0]		
Bacterial Superinfection	1 (20) [0.0–55.1]		
Treatment			
Acyclovir	12 (24) [12.2–35.8]		
Valacyclovir	19 (38) [24.5–51.5]		
Brivudine	19 (38) [24.5–51.5]		
ALT		21.6 ± 11.1 [18.4–24.7]	20 (10–69)
AST		19.4 ± 8.9 [16.8–21.9]	18 (10–66)
Liver Function Test (LFT) abnormality	4 (8) [0.5–15.5]		
Vitamin B12 level		323.8 ± 346.4 [213–434.5]	220 (117–2000)
HBsAg (+)	0 (0)		
Anti-HBs		330.7 ± 362.3 [52.1–609.2]	155 (17–1000)
Anti-HCV (+)	0 (0)		
Anti-HIV (+)	0 (0)		
WBC		6966.6 ± 1898.3 [627.1–7506.1]	6450 (3500–12,600)
CRP		1.1 ± 2.4 [0.4–1.8]	0.3 (0.1–11.0)

Notes: Values are n (percent) unless otherwise indicated. Continuous variables are reported as mean ± SD and/or median (min–max) as shown.

Abbreviations: CI, confidence interval; PHN, postherpetic neuralgia; ALT, alanine aminotransferase; AST, aspartate aminotransferase; LFT, liver function test; HBsAg, hepatitis B surface antigen; Anti-HBs, antibody to hepatitis B surface antigen; WBC, white blood cell count; CRP, C-reactive protein.

The seasonal distribution was spring 12%, summer 32%, autumn 28%, and winter 28% (Table 1).

Complications occurred in 5/50 patients (10.0%; 95% CI 1.7–18.3). Among these, postherpetic neuralgia (PHN) was observed in 4 (8.0%; 95% CI 3.2–18.8) and secondary bacterial infection in 1 (2.0%; 95% CI 0.3–10.5) (Table 1).

Thoracic dermatomes were most frequently involved (52%), followed by cranial (20%) (Table 2).

Diabetes mellitus (45.5%) and hypertension (20.5%) were the most common comorbidities (Table 3). Six patients had no comorbidity.

Antiviral treatment distribution was: acyclovir 24%, valacyclovir 38%, brivudine 38% (Table 1). Complication rates did not differ significantly between antiviral groups (p=0.112, Chi-square): acyclovir 0% (95% CI 0–26.5), valacyclovir 5.3% (95% CI 0.1–26.0), brivudine 21.1% (95% CI 6.1–45.6). Compared with valacyclovir, brivudine showed a higher but non-significant risk (RR 4.0, 95% CI 0.49–32.6; p=0.34). Compared with acyclovir, brivudine showed RR 5.9 (95% CI 0.34–99.8; p=0.14).

Analgesics were administered to 88% of patients. Vitamin B12 supplementation was used in 78%. Complications occurred in 10.3% (4/39; 95% CI 3.0–24.2) of those receiving vitamin B12 and 9.1% (1/11; 95% CI 0.2–41.3) of those

Table 2 Distribution of Affected Dermatomes in Patients with Herpes Zoster

Affected Region	n (%) [%95 CI]
Thoracic	26 (52) [38.2–65.8]
Cranial*	10 (20) [8.9–31.1]
Lumbar	4 (8) [0.5–15.5]
Upper extremity	2 (4) [0.0–9.4]
Lower extremity	2 (4) [0.0–9.4]
Abdominal	2 (4) [0.0–9.4]
Sacral	2 (4) [0.0–9.4]
Lumbosacral	1 (2) [0.0–5.9]
Inguinal and sacral	1 (2) [0.0–5.9]

***Notes**: Cranial region includes facial involvement (n=7) and auricular involvement (n=3).

Table 3 Predisposing Factors in Patients with Herpes Zoster

Underlying Disease	n (%) [%95 CI]
Diabetes mellitus	20 (45.5) [30.8–60.2]
Hypertension	9 (20.5) [8.6–32.4]
Asthma	4 (9.1) [0.6–17.6]
Major depression	3 (6.8) [0.0–14.2]
Rheumatoid arthritis	2 (4.5) [0.0–10.6]
Emotional stress	2 (4.5) [0.0–10.6]
Malignancy	2 (4.5) [0.0–10.6]
Chronic kidney disease	1 (2.3) [0.0–6.8]
Fibromyalgia	1 (2.3) [0.0–6.8]
Total	44 (100)

not receiving it (RR 1.13, 95% CI 0.13–9.31; p=1.000) (Table 4). These subgroup findings should be interpreted cautiously due to the small sample size.

Among vitamin B12 recipients, brivudine was most common (43.6%), followed by valacyclovir (33.3%) and acyclovir (23.1%). Among non-recipients, valacyclovir predominated (54.5%), followed by acyclovir (27.3%) and brivudine (18.2%) (p=0.281) (Table 4).

By age group (<65 vs ≥65), there were no significant differences in sex, season, comorbidities, complications, dermatomal distribution, or antiviral choice (Table 5). Complications occurred in 1/25 (4.0%; 95% CI 0.0–11.7) of those <65 vs 4/25 (16.0%; 95% CI 2.2–31.2) of those ≥65 (p=0.349). ALT levels were significantly lower in patients ≥65 (p=0.015). Other parameters (AST, liver function abnormalities, vitamin B12 treatment/level, anti-HBs, WBC, CRP) did not differ significantly (Table 5).

Table 4 Complication Status, Antiviral Use Rates, and Complication Development in Patients Receiving Vitamin B12 Treatment

Variables	Vitamin B12 Treatment		p-Value
	Yes	No	
Complication	n (%) [%95 CI]	n (%) [%95 CI]	1,000[a]
No	35 (89.7) [75.8–96.9]	10 (90.9) [58.7–99.8]	
Yes	4 (10.3) [3.0–24.2]	1 (9.1) [0.2–41.3]	
Antiviral Treatment	n (%) [%95 CI]	n (%) [%95 CI]	0,281[b]
Acyclovir	9 (23.1) [11.5–39.3]	3 (27.3) [6.0–61.0]	
Valacyclovir	13 (33.3) [19.1–50.2]	6 (54.5) [23.4–83.3]	
Brivudine	17 (43.6) [27.8–60.4]	2 (18.2) [2.3–51.8]	

Notes: [a]Fisher's Exact test; Risk Ratio (RR)= 1,13 [0, 13–9, 31]; Risk Difference (RD)=%1,2 [−22,4–24,8]. [b]Chi-square test.

Table 5 Distribution of Clinical Characteristics According to Age Groups

Variables	Age <65 (n=25)	Age ≥65 (n=25)	p-Value
	n (%) [%95 CI] or Median (Min–Max)	n (%) [%95 CI] or Median (Min–Max)	
Gender			1.000
Female	15 (60%) [40.8–79.2]	14 (56%) [36.7–75.3]	
Male	10 (40%) [20.8–59.2]	11 (44%) [24.7–63.3]	
Season			0.361
Autumn	5 (20%) [4.3–35.7]	9 (36%) [17.2–54.8]	
Winter	9 (36%) [17.2–54.8]	5 (20%) [4.3–35.7]	
Spring	2 (8%) [0.0–18.6]	4 (16%) [1.7–30.3]	
Summer	9 (36%) [17.2–54.8]	7 (28%) [10.6–45.4]	

(*Continued*)

Table 5 (Continued).

Variables	Age <65 (n=25)	Age ≥65 (n=25)	p-Value
	n (%) [%95 CI] or Median (Min–Max)	n (%) [%95 CI] or Median (Min–Max)	
Underlying Disease	20 (80%) [64.3–95.7]	24 (96%) [88.3–100.0]	0.189
Hypertension (HT)	5 (25%) [7.9–42.1]	4 (16.7%) [2.2–31.2]	
Rheumatoid Arthritis (RA)	1 (5%) [0.0–13.5]	1 (4.2%) [0.1–21.1]	
Diabetes Mellitus (DM)	7 (35%) [0.1–29.0]	13 (54.2%) [32.8–74.4]	
Fibromyalgia	1 (5%) [0.0–13.5]	0 (0%)	
Chronic Kidney Disease (CKD)	0 (0%)	1 (4.2%) [0.1–21.1]	
Malignancy	1 (5%) [0.0–13.5]	1 (4.2%) [0.1–21.1]	
Asthma	0 (0%)	4 (16.7%) [2.2–31.2]	
Major Depression	3 (15%) [0.1–29.0]	0 (0%)	
Emotional Stress	2 (10%) [0.0–21.8]	0 (0%)	
Complications	1 (4%) [0.0–11.7]	4 (16%) [2.2–31.2]	0.349
PHN	1 (100%)	3 (75%) [19.4–99.4]	
Bacterial Superinfection	0 (0%)	1 (25%) [0.6–80.6]	
Localization			0.324
Cranial	3 (12%) [0.0–24.7]	7 (28%) [12.1–49.4]	
Thoracic	15 (60%) [40.8–79.2]	11 (44%) [24.4–65.1]	
Upper Extremity	2 (8%) [0.0–18.6]	0 (0%)	
Lower Extremity	0 (0%)	2 (8%) [1.0–26.0]	
Abdomen	1 (4%) [0.0–11.7]	1 (4%) [0.1–20.4]	
Lumbar	3 (12%) [0.0–24.7]	1 (4%) [0.1–20.4]	
Lumbar and Sacral	0 (0%)	1 (4%) [0.1–20.4]	
Inguinal/Hip	0 (0%)	1 (4%) [0.1–20.4]	
Hip	1 (4%) [0.0–11.7]	1 (4%) [0.1–20.4]	
Treatment			0.259
Acyclovir	4 (16%) [1.7–30.3]	8 (32%) [14.9–53.5]	
Valacyclovir	12 (48%) [28.4–67.6]	7 (28%) [12.1–49.4]	
Brivudine	9 (36%) [17.2–54.8]	10 (40%) [20.8–59.2]	
ALT (U/L)	**21 (10–69)**	**18 (10–36)**	**0.015***
AST (U/L)	20 (10–66)	17 (10–34)	0.139
LFT Abnormality	4 (16%) [1.7–30.3]	0 (0%)	0.110
Vitamin B12 Treatment	22 (88%) [75.3–100.0]	17 (68%) [49.7–86.3]	0.172

(*Continued*)

Table 5 (Continued).

Variables	Age <65 (n=25)	Age ≥65 (n=25)	p-Value
	n (%) [%95 CI] or Median (Min–Max)	n (%) [%95 CI] or Median (Min–Max)	
Vitamin B12 Level (pg/mL)	220 (117–938)	215 (120–2000)	0.883
Anti-HBs (mIU/mL)	353.5 (17–1000)	91 (50–100)	0.167
WBC (cells/μL)	6800 (5300–11,200)	6400 (4900–8400)	0.382
CRP (mg/dL)	0.3 (0.2–11)	0.3 (0.2–0.6)	0.690

Notes: *Data are presented as median (min–max). A statistically significant difference was observed in ALT levels between the groups (*p = 0.015). Effect size: r = 0.34 (moderate effect). The bold value indicates a statistically significant difference between the age groups, showing that ALT levels were significantly lower in patients aged ≥65 years (p = 0.015).*
Abbreviations: HT, hypertension; RA, rheumatoid arthritis; DM, diabetes mellitus; CKD, chronic kidney disease; PHN, postherpetic neuralgia; others as in Table 1.

Key laboratory values were as follows: ALT 21.6±11.1 U/L (median 20; range 10–69); AST 19.4±8.9 U/L (median 18; range 10–66); WBC 6966.6±1898.3/mm^3 (median 6450; range 3500–12,600); CRP 1.1±2.4 mg/L (median 0.3; range 0.1–11.0). Vitamin B12 levels (n=40) averaged 323.8±346.4 pg/mL; median 220 pg/mL (range 117–2000) (Table 1). All patients were negative for anti-HIV, anti-HCV, and HBsAg; anti-HBs ≥10 mIU/mL was detected in 18%. No viral pneumonia was identified on chest X-rays.

Discussion

The risk of herpes zoster (HZ) increases markedly with advancing age, particularly beyond the age of 50, reflecting the progressive decline in cell-mediated immunity against varicella-zoster virus (VZV).[7–9] Epidemiological studies consistently demonstrate that the annual incidence rises from 1.2–3.4 per 1000 in younger adults to 3.9–11.8 per 1,000 among individuals aged ≥65 years.[7,8] This pattern was consistent with our cohort, in which the mean age was 63±16 years, underscoring immunosenescence as a critical determinant of HZ susceptibility.

In addition to age, female sex has been repeatedly reported as an independent risk factor for HZ.[6,10] Although the precise mechanisms remain incompletely understood, proposed explanations include hormonal and immunological differences as well as sociobehavioral factors such as women's greater likelihood of seeking medical care. In our study, females constituted 58% of cases, supporting the trends described in the literature. These findings are in line with large-scale epidemiological studies showing that aging and female sex are the strongest demographic predictors of HZ incidence.[10,11]

Chronic diseases and immunocompromising conditions are also well-established predisposing factors for HZ. A large-scale case–control study from the United Kingdom demonstrated that conditions such as type 1 diabetes, depression, rheumatoid arthritis (RA), systemic lupus erythematosus, inflammatory bowel disease, chronic obstructive pulmonary disease (COPD), asthma, and chronic kidney disease were associated with increased HZ risk, particularly among younger individuals.[11] Similarly, a comprehensive meta-analysis published in 2024 highlighted respiratory and cardiovascular diseases, autoimmune and hematologic disorders, malignancies, and organ transplantation as the strongest risk factors.[12]

In our study, diabetes mellitus (DM) was the most frequent predisposing factor (45.5%), consistent with a meta-analysis of 16 studies showing that individuals with DM have a significantly higher risk of HZ and underscoring the importance of vaccination regardless of age.[13] Hypertension was the second most common comorbidity (20.5%). However, its association with HZ remains controversial: some studies report no significant correlation,[14] while others suggest that hypertension may increase susceptibility.[15]

Rheumatoid arthritis (RA) has also been linked with a 37–57% higher risk of HZ compared to individuals without RA. This increased risk is attributed to immune dysregulation, disease activity, immunosuppressive therapy, and comorbidities such as depression, asthma, or COPD.[16] In our cohort, RA was identified in 4.5% of patients (2/44), consistent with previous reports, although the small number precludes firm conclusions. These findings highlight the complex interplay between host immunity, underlying diseases, and treatment-related factors in shaping HZ risk.

The characteristic rash of HZ typically presents as unilateral vesicles on an erythematous base. Prodromal symptoms, such as malaise and dermatomal pain, often precede the rash. This variability, particularly in the prodromal phase, may lead to misdiagnosis depending on the site of involvement.[1] For example, one of our patients was initially followed up for suspected acute cholecystitis due to right-sided abdominal pain; however, antiviral therapy was initiated once typical vesicular lesions appeared on the third day. In our study, thoracic dermatomes were the most frequently involved (52%), followed by cranial dermatomes in 20% of cases. Lumbar involvement ranked third, while single cases of lumbosacral and inguinal–sacral involvement were also observed. These findings are consistent with previous reports indicating thoracic as the most affected region and sacral involvement as rare.[17] Multidermatomal HZ is generally associated with immunosuppression, though it can also occur in immunocompetent individuals.[3] In our study, the lumbosacral case occurred in a 73-year-old woman with DM, while the inguinal–sacral case involved a 67-year-old man with asthma, supporting the role of comorbidities in atypical presentations.

Postherpetic neuralgia (PHN) is the most common complication of HZ. While definitions vary—some authors define PHN as pain persisting for ≥1 month, others use a 3-month threshold—it is consistently recognized as a chronic neuropathic condition that impairs quality of life.[8,18,19] Treatment options remain symptomatic, including tricyclic antidepressants (TCAs), gabapentinoids, anticonvulsants, topical agents, and in refractory cases, interventional approaches.[20,21]

The prevalence of PHN ranges from 5% to >30%, depending on population and definition.[8] In our study, PHN occurred in 8% of patients, at the lower end of this spectrum. This relatively low rate likely reflects the fact that all patients received antiviral therapy within 72 hours, which is well documented to reduce PHN risk.[22] A secondary bacterial infection occurred in 2% of patients, highlighting that even with timely antiviral therapy, bacterial complications may rarely develop, especially in those with comorbidities.

Early initiation of antiviral therapy—ideally within the first 72 hours—is critical for maximizing efficacy. Antivirals accelerate vesicle resolution, promote lesion healing, and reduce PHN incidence by inhibiting viral replication and minimizing neuronal damage.[21,22] Although the benefit of later initiation remains debated, some evidence suggests antivirals may still be useful while new vesicle formation continues.[3]

In our cohort, patients treated with brivudine exhibited a numerically higher complication rate compared with those treated with acyclovir or valacyclovir. However, this difference was not statistically significant, and the wide confidence intervals indicate uncertainty; therefore, no causal inference can be drawn. The older age and greater comorbidity burden in the brivudine group may have contributed. Importantly, brivudine is associated with clinically relevant drug–drug interactions, particularly with fluoropyrimidines, which may increase adverse outcomes in polymedicated patients.[23–25] A Turkish study by Yaldiz et al found no significant differences in efficacy among famciclovir, valacyclovir, and brivudine, though they emphasized careful monitoring.[23] Our findings align with a recent systematic review confirming the efficacy of brivudine while highlighting its interaction profile.[24] Furthermore, a randomized trial showed that extending famciclovir treatment from 1 to 2 weeks did not reduce PHN incidence, suggesting that longer antiviral courses may not confer additional benefit.[25] Larger prospective studies are required to clarify the safety and comparative effectiveness of brivudine.

Vitamin B12 is frequently prescribed for HZ in routine clinical practice in our country, although its benefit remains debated. A systematic review of randomized controlled trials suggested that vitamin B12 may reduce pain scores in PHN compared with placebo, but the evidence is limited and heterogeneous.[26] In our study, 78% of patients received vitamin B12, but no significant association with clinical outcomes was observed. The lack of randomization, absence of standardized treatment protocols, and potential confounders (baseline B12 levels, neurological comorbidities, concomitant therapies) preclude causal interpretation. Larger randomized trials are needed to determine the true role of vitamin B12 in HZ management.

Inflammatory markers such as neutrophil-to-lymphocyte ratio (NLR), C-reactive protein (CRP), and liver enzymes are increasingly studied in viral infections. In our cohort, no statistically significant association was found between these laboratory parameters and outcomes. However, older patients had lower ALT levels, consistent with our results, although the clinical relevance of this finding remains unclear. In contrast, a Korean cohort suggested that ESR, CRP, and lymphocyte count may help predict PHN, though differences in study design limit generalizability.[27] Seasonal variation in HZ incidence has also been reported, but the evidence is inconsistent.[28] In our study, a slight winter increase was observed, though numbers were too small for conclusions.

Complications were more frequent in patients aged ≥65 years (16% vs 4%), but this difference did not reach statistical significance. These findings suggest that age may influence complication risk, but larger cohorts are needed to confirm this trend.

This study has several limitations. First, the retrospective, single-center design and modest sample size limited the ability to perform robust subgroup analyses. Second, laboratory and seasonal findings should be regarded as exploratory. Finally, causality cannot be inferred due to the observational design. Future multicenter, prospective studies are warranted to validate these findings and to further clarify the role of laboratory and seasonal factors in HZ outcomes.

Conclusion

In this single-center cohort, early initiation of antiviral therapy was associated with a low incidence of postherpetic neuralgia. Although patients treated with brivudine exhibited a numerically higher complication rate, this finding did not reach statistical significance and should not be overinterpreted. A single case of secondary bacterial infection was also observed, though rare. Vitamin B12 supplementation, despite its frequent use in routine practice, showed no meaningful impact on outcomes. Complications appeared more common in older patients, and ALT levels were lower in this group, though the clinical implications remain uncertain. Given the retrospective design, modest sample size, and lack of standardized treatment protocols, our findings must be interpreted with caution. Larger, multicenter prospective studies are required to validate these results and to define the role of adjunctive therapies, such as vitamin B12, in the management of herpes zoster.

Data Sharing Statement

The datasets generated and/or analyzed during the current study are not publicly available due to patient confidentiality but are available from the corresponding author on reasonable request.

Ethics Approval

This study was approved by the Non-Interventional Clinical Research Ethics Committee of Pamukkale University Faculty of Medicine (Approval No. 02, January 21, 2025) and conducted in accordance with the Declaration of Helsinki.

Informed Consent

Owing to the retrospective design and anonymization of data, the requirement for informed consent was waived by the Ethics Committee.

Author Contributions

The author made a significant contribution to the work reported, including the conception, study design, data acquisition, analysis, and interpretation; drafted, revised, and approved the final version of the manuscript; agreed on the journal to which the article has been submitted; and is accountable for all aspects of the work.

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Disclosure

The author declares that there are no competing interests.

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