

PREVENTION OF HERPES ZOSTER INFECTION IN BRAIN TUMOR PATIENTS TREATED WITH PCV REGIMEN : A SINGLE INSTITUE RETROSPECTIVE STUDY

INTRODUCTION

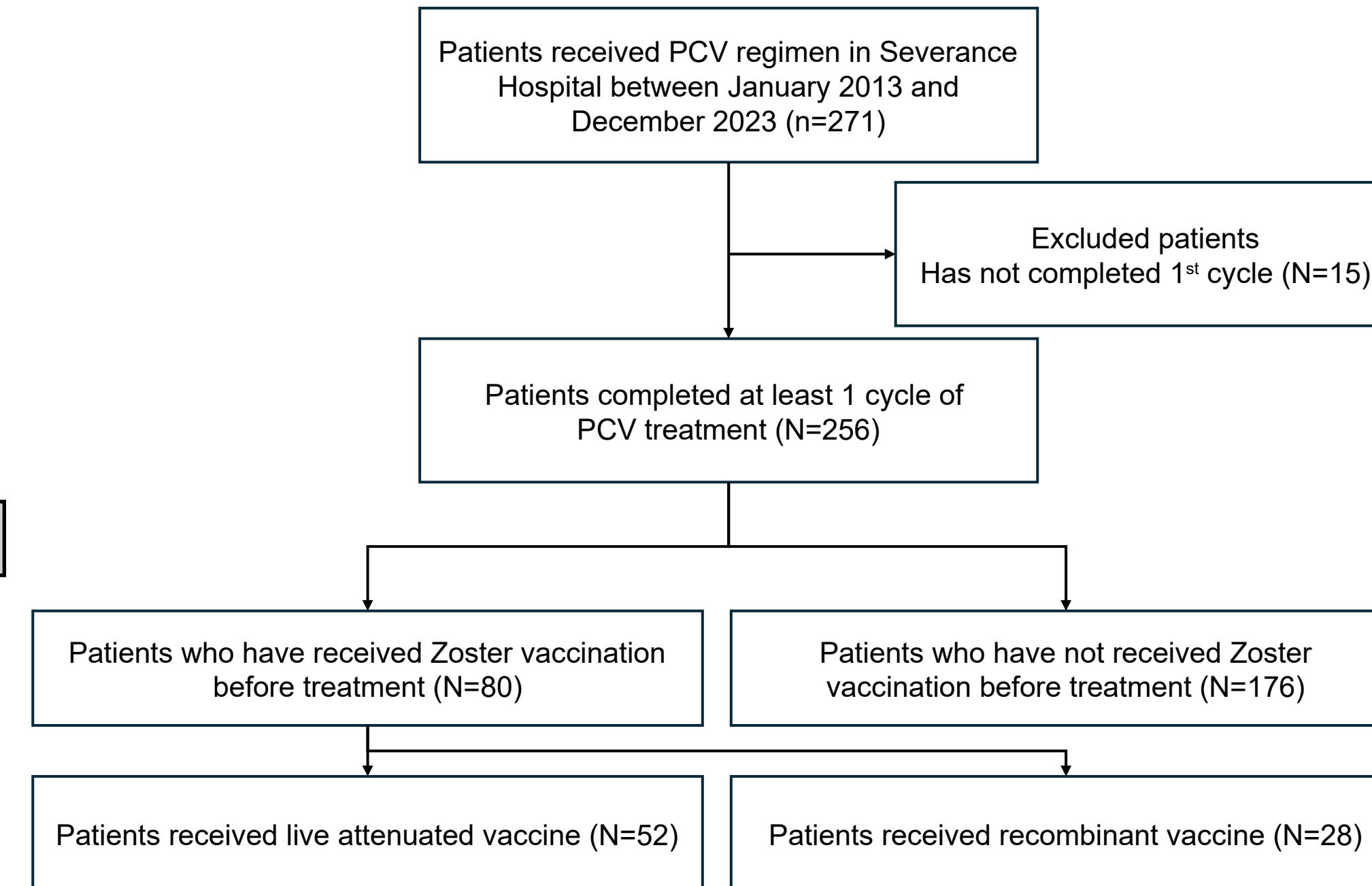
- The PCV regimen (Procarbazine, Lomustine, and Vincristine) has been utilized as an adjuvant therapy or treatment for recurrent lower grade gliomas such as astrocytomas, oligodendrogliomas, and oligoastrocytomas.
- Although this regimen had prolonged survival in many patients with brain tumor, common adverse events include severe bone marrow suppression, leading to increased risk of infection.
- Herpes Zoster (HZ) infection delays or even terminates the ongoing chemotherapy, and also deteriorates quality of life for patients being treated with PCV in real world practice.
- Therefore, after the advent of zoster vaccination in Korea, we started to administer zoster vaccine before the initiation of PCV regimen. We retrospectively analysed the patients who received PCV regimen to find out whether vaccination could possibly prevent HZ infection during the PCV chemotherapy (CTx.)

METHODS

- We retrospectively collected brain tumor patients who have been treated with PCV regimen in Yonsei Cancer Center, Korea. Patients who failed to complete first cycle were excluded.
- Patients who received the vaccination typically underwent surgery first, followed by radiotherapy(RT) or no adjuvant RT, and then PCV chemotherapy. Vaccination were done with either live attenuated vaccine (ZOSTAVAX®), or recombinant vaccine (SHINGRIX®) (Figure 1).
- Typically, live attenuated vaccine was administered at the end of RT, or before 2 to 4 weeks of initiation of PCV, if RT was not planned.
- Recombinant vaccine are to be administered twice, so 1st shot was planned before 6 to 8 weeks of initiation of PCV in patients ongoing RT, or 4 weeks before initiation of PCV, if RT was not planned. Final shot was administered right before the PCV regimen.
- Vaccination status and incidence of HZ during PCV treatment were assessed by electronic medical records (Figure 2).
- Primary endpoint of this study included risk of HZ infection with or without vaccination.
- Chi-square test or Fisher's exact test was employed to assess differences between categorical variables. The log-rank test was utilized to evaluate the incidence rate of zoster over time from the initiation of chemotherapy.
- All statistical study and graph were employed by SPSS 27.0..

RESULTS

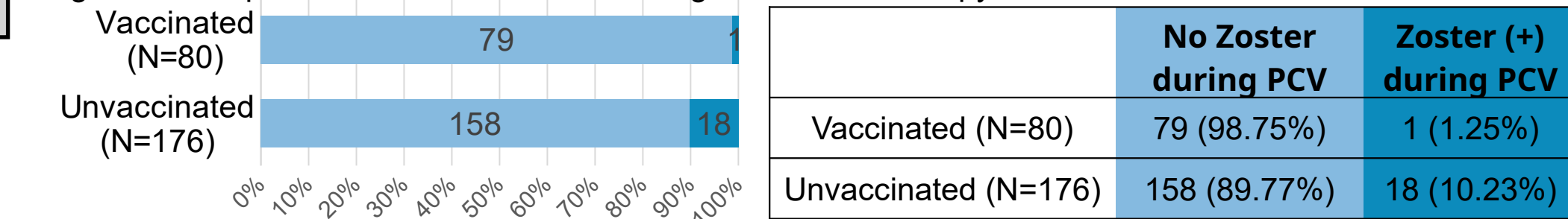
Figure 2. Consort diagram



		Unvaccinated (N=176)	Vaccinated (N=80)	P-value
Sex	Male (%)	85 (48.3%)	49 (61.3%)	0.060
Age	Mean(SD)	46.11 (11.32)	41.53 (9.78)	0.002**
Aim of CTx.	Adjuvant	141	70	0.301
	Recurred, before TMZ	23	7	
	Recurred, after TMZ	9	2	
	Palliative	1	1	
Diagnosis	Oligodendroglioma	134	40	0.034*
	Astrocytoma	13	31	
	Diffuse Astrocytoma	26	6	
	Others	3	3	
RT	No RT	31	2	<0.001***
	RT	145	76	
Radiation exposure (Gy)	<50	3	1	0.823
	≥50, <60	52	5	
	60 or 60.2	88	10	

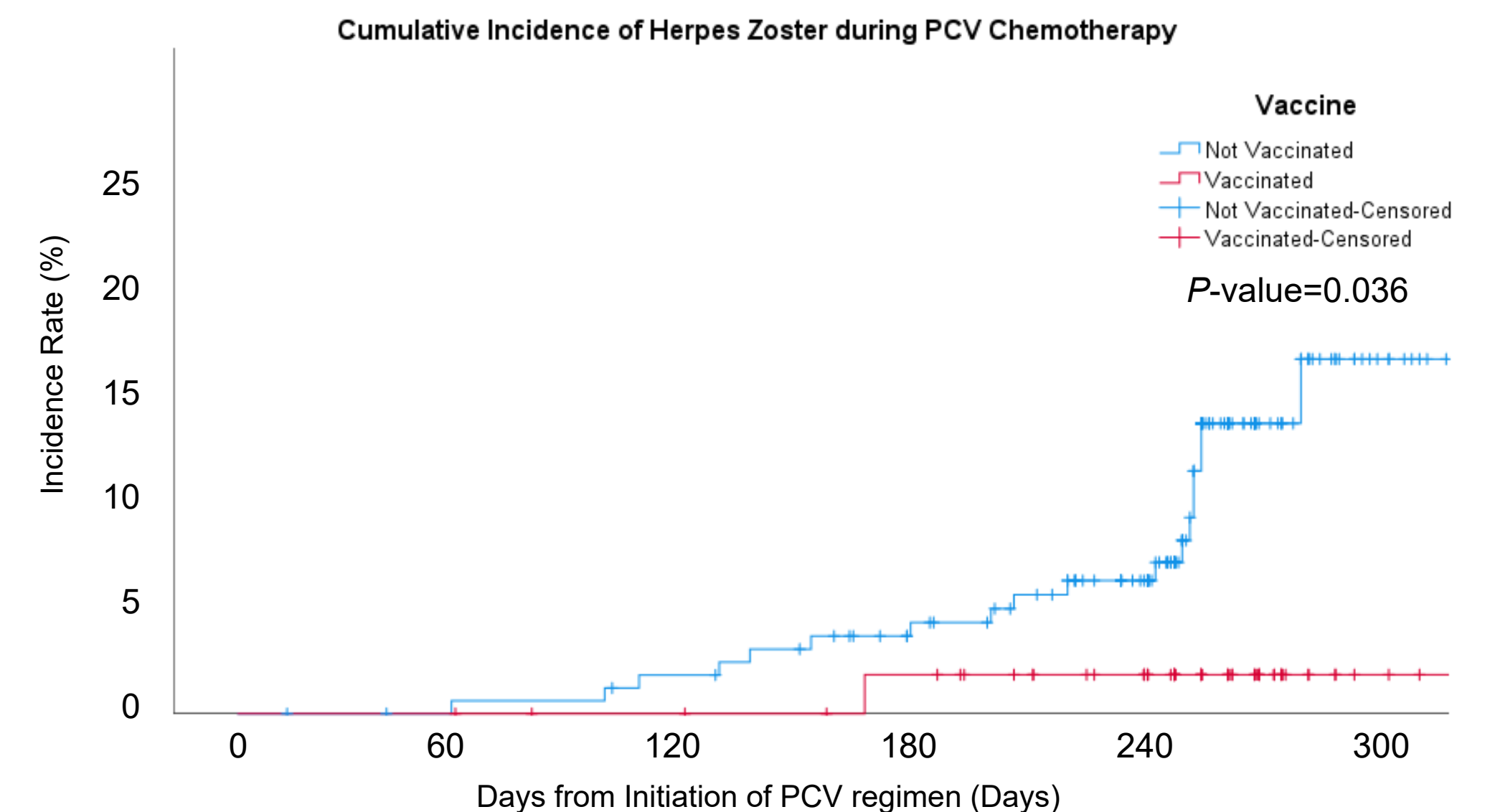
Table 1. Baseline Characteristics of patients who completed PCV regimen

Figure 3. Comparison of Zoster infection during PCV chemotherapy



OR=0.111 (0.015, 0.847), P-value=0.009

Figure 4. Incidence of Cumulative Zoster infection



- Between January 2013 and December 2023, total 256 patients who have received PCV regimen were evaluated. Table 1 shows baseline characteristics of the subjects.
- Among 176 unvaccinated patients, 18 patients (10.2%) were infected to HZ during the PCV treatment.
- Among 80 patients who were vaccinated before initiating PCV, only one patient (1.3%) was infected with HZ during PCV treatment.
- Odds ratio (OR) for HZ infection of vaccinated over unvaccinated patients was 0.111 (95% confidence interval, 0.015-0.847) (Fischer's exact test P-value = 0.009) (Figure 3).
- A log-rank test was used to compare the incidence between two groups, resulting in a P-value of 0.036 (Figure 4).

LIMITATIONS

- This study is retrospective study, it cannot completely reflect hazard ratio.
- The study cohorts were not well balanced in age or necessity for RT.
- Vaccination history was not fully recorded, patients without written vaccination history were considered not vaccinated since zoster vaccine was not very popular in Korea.

CONCLUSION

Zoster vaccination has significantly lowered HZ infection in patients with brain tumor treated with PCV regimen. Therefore, we strongly recommend zoster vaccination before administration of PCV regimen.

Figure 1. Schematic diagram of vaccination schedule

