

Timing of the infusion of nivolumab for patients with recurrent or metastatic squamous cell carcinoma of the esophagus influences its efficacy

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Abstract

Background: The immune system is affected by the circadian rhythm. The objective of this study was to clarify whether time-of-day patterns (early or late in the daytime) of the infusion of nivolumab and whether its duration affect treatment efficacy in metastatic or recurrent esophageal squamous cell carcinoma (R/M-ESCC).

Methods: The data of 62 consecutive patients with R/M-ESCC treated with nivolumab between February 2017 and May 2022 were retrospectively reviewed. The infusion of nivolumab before 13:00 was set as ‘early in the day’, and that after 13:00 was set as ‘late in the day’. The treatment efficacy was compared between early and late groups by 3 criteria (first infusion, during the first 3 months, and all treatment courses).

Results: The overall survival, progression-free survival, response rate of patients received the first dose in the early group were significantly superior to those of patients in the late group. The progression-free survival and response rate of patients who received the majority of nivolumab infusions before 13:00 during the first 3-months were significantly superior to those who received it after 13:00, with the exception of overall survival. There were no significant differences in the overall survival, progression-free survival, and response rate between patients who received the majority of nivolumab infusions before 13:00 of all treatment courses and those who received it after 13:00.

Conclusion: The timing of the infusion of nivolumab may affect treatment efficacy in R/M ESCC.