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Preoperative platelet distribution width-to-platelet count ratio as a prognostic factor in patients with glioblastoma multiforme

Ehsan Alimohammadi , Seyed Reza Bagheri, Arash Bostani, Zahra Rezaie & Moradi Farid

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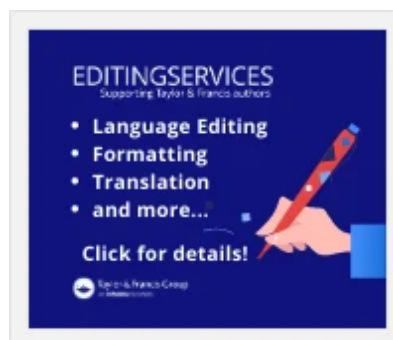
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Abstract

Backgrounds

The prognostic significance of the platelet volume indices (PVIs), including the platelet distribution width (PDW), mean platelet volume (MPV), and platelet distribution width-to-platelet count ratio (PDW/P) has been demonstrated in a variety of malignancies. This study aimed to evaluate the prognostic value of PVIs in patients with a newly diagnosed glioblastoma multiforme (GBM).

Methods

We retrospectively evaluated the clinical data of 143 patients with GBM who managed at our center between May 2010 and May 2019. Receiver operating characteristic curves (ROC) for cutoff value determination, Kaplan–Meier survival analysis, and univariate and multivariate Cox regression analyses were performed.

Results

The corresponding cutoff values for MPV, PDW, and PDW/P were 9.05, 14.7, and 0.51, respectively. The Kaplan-Meier survival analyses showed that patients with an MPV < 9.05 and those with PDW < 14.7 and cases with PDW/P < 0.51 had a longer overall

survival (OS) ($p < 0.05$). Based on univariate analysis, age, Karnofsky Performance Status scores (KPS), tumor focality, MPV, PDW, and PDW/P were predictors of OS ($p <$

0.05). Final multivariate Cox regression analyses showed age (HR 1.040, 95% CI 1.009–1.071, $P=0.011$), KPS (HR 2.208, 95% CI 1.107–4.405, $P=0.025$), tumor focality (HR 4.596, 95% CI 1.988–10.626, $p < 0.001$), and PDW/P (HR 1.786, 95% CI 1.103–3.072, $P=0.037$) as the independent predictors of OS in patients with newly diagnosed glioblastoma.

Conclusions

Our results suggest an elevated preoperative PDW/P, along with previously established variables, as a simple and inexpensive prognostic factor for patients with GBM.

Keywords: Platelet volume indices platelet distribution width mean platelet volume glioblastoma multiforme overall survival

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Disclosure statement

All authors declare that they have no conflict of interest.

Ethical approval and consent to participate

The study received ethics approval by the Kermanshah University of Medical Science Ethics Committee. Written consent to participate was obtained from all patients.

Author contributions

EA and SRB had the idea for this study. EA, SRB, and AB participated in outlining the concept and design. ZR and FM did the data acquisition. EA and FM did the statistical analysis and wrote the first draft of the manuscript. EA, SRB and AB revised the final manuscript. All authors have read and approved the manuscript.

Data availability statement

All data are available from the corresponding author upon reasonable request.

Additional information

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