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Carboplatin desensitization in the era of target therapies: still worthwhile?

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Abstract

Purpose: Unresectable pediatric low-grade gliomas (LGG) usually need adjuvant therapy, and carboplatin hypersensitivity reaction (HR) commonly leads to premature treatment cessation of a standard chemotherapy regimen. In the molecular era, advances in understanding tumor genetic characteristics allowed the development of targeted therapies for this group of tumors; however, cost-effectiveness assessment of treatments, especially in low-income countries, is crucial. The aim is to describe the results of carboplatin desensitization protocol in a single center in a middle-income country.

Method: Prospective analysis of children with LGG submitted to carboplatin desensitization from December 2017 to June 2020 with follow-up until April 2024.

Results: Nine patients were included. The mean age was 11 years. Five patients were male. Seven had optic pathway and two cervicomedullary location. Six had histologic diagnosis and four molecular analyses. The incidence of carboplatin reactions during the study period was 39.1%. Six patients underwent skin prick test, three with positive results. The first HR occurred, on average, around the 9th cycle of treatment. All patients had cutaneous symptoms, and five out of nine had anaphylaxis as the first reaction. 77.7% of the patients completed the protocol, and the clinical benefit rate (stable disease and partial response) was 88.8%. Six patients further required other lines of therapy. Monthly, the total cost for carboplatin was \$409.09, and for target therapies (dabrafenib plus trametinib), \$4929.28 to \$5548.57.

Conclusion: Our study presented an interesting and cost-effective option where desensitization allowed children with HR to be treated with first-line therapy, avoiding the discontinuation of an effective treatment.

Keywords: Carboplatin desensitization; Low-grade glioma; Low-middle-income country; Molecular diagnostics; Targeted therapies.

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