

Carmustine

see also [Carmustine wafer](#).

Carmustine or BCNU (bis-chloroethyl**nitrosourea**) is a mustard gas-related β -chloro-nitrosourea compound used as an alkylating agent in chemotherapy. As a dialkylating agent, BCNU is able to form interstrand crosslinks in DNA, which prevents DNA replication and DNA transcription.

It has the appearance of an orange-yellow solid.

Carmustine for injection is marketed under the name BiCNU by Bristol-Myers Squibb.

Case series

Survival data of 34 mostly chemotherapy-naïve glioblastoma patients treated with BCNU at 1(st) relapse were compared to 29 untreated control patients, employing a multiple Cox regression model which considered known prognostic factors including MGMT promoter hypermethylation. Additionally, medical records of 163 patients treated with BCNU for recurrent glioma WHO grade II to IV were retrospectively evaluated for BCNU-related side effects classified according to the National Cancer Institute Common Toxicity Criteria for Adverse Events (CTCAE) version 2.0.

In recurrent glioblastoma, multiple regression survival analysis revealed a significant benefit of BCNU-based chemotherapy on survival after relapse ($p = 0.02$; $HR = 0.48$; 95 % $CI = 0.26-0.89$) independent of known clinical and molecular prognostic factors. Exploratory analyses suggested that survival benefit was most pronounced in MGMT-hypermethylated, BCNU-treated patients. Moreover, BCNU was well tolerated by 46 % of the 163 patients analyzed for side effects; otherwise, predominantly mild side effects occurred (CTCAE I/II; 45 %). Severe side effects CTCAE III/IV were observed in 9 % of patients including severe hematotoxicity, thromboembolism, intracranial hemorrhage and injection site reaction requiring surgical intervention. One patient presented with a clinically apparent pulmonary fibrosis CTCAE IV requiring temporary mechanical ventilation.

In this study, BCNU was rarely associated with severe side effects, particularly pulmonary toxicity, and, in case of recurrent glioblastoma, even conferred a favorable outcome. Therefore BCNU appears to be an appropriate alternative to other nitrosoureas although the efficacy against newer drugs needs further evaluation ¹⁾.

¹⁾

Jungk C, Chatziaslanidou D, Ahmadi R, Capper D, Bermejo JL, Exner J, von Deimling A, Herold-Mende C, Unterberg A. Chemotherapy with BCNU in recurrent glioma: Analysis of clinical outcome and side effects in chemotherapy-naïve patients. BMC Cancer. 2016 Feb 10;16(1):81. doi: 10.1186/s12885-016-2131-6. PubMed PMID: 26865253.

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