G-CIMP

The updated 2016 World Health Organization (WHO) classification of tumors of the central nervous system reflects a refinement of tumor diagnostics by integrating the genotypic and phenotypic features, thereby narrowing the defined subgroups. The new classification recommends molecular diagnostics of isocitrate dehydrogenase (IDH) mutational status in gliomas. IDH-mutant gliomas manifest the cytosine-phosphate-guanine (CpG) island methylator phenotype (G-CIMP). Notably, the recent identification of clinically relevant subsets of G-CIMP tumors (G-CIMP-high and G-CIMP-low) provides a further refinement in glioma classification that is independent of grade and histology. This scheme may be useful for predicting patient outcome and may be translated into effective therapeutic strategies tailored to each patient [1)].

IDH1/2-mutant gliomas harbor a distinct glioma-CpG island methylation phenotype (G-CIMP) that may promote the initiation and progression of secondary pathway gliomas by silencing tumor-suppressive genes. The potential role of tumor-suppressive microRNAs (MicroRNA; miR) in this process is not understood [2)].

1)
Malta TM, de Souza CF, Sabedot TS, Silva TC, Mosella MS, Kalkanis SN, Snyder J, Castro AVB, Noushmehr H. Glioma CpG island methylator phenotype (G-CIMP): biological and clinical implications. Neuro Oncol. 2018 Apr 9;20(5):608-620. doi: 10.1093/neuonc/nox183. PubMed PMID: 29036500; PubMed Central PMCID: PMC5892155.

2)
Li S, Chowdhury R, Liu F, Chou AP, Li T, Mody RR, Lou JJ, Chen W, Reiss J, Soto H, Prins R, Liau LM, Mischel PS, Nghiemphu PL, Yong WH, Cloughesy TF, Lai A. Tumor-suppressive miR148a is silenced by CpG island hypermethylation in IDH1-mutant gliomas. Clin Cancer Res. 2014 Nov 15;20(22):5808-22. doi: 10.1158/1078-0432.CCR-14-0234. Epub 2014 Sep 15. PubMed PMID: 25224277; PubMed Central PMCID: PMC4233178.