DKC1

The dyskeratosis congenita 1 (DKC1) gene is located on the X chromosome at Xq28. Dyskerin encoded by the DKC1 gene is associated with the formation of certain small RNAs and the telomerase activity. Inherited mutations in DKC1 inactivate the dyskerin and causes dyskeratosis congenital, which is characterized by skin defects, hematopoiesis failure, and increased susceptibility to cancer. DKC1 reportedly up-regulates in several human cancers, including renal cell carcinoma and prostate cancer. Dyskerin is deregulated in B-chronic lymphocytic leukemia and breast carcinomas, but its expression and function in glioma have hardly been investigated. Hence, we were prompted to collect tissue samples and implement cell experiments. Our study reveals that DKC1 expression is significantly increased in the pathological tissues of glioma compared with that in normal tissues. The increased staining of DKC1 is related to the World Health Organization stages of tumors. DKC1 knockdown also significantly inhibits glioma cell growth by altering the expression of cell cycle-relative molecules to arrest at the G1 phase. In the transwell chamber, DKC1 knockdown glioma cells exhibit low motility. Consistent with classic oncogenic pathways, N-cadherin, HIF-1α, and MMP2 expression levels are lower compared with those of the control group. Therefore, DKC1 up-regulation in gliomas is common and necessary for extensive tumor growth. The phenotype of glioma cell lines after DKC1 down-regulation suggests its use as a valuable clinical treatment strategy [1)].

The article by Miao et al. is an important contribution that opens the door to further research on DKC1 in glioma. It aligns well with the current push toward precision oncology, although more work is needed to validate its clinical and therapeutic utility.

1)
Miao FA, Chu K, Chen HR, Zhang M, Shi PC, Bai J, You YP. Increased DKC1 expression in glioma and its significance in tumor cell proliferation, migration and invasion. Invest New Drugs. 2019 Dec;37(6):1177-1186. doi: 10.1007/s10637-019-00748-w. Epub 2019 Mar 7. Erratum in: Invest New Drugs. 2022 Jun;40(3):676-678. doi: 10.1007/s10637-022-01215-9. PMID: 30847721.