CDKN2A/B homozygous deletion (Non-core)

Reason/Evidentiary Support

Homozygous deletion of the *CDKN2A/B* genes on the short arm of chromosome 9 is associated with higher-grade diffuse gliomas and has been suggested as a marker for assessing likely behaviour (and grading) of IDH-mutant diffuse astrocytic tumours, with those harbouring homozygous *CDKN2A/B* deletions following more aggressive courses.[1] On the other hand, *CDKN2A/B* deletions have been shown to be a characteristic genetic feature in pleomorphic xanthoastrocytomas, occurring in up to 87% of cases in one series; in this situation, along with *BRAF* V600E mutation, the *CDKN2A/B* deletions do not connote more aggressive behaviour.[2] In neuropathological practice, FISH or high-resolution cytogenetic techniques (e.g., array-CGH, SNP arrays, methylation arrays) can be used to detect homozygous *CDKN2A/B* deletions.

The *CDKN2A* gene encodes the p16 protein, which can be detected using immunohistochemistry. However, whether loss of p16 nuclear staining has similar prognostic information to homozygous *CDKN2A/B* deletion remains to be determined and, at the present time, p16 immunohistochemistry cannot be recommended as a substitute for assessing homozygous *CDKN2A/B* deletion.[1]

References

1 Shirahata M, Ono T, Stichel D, Schrimpf D, Reuss DE, Sahm F, Koelsche C, Wefers A, Reinhardt A, Huang K, Sievers P, Shimizu H, Nanjo H, Kobayashi Y, Miyake Y, Suzuki T, Adachi JI, Mishima K, Sasaki A, Nishikawa R, Bewerunge-Hudler M, Ryzhova M, Absalyamova O, Golanov A, Sinn P, Platten M, Jungk C, Winkler F, Wick A, Hanggi D, Unterberg A, Pfister SM, Jones DTW, van den Bent M, Hegi M, French P, Baumert BG, Stupp R, Gorlia T, Weller M, Capper D, Korshunov A, Herold-Mende C, Wick W, Louis DN and von Deimling A (2018). Novel, improved grading system(s) for IDH-mutant astrocytic gliomas. *Acta Neuropathol*.

2 Vaubel RA, Caron AA, Yamada S, Decker PA, Eckel Passow JE, Rodriguez FJ, Nageswara Rao AA, Lachance D, Parney I, Jenkins R and Giannini C (2018). Recurrent copy number alterations in low-grade and anaplastic pleomorphic xanthoastrocytoma with and without BRAF V600E mutation. *Brain Pathol* 28(2):172-182.