00408 Chromosomal Abnormalities in Childhood Brain Tumours

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Aims: Childhood brain tumours are the most common paediatric solid tumours and the main cause of death amongst all childhood cancers. They are classified according to WHO Classification of Tumours of the Central Nervous System 2016. We present the results of cytogenetic analysis of paediatric brain tumours and describe the frequency of anomalies seen in different tumour subtypes.

Methodology: Chromosome analyses were performed on 31 paediatric brain tumours. These included eight astrocytic tumours, three ependymal tumours, three embryonal-AT/RTs, 13 medulloblastomas, three embryonal-NOS and one mixed neuronal glial tumour.

Result: Majority of low grade astrocytomas showed normal karyotype (3/5), although one showed gains of chromosomes 5, 7, 8, 9, 10 and 20 while another showed chromosome 22 abnormalities. All three high grade astrocytomas showed complex chromosomal abnormalities.For embryonal tumours, two of the three AT/RTs showed abnormalities involving chromosome 22, which is in concordance with published literature. 5/13 (38%) medulloblastomas showed several chromosome abnormalities; three with hyperdiplody and two with gain in chromosome 7 and monosomy 6 in one. No 17p deletion was seen in these tumours. Complex numerical and structural abnormalities were observed in three NOS samples. One ependymoma showed derivative chromosome 11 and a normal karyotype was seen in the sole mixed neuronal- glial tumour.

Conclusion: Our study demonstrates that high-grade astrocytic tumours in children frequently have abnormal cytogenetic aberrations, often in the hyperdiploid and polyploid ranges. Loss of 17p was less frequently seen in medulloblastomas compared to what is frequently quoted in literature. Correlation of specific chromosomal abnormalities as prognostic predictors for the clinical course of disease, response to therapy and overall survival remains poorly defined. We hope that our data will add to the body of research in characterizing chromosomal anomalies seen in different histological subtypes of brain tumours in our local patient population.