

Supplementary Methods

Detailed description on methods for histologic diagnosis

The ATRX mutation status was evaluated using an anti-ATRX rabbit polyclonal antibody (Sigma-Aldrich, St. Louis, MO; n=30), the loss of which indicates ATRX mutation, or from targeted next-generation sequencing (n=13). IDH1 R132H-mutant protein was evaluated using a mouse monoclonal antibody (clone H09; Dianova, Hamburg, Germany; n=30) or targeted NGS (n=13). IDH2 mutation was evaluated by nested-polymerase chain reaction (n=14) or targeted NGS (n=13). CDKN2A and PTEN deletion status were evaluated by fluorescence in situ hybridization (FISH) using a Vysis CDKN2A/CEP9 FISH Probe Kit (n=23) and Vysis LSI PTEN/CEP 10 FISH Probe Kit (n=23) or from targeted NGS (n=13). Co-deletion of 1p/19q was evaluated using the Vysis LSI 1p36(orange)/1q25(green) and LSI 19q13(orange)/19p13(green) probe kit and morphometric analysis (Allegro Plus/Solo Touch/SoloWeb system by BioView, n=20) or targeted NGS (n=13). Finally, the MGMT methylation status was evaluated by methylation-specific PCR of MGMT (n=32).