**Supplementary material**

**Prognostic Role of H3K27M Mutation, Histone H3K27 Methylation Status, and EZH2 Expression in Diffuse Spinal Cord Gliomas.**

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**Supplementary Fig. 1** Case presentation of a H3K27M-mutant case experiencing diagnostic revision following additional surgery.

A and B: Preoperative magnetic resonance imaging (MRI) presenting a high-intensity region on T2-weighted imaging (A) and heterogeneous enhancement on gadolinium-enhanced T1-weighted imaging (B) at thoracic (Th) levels 8–10.

C: Hematoxylin and eosin (HE) staining of the specimen from the first operation presenting mildly proliferating astrocytic tumor cells, which was diagnosed as diffuse astrocytoma WHO grade 2.

D and E: T2-weighted (D) and gadolinium-enhanced T1-weighted (E) MRI obtained after initial surgery involving partial resection of the tumor.

F: HE staining of the specimen from the additional surgery presenting densely proliferating astrocytic tumor cells with marked nuclear atypia, which was diagnosed as anaplastic astrocytoma WHO grade 3.

**Supplementary Fig. 2** Kaplan–Meier survival curve showing no significance difference according to MGMT expression in WHO grade 2–4 cases.

**Supplementary Fig. 3** Clinical characteristics of H3K27M-mutant and wild-type H3K27 cases in WHO grade 3 and 4 spinal cord gliomas.

A: Distribution of age according to H2K27 status. Despite the absence of significant differences between these groups, H3K27M-mutant cases presented bimodal peaks among teenagers and those in their fifties.

B: Distribution of tumor location presenting no significant differences between groups.

**Supplementary Fig. 4** Survival analysis of WHO grade 2 spinal cord gliomas.

A: Kaplan–Meier survival curve for distinct groups: cases with poor (i.e., died within several years from initial treatment) and favorable (i.e., survived for more than 10 years) outcomes.

B and C: Representative case with a favorable outcome. An 11-year old male with thoracic spinal cord lesion (B) pathologically diagnosed as diffuse astrocytoma (D). He has survived for 16 years without recurrence following initial surgery.

D and E: Representative case with a poor outcome. A 23-year old female with thoracic spinal cord lesion (B) pathologically diagnosed as diffuse astrocytoma (D) similar to the aforementioned case. However, she experienced malignant transformation and died 4 years after initial surgery.

**Supplementary Fig. 5** Survival analysis of WHO grade 2–4 cases according to H3K27me3 status and EZH2 expression.

A: Kaplan–Meier survival curve showing no significance difference according to H3K27me3 status. However, majority of the cases with long-term survival exhibited retained H3K27me3.

B: Kaplan–Meier survival curve showing no significance difference according to EZH2 expression. However, majority of the cases with long-term survival exhibited negative EZH2 expression.