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A common tumour in a rare location: a single centre case series of cerebellar glioblastoma

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Abstract

Although glioblastoma is the commonest primary brain tumour in adults, its location in the cerebellum is extremely rare. We present thirteen cases (3 female, 10 male; median age at presentation 56 [age range 21-77]) of surgically managed, histologically confirmed, primary cerebellar glioblastoma (cGB) over a 17 year period (2005-2022). Pre-operative radiological diagnosis was challenging given cGB rarity, although MRI demonstrated ring enhancement in all cases. Surgical management included posterior fossa craniectomy and debulking in 11 cases and burr hole biopsy in two. CSF diversion was necessary in four cases. No evidence of IDH or ATRX gene mutations was found when tested. Survival ranged from 1 to 22 months after diagnosis (mean 10.9 months). We also seek to understand why glioblastoma is rare in this location and discuss potential reasons for this. We hypothesise that increasing anatomical distance from germinal regions and decreased local endogenous neural stem cell activity (which has been associated with glioblastoma) may explain why glioblastoma is rare in the cerebellum. We hereby seek to add to the limited literature on cGB as this is the largest UK cGB series to date.

Keywords: Cerebellar glioblastoma; glioblastoma; glioma; high grade glioma; neural stem cell; posterior fossa.