

## Cerebellar Cystic Oligodendroglioma in a Young Adult

Sir,

Oligodendrogliomas are tumors of glial cells, and they represent approximately 4%–5% of all primary brain tumors.<sup>[1]</sup> The majority of oligodendrogliomas are supratentorial (>90%) and infrequently encountered in the posterior fossa.<sup>[2,3]</sup> Infratentorial cystic oligodendrogliomas are very uncommon, and most of them belong to pediatric age group. We report a cerebellar cystic oligodendroglioma in a young adult.

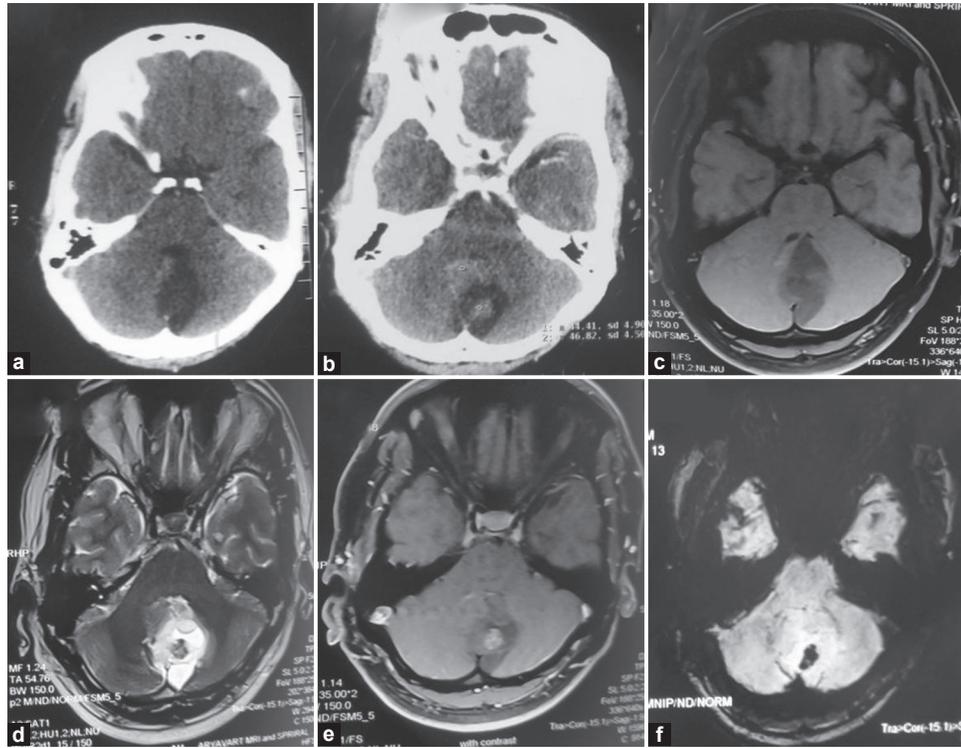
A 36-year-old male presented with a history of headache and vertigo of 1-month duration. Neurological examination showed impaired tandem gait with no other neurological deficits. Noncontrast and contrast computed tomography of the head revealed a large, well-defined, hypodense vermian lesion, with areas of patchy contrast enhancement [Figure 1a and b]. No evidence of calcification noted. Magnetic resonance imaging (MRI) showed a large inhomogeneous solid cystic lesion. The large cystic component is hypointense on T1-weighted images and hyperintense on T2-weighted images whereas small solid component is isointense on T1-weighted images and hypointense on T2-weighted images. On contrast study, only solid component showed heterogeneous enhancement with evidence of blooming on susceptibility-weighted images (SWI) [Figure 1c-f]. A radiological impression of hemangioblastoma and the possibility of pilocytic astrocytoma was kept in mind, and the patient was prepared for surgery.

A midline suboccipital craniectomy with complete excision of the lesion was performed, and postoperative recovery was uneventful. Histopathological examination (HPE) of the specimen showed a

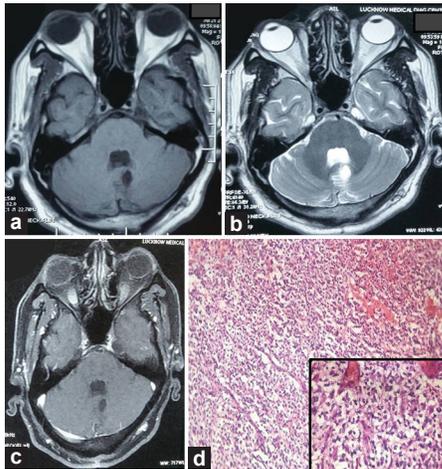
diffusely infiltrating glial neoplasm composed of monomorphic cells with uniform round vesicular nuclei, small distinct nucleoli, and a perinuclear halo interspersed by arborizing thin-walled blood vessels. The tumor cells were dispersed around ectatic dilated and congested blood vessels. Areas of necrosis were also evident at places [Figure 2d]. The proliferation fraction, as detected by Ki-67, was low (<1%). Immunohistochemistry (IHC) was performed for confirmation; the tumor cells were strongly positive for GFAP along with S-100 and negative for inhibin. Based on HPE and IHC, a diagnosis oligodendroglioma (WHO grade 2) was established. There was no evidence of clinicoradiological recurrence of the lesion at 6-month follow-up [Figure 2a-c]. Cystic cerebellar oligodendroglioma in adult has never been reported in the literature (PubMed search with key words “posterior fossa,” “cystic oligodendroglioma,” “adults”).

The symptoms of oligodendroglial tumors do not reliably distinguish them from other types of low-grade gliomas. The most common presenting symptom is seizures (generalized, simple partial, complex partial), ranging in incidence from 35% to 85% of patients.<sup>[4]</sup> Other presenting symptoms are headache, change mental status, visual complaints, nausea, vomiting, vertigo, and/or localized sensory/motor deficit.<sup>[4,5]</sup> The clinical course of oligodendroglioma in the posterior cranial fossa is relatively indolent, and symptoms (nausea, vomiting, and vertigo) are usually long standing.<sup>[6]</sup>

Radiological findings of oligodendrogliomas may be characteristic but are not pathognomonic. Usually, these tumors are found in the cortex and/or subcortical white



**Figure 1:** (a and b) Plain and contrast computed tomography, (c-f) magnetic resonance imaging images (c) T1-weighted image, (d) T2 weighted image, (e) T1 contrast, (f) susceptibility-weighted image



**Figure 2:** (a-c) Follow-up magnetic resonance imaging (a) T1-weighted image, (b) T2-weighted image, (c) T1 contrast, (d) histopathological examination  $\times 100$  (inset  $\times 400$ )

matter with fairly discrete margins (49%–59%) and variable contrast enhancement.<sup>[4]</sup> Peritumoral edema and mass effect are usually minimal or absent despite the size of the tumor. On MRI, an oligodendroglioma is typically hypointense on T1-weighted images and hyperintense on T2-weighted images, often appearing fairly well demarcated.<sup>[4,7]</sup> The diagnosis of oligodendrogliomas is suggested preoperatively when intratumoral or peritumoral calcification is seen on neuroimaging (up to 90% cases).<sup>[4,7]</sup> Calcifications

and enhancement are seen less frequently in children and adolescents with oligodendrogliomas than in adults.<sup>[4]</sup> However, posterior fossa oligodendrogliomas may not show characteristic imaging findings with occasional heterogeneous enhancement and absent or mild mass effect.<sup>[7]</sup> In our case, the tumor was largely cystic with small solid part, and contrast enhancement of solid part was seen along with blooming on SWI.

Oligodendrogliomas are treated by surgical excision with or without adjuvant radiation therapy based on multiple prognostic factors. Oligodendrogliomas seem to be more likely to metastasize outside the central nervous system (to bone, lung, pleura, and liver) than other gliomas.<sup>[4]</sup> Because of the tendency to metastasize through the cerebrospinal fluid, some authors recommended cerebrospinal fluid cytology in all cases to determine the need for spinal axis irradiation. Others suggest that the oligodendroglioma of the posterior fossa be considered potentially malignant and treat with local as well as prophylactic craniospinal radiotherapy.<sup>[6]</sup> Infratentorial oligodendrogliomas may be more aggressive and malignant than supratentorial ones.<sup>[2,8]</sup> Therefore, postoperative radiotherapy has been advocated in many reported evidence of infratentorial oligodendrogliomas. However, some continue to observe their patients for clinicoradiological recurrence before

instituting radiotherapy (as in our case). The exact treatment protocols of posterior fossa oligodendroglioma are yet to be established due to the paucity of cases.

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### Conflicts of interest

There are no conflicts of interest.

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