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Case Report

Rare Presentation of Pilocytic Astrocytoma in the Cerebellar Tonsils of an Adult: A Case Report

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ABSTRACT

Background and Importance: Low-grade gliomas (LGGs) in the infratentorial region are rare in adults.

Case Presentation: A 31-year-old man presented with a 2-year history of neck pain and progressive numbness in the face and left arm. Neurological examination upon admission revealed no cranial nerve involvement, motor or sensory deficits, or signs of cerebellar dysfunction. The patient's medical history was unremarkable. Cranial magnetic resonance imaging (MRI) revealed a 2-cm T2 hyperintense lesion with focal cystic components in the right cerebellar tonsil, suggestive of a LGG. The lesion was surgically removed without any complications. Post-operative MRI showed total removal of the tumor. Histopathological analysis confirmed the lesion to be a pilocytic astrocytoma. No adjuvant therapy was given, and the patient is recurrence-free at 1-year follow-up.

Conclusion: This case underlines the possibility of such rare diagnoses in adult patients and the effectiveness of the surgical treatment.

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Highlights

- Pilocytic astrocytoma in the cerebellar tonsils of an adult is an infrequent occurrence.
- The tumor was completely removed surgically without complications, and its benign nature was histopathology confirmed.
- The patient remained recurrence-free at 1-year follow-up without needing adjuvant therapy, emphasizing the effectiveness of surgical treatment.

Plain Language Summary

This case report discusses a rare instance of a pilocytic astrocytoma, a type of low-grade brain tumor found in the cerebellar tonsils of a 31-year-old man. The patient had neck pain and numbness in the left side of his face and arm for two years. Upon examination, doctors found no signs of nerve or motor problems. A magnetic resonance imaging (MRI) scan revealed a 2-cm lesion in the right cerebellar tonsil, which appeared to be a low-grade glioma (LGG). The tumor was surgically removed without complications, and a follow-up MRI confirmed its complete removal. Pathological analysis confirmed the tumor as a pilocytic astrocytoma, which is usually benign and slow-growing. The patient did not receive any additional treatment after surgery. One year later, he remains symptom-free with no signs of the tumor returning. This case underscores the rarity of such tumors in adults and highlights the successful outcome of surgical removal without the need for further therapy. The report emphasizes the importance of considering rare diagnoses in unusual locations and demonstrates the potential for positive outcomes with appropriate surgical intervention.

1. Background and Importance

Low-grade gliomas (LGGs) are World Health Organization (WHO) grade 1 and 2 tumors that are slow-growing tumors arising from glial cells [1]. Pilocytic astrocytomas are the most common virulence of childhood [2], but infratentorial pilocytic astrocytomas are rarely observed in adults [1, 3, 4]. We present a rare case of adult infratentorial pilocytic astrocytoma to add to the literature.

2. Case Presentation

A 31-year-old man presented with a 2-year history of neck pain and progressive numbness in the face and left arm. The patient's medical history was unremarkable, with no previous surgeries, allergies, or known diseases. Neurological examination upon admission revealed no cranial nerve involvement, motor or sensory deficits, or signs of cerebellar dysfunction.

Cranial magnetic resonance imaging (MRI) was obtained, revealing a 2-cm T2 hyperintense lesion with focal cystic components in the right cerebellar tonsil (Figure 1), suggestive of a LGG. No contrast enhancement was observed on T1 gadolinium-enhanced sequences. Perfusion MRI showed no increase in the tumor's perfusion. A spectroscopy was also obtained, but it was inconclusive due to artifacts caused by tumor adjacency to the bony structures.

The patient was operated on after informed consent was obtained. In the prone position, a midline incision and suboccipital craniotomy were made. The tumor was removed without any complications and sent to pathology for analysis. Postoperative MRI revealed the removal of the tumor (Figure 2). The patient was discharged four days later without any significant complications.

The tumor on morphological analysis showed areas of dense fibrillary tissue with microcystic spaces in between. The tumor was ATRX loss negative, IDH-1 mutation negative, and synaptophysin negative, confirming the diagnosis of pilocytic astrocytoma. This, along with the absence of p53 mutation, commonly found in higher grade gliomas, and a low Ki-67 labeling index of 1%, suggested a low proliferative potential, consistent with the benign nature of pilocytic astrocytomas.

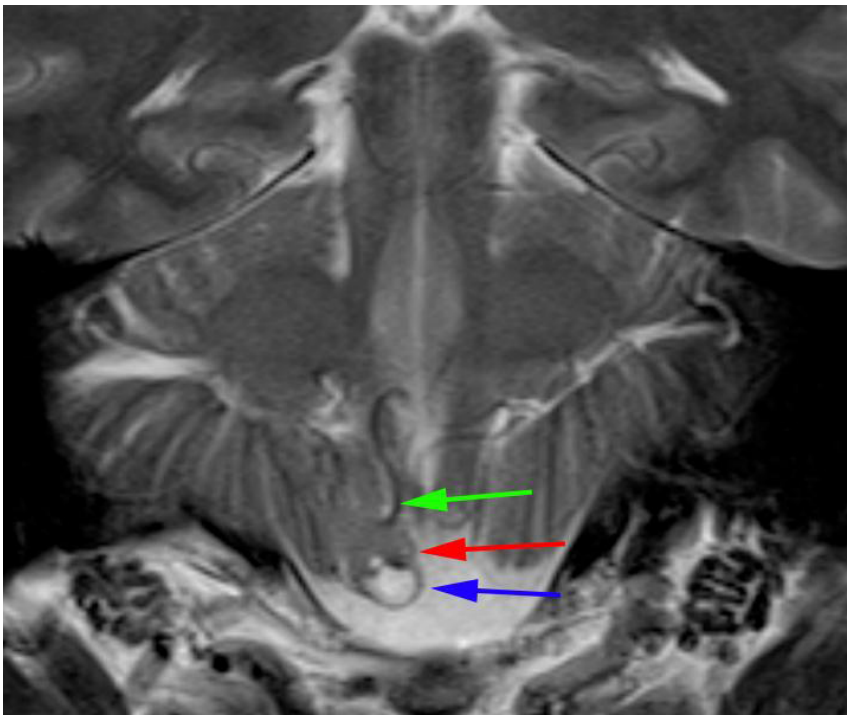

Figure 1. In the T2 coronal MRI

MRI: Magnetic resonance imaging.

Notes: PICA is marked with the green arrow, while the tumor is marked with the red arrow. The cystic component shown by the blue arrow.

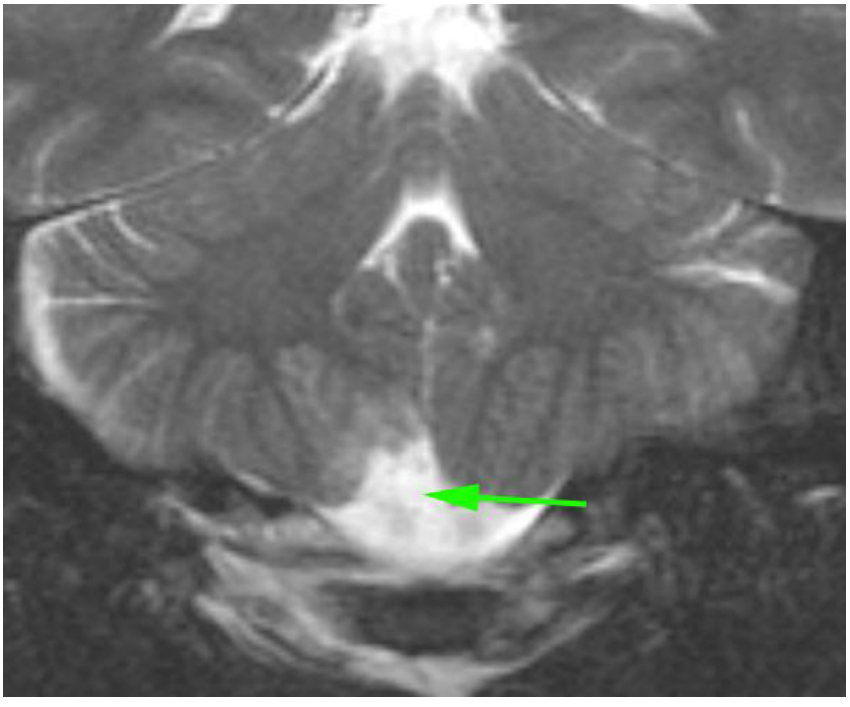

Figure 2. Postoperative T2 coronal MRI, revealing total removal of the tumor (green arrow)

MRI: Magnetic resonance imaging.

The patient was discussed on our multidisciplinary tumor board, and since the tumor was totally removed, only follow-up was planned with no adjuvant therapy. The patient is recurrence-free at 1-year follow-up without any symptoms.

3. Discussion

Pilocytic astrocytomas are rare tumors in the adult population, especially in the infratentorial region, with benign histologic features and a favorable prognosis [1, 3, 4]. The absence of IDH-1 mutation and P53 alteration, along with a low Ki-67 index, is typical of a benign tumor, in agreement with the literature, indicating a favorable prognosis for pilocytic astrocytomas [2]. The recurrence-free period at the 1-year follow-up that followed a successful surgical resection without adjuvant therapy demonstrates the potential for favorable outcomes in cases where complete resection is feasible [5-7].

A multidisciplinary approach is used to manage infratentorial pilocytic astrocytomas in adults. The approach is directed at maximal tumor resection with neurological function preservation. This case contributes to the growing body of evidence concerning the efficacy of surgical treatment in such cases.

4. Conclusion

This case report highlights the uncommon presentation of pilocytic astrocytoma in the cerebellar tonsils of an adult. It stresses the need to consider this diagnosis even in atypical locations. It also demonstrates the effectiveness of surgical treatment in this population.

Ethical Considerations

Compliance with ethical guidelines

This is a retrospective observational case study. The Ege University, Izmir, Turkey. Research Ethics Committee has confirmed that no ethical approval was required. The patient participating in the study provided informed consent for surgery. Consent to participate is not applicable as this is not an experimental study.

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Authors' contributions

Conceptualization and study design: Hüseyin Biçeroğlu, Mustafa Serdar Bölük, and Taşkın Yurtseven; Data collection: Bilal Bahadır Akbulut, and Mustafa Serdar Bölük; Data analysis and interpretation: Bilal Bahadır Akbulut; Drafting the article: Bilal Bahadır Akbulut, and Mustafa Serdar Bölük; Review and editing; Final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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