CASE REPORT

Nasopharyngeal Carcinoma with Sphenoid Sinus Extension Presenting as Severe Unilateral Headache: Case Report†

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Background: Nasopharyngeal carcinoma is one of the most challenging cancers to diagnose at the initial presentation. Headache is a rare and misleading symptom in diagnosis. This symptom often indicates sphenoid sinus, skull base lesion or intracranial tumor invasion and is therefore a hallmark of advanced disease and a poor prognosis.

Case Report: A 62-year-old male came with a severe left-sided headache for four days. He had vomiting but no weakness or vision problems. After taking analgesics, he still had a severe headache. An endoscopic examination showed a submucosal lesion at the nasopharynx. Computerized tomography scan revealed the enhancing mass over left nasopharynx, across midline to contralateral side, posterior extension to sphenoid sinus and intracranium. A nasopharyngeal biopsy and immunohistochemical staining analysis were performed and shown as nonkeratinizing undifferentiated nasopharyngeal carcinoma. Chemoradiotherapy was performed. The radiation dose was 70 Gy in 33 fractions and chemotherapy was six cycles. At 3-year follow-up, the patient showed decreased size of enhancing mass showing heterogeneous hyperSI on T2Wl. His headache decreased after the treatment.

Conclusion: Headache as a primary clinical presentation without other symptom is extremely rare in patients with nasopharyngeal cancer, leading to delays or misdiagnosis. This is because these symptoms indicate advanced disease and require prompt and appropriate treatment. Therefore, physical examination, radiology and pathology are required to plan further treatment.

Keywords: Nasopharyngeal carcinoma; Sphenoid sinus; Chemoradiotherapy; Headache

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Nasopharyngeal carcinoma is Epstein-Barr virus (EBV)-related epithelial cancer in the nasopharynx[1]. Men are more likely to develop the disease than women and it occurs most commonly in people aged 50 to 60 years[2]. The most common presentation is neck mass at 75.8%, unilateral hearing loss at 62.4%, and recurrent epistaxis at 44.6%. The non-specific headache is less common at 34.8%[3,4]. Most nasopharyngeal carcinoma patients present with multiple symptoms in 96%, with only 0.3% of patients that present with headaches alone[5]. Therefore, diagnosis of nasopharyngeal carcinoma should include history, physical examination, imaging, and histopathology, which is the definitive diagnosis[6]. Most patients had advanced disease at the time of diagnosis[7]. Radiotherapy with concurrent chemotherapy is the primary treatment in the advanced stage[8].

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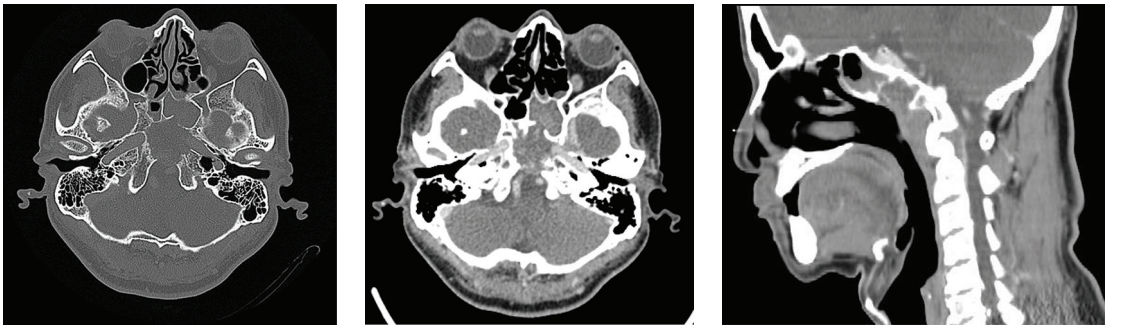
Case Report

A 62-year-old male came to the emergency room with a severe left-sided headache and vomiting for four days. He presented without neck mass, hearing loss, epistaxis, weakness, or vision problems. After taking oral analgesics, he still had a severe headache. He received intravenous analgesics to relieve the pain at the hospital. The computerized tomography (CT) scan was performed for the indication of severe headache. The patient was referred to an otolaryngologist due to the nasopharyngeal mass.



A B C

Figure 1. Computerized tomography (CT) scan; (A) Axial view (bone window), (B) Axial view (soft tissue window with contrast), (C) Coronal view (soft tissue window with contrast). CT scan revealed the enhancing mass over left nasopharynx, across midline to contralateral side, superoposterior extension to sphenoid sinus and clivus to intracranium including pituitary fossa, bilateral cavernous sinuses, and prepontine cistern.

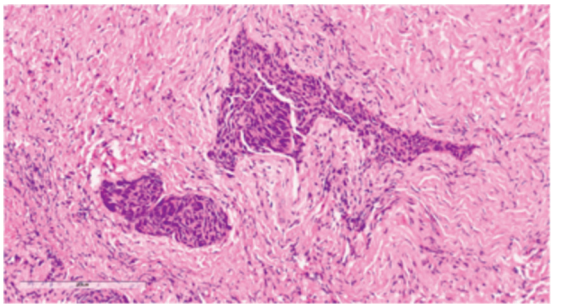


Figure 2. Pathologic finding of nasopharyngeal lesions: A few irregular nests of tumor cells with nuclear hyperchromasia and irregular nuclear membranes. No keratinization is seen.

Endoscopic examination showed a submucosal lesion at the nasopharynx without palpable neck mass. CT scan revealed the enhancing mass over left nasopharynx, across midline to contralateral side, superoposterior extension to sphenoid sinus, and clivus to intracranium including pituitary fossa, bilateral cavernous sinuses, and prepontine cistern. Lateral extension to left carotid space was shown. There was no inferior or anterior extension (Figure 1). A 1.2-cm homogeneous enhanced left posterior cervical node (V) was seen and a 1.4-cm heterogeneous enhancing left upper deep cervical node (IIa) was noted.

A nasopharyngeal biopsy was performed and shown as atypical cell infiltration (Figure 2). The immunohistochemical staining analyses were positive for P63, AE1/AE3, EBV (EBER), and negative for CD45, Synaptophysin, and Chromogranin A (Figure 3). The findings indicated nonkeratinizing undifferentiated nasopharyngeal carcinoma. No distant metastasis was shown in ultrasound upper abdomen, chest X-ray, and bone scan, so the

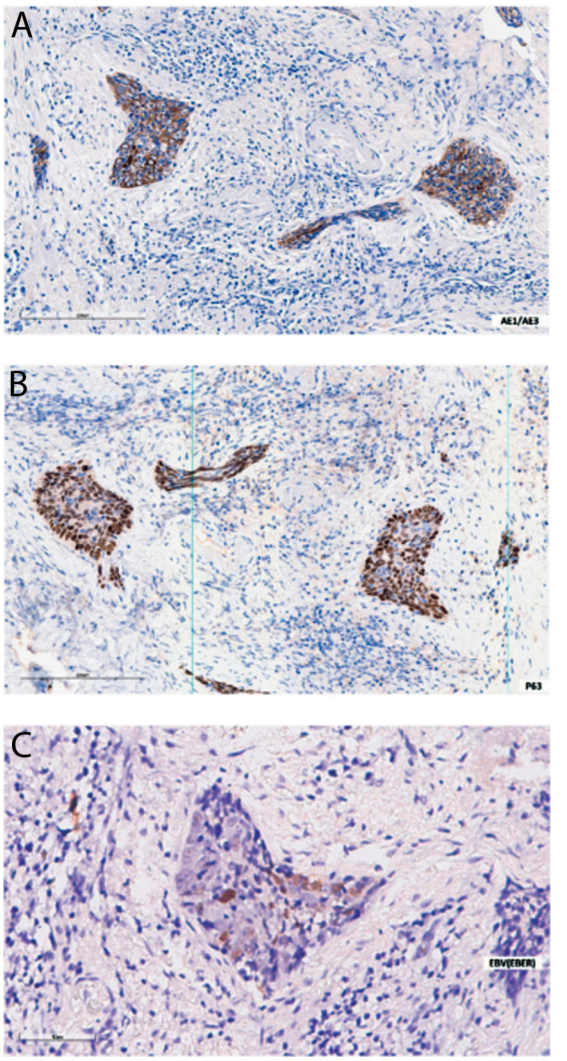


Figure 3. The immunohistochemical staining analyses of nasopharyngeal lesions: (A) Positive for P63, (B) AE1/AE3, and (C) EBV (EBER).

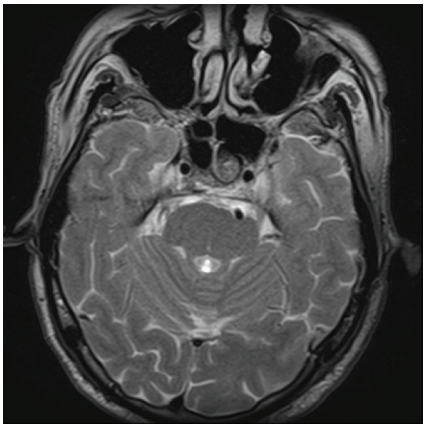


Figure 4. MRI, axial view (T2WI FS) revealed decreased size of enhancing mass showing heterogeneous hyperSI on T2Wl.

carcinoma was staged as stage III (T4N2M0) (AJCC 9th). The average duration before definite diagnosis was 1.5 months.

Chemoradiotherapy was performed. The radiation dose was 70 Gy in 33 fractions and chemotherapy was six cycles. At 3-year follow-up, the patient showed decreased size of enhancing mass showing heterogeneous hyperSI on T2W1 (Figure 4). His headache decreased after the treatment. However, tissue pathology of decreased size of the enhancing mass was not performed in this patient.

Discussion

The most common clinical presentation of nasopharyngeal carcinoma is neck mass, hearing loss, or epistaxis. Isolated headaches are rare. Further investigations are necessary to rule out other causes of headache[5].

Alshahrani et al. described their experience of nasopharyngeal carcinoma presenting with occipital headache as a sole symptom in a young adult male[9]. They reported a case of a 37-year-old male presenting with a headache alone that was progressive pain and not responding to analgesics. CT scan revealed a large ill-defined infiltrative heterogeneously enhancing soft tissue mass at nasopharynx that was different from the present case who had only submucosal lesion.

Wu et al. reported that the nasopharyngeal carcinoma patients presented only with headaches had the highest misdiagnosis rate at 86.4%[10]. Velayutham et al. reported a 45-year-old female presenting with a right hemicranial headache for two years and was diagnosed as nasopharyngeal carcinoma[11].

Lee et al. showed 14 cases of nasopharyngeal carcinoma presenting solely with a headache. The average duration before definite diagnosis was 7.9 months. Although most patients in the study had T3 or T4 tumors, the five-year overall survival did not differ from other patients[12]. However, the average duration before definite diagnosis in the present case was 1.5 months, which is considered a rapid diagnosis leading to a good prognosis.

Conclusion

Headaches as a primary clinical presentation are extremely rare in patients with nasopharyngeal cancer, leading to delays or misdiagnoses. This is because these symptoms indicate advanced disease and require prompt and appropriate treatment. Therefore, physical examination, radiology, and pathology are required to plan further treatment.

What is already known about this topic?

A unilateral headache can be the only presenting symptom of the nasopharyngeal carcinoma.

What does this study add?

Radiography and immunohistology are helpful for the accurate diagnosis of nasopharyngeal carcinoma with sphenoid sinus extension presenting as severe unilateral headache.

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Ethical approval

The present study was approved by the Ethics Committee of Burapha University (IRB1-097/2025).

Conflicts of interest

The authors declare no conflict of interest.

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